To Tell the "Tooth"

Children’s Hospital & Medical Center
ECHO School Nurse Series

Dr. Jill Wallen
UNMC College of Dentistry
jillian.wallen@unmc.edu
<table>
<thead>
<tr>
<th>Category</th>
<th>Disclosures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant/ Speakers bureaus</td>
<td>No Disclosures</td>
</tr>
<tr>
<td>Research funding</td>
<td>No Disclosures</td>
</tr>
<tr>
<td>Stock ownership Corporate boards-employment</td>
<td>No Disclosures</td>
</tr>
<tr>
<td>Off-label uses</td>
<td>No Disclosures</td>
</tr>
</tbody>
</table>
Lecture Outline

• Basics of Oral health and the link to whole body health
• Hard tissue pathology
• Soft tissue pathology
• Trauma Management
• Teledentistry Information
• Q&A
What is Dentistry?

The science concerned with the prevention, diagnosis, and treatment of diseases of the teeth, gums, and related structures of the mouth and including the repair or replacement of defective teeth.
Earliest Dentist

- Ancient Egypt
- 3000 B.C.
- Chief of physicians and dentists
- Evidence of periodontal disease in mummified Egyptians
History of Dentistry

What is the relevance of this to dentistry?
St. Apollonia

• St Apollonia is known as the patron saint of dentistry
• One of a group of virgin martyrs who suffered during the persecution of Christians
• According to legend her torture included having all of her teeth violently pulled out or shattered
• For this reason she is the patron saint of those suffering from toothache
The Silent Epidemic

- Dental caries or tooth decay is known as the silent epidemic
- **Most common chronic disease of childhood**
- Five times more prevalent than asthma
- Entirely preventable
- Causes pain, anxiety, missed days from school and work, poor school performance
Question of the Day?

Who is this young boy, and why is he so important to dentistry?
Deamonte Driver

- Twelve-year-old Deamonte Driver died of a toothache.
- A routine, $80 tooth extraction might have saved him.
- If his mother had been insured.
- If his family had not lost its Medicaid.
- If Medicaid dentists weren’t so hard to find.
- If his mother hadn't been focused on getting a dentist for his brother, who had six rotted teeth.
Deamonte Driver

- By the time Deamonte's own aching tooth got any attention, the bacteria from the abscess had spread to his brain, doctors said. After two operations and more than six weeks of hospital care, the Prince George's County boy died.

- Deamonte's death and the ultimate cost of his care, which could total more than $250,000, underscore an often-overlooked concern in the debate over universal health coverage: dental care.
Dental Home

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.

Establishment of a dental home begins no later than 12 months of age and includes referral to dental specialists when appropriate.
Dental Home

• Promote Oral Health of families, especially in the prenatal and perinatal periods
• Oral health of the child is intricately linked to the oral health of the mother
• Vertical and Horizontal transmission of bacteria
Risk factors for decay in early life

- Oral hygiene practices
- Diet - including exposure to sugary snacks and beverages
- Oral health literacy of the family
- Exposure to sources of Fluoride
Consequences of Poor Oral Health

- Pain – may be acute or chronic
- Loss of function and esthetics
- Ability to eat, sleep and speak may be impaired
- Ability to concentrate in school, perform as required may be impaired
- Time missed from school due to tooth pain
- Parental time missed from work
Epidemiology of Tooth Decay

Where we were: The Baby Boomers born between 1946-1964. No/limited access to optimally fluoridated water, fluoride toothpaste, dental floss, fluoride mouth rinses, dental sealants, composites, glass ionomer, etc.

Where we were: Generation X & Y born between 1965-1995. Greater Access to optimally fluoridated water, oral hygiene home care products, dental sealants and modern restorative dental materials

Where we are: “Epidemiologic data from a 2011-2012 national survey clearly indicate that early childhood caries remains highly prevalent in poor and near poor U.S. preschool children.” AAPD Policy on ECC. According to recent (2015) numbers published by the American Academy of Pediatrics 30.6% of Nebraska’s children are covered by Medicaid. According to recent press release by the AAPD nearly 1 in 3 children age 2-5 years old are affected by dental decay. AAPD also reports that for children age 2-5, 70% of the cavities are found in 8% of the population.
Epidemiology of Tooth Decay

Recently we are seeing a renaissance of caries in many Groups/Populations of Children: Poor/Near Poor, Minorities, Immigrants/Refugees, Rural (non fluoridated water?)

Why?: Changing diets, changing parenting practices, public pushback on water fluoridation, access to care (physical and financial), lack of education overall and in regards to healthcare, changing family structure, changing demands on parents time/energy
Defining Dental Disease

**Early Childhood Caries:** The presence of one or more decayed (cavitated or non-cavitated), missing (due to caries) or filled tooth surface in a child under age six.

**Severe Early Childhood Caries:** Any sign of smooth surface caries in children under three. Or, for children 3-5 one or more cavitated, missing (due to caries), or filled smooth surfaces in the maxillary anterior teeth. Or, dmft score of greater than or equal to 4 for three year olds, greater than or equal to 5 for four year olds, and greater than or equal to 6 for five year olds.
Dental Caries

Dental Caries is still the most prevalent disease of childhood

Entirely preventable
Caries risk factors

- Past caries experience
- Visible plaque
- Fluoride
- Home care
- Consumption of carbohydrates
- “Tooth” factors
- Socio-economic status (SES)
Early Childhood Caries

Typical baby bottle tooth decay
Caused by frequent exposure to juice or milk, especially overnight.
Early Childhood Caries

- Child allowed to sleep with bottle
- Bottle used as pacifier for prolonged periods of time
- Related to frequency & length of exposure
- Early carious involvement of upper anterior teeth, then lower first primary molars & then lower canines
Oral Health/Whole Body Health Link

- “Cavities” as a chronic infectious disease not just holes to be filled
- AAPD reports tooth decay is the single most common chronic childhood disease. It is five times more common than asthma, four times more common than early childhood obesity, and 20 times more common than diabetes
- Dental caries is a multifactorial disease process initiated by bacteria primarily mutans streptococci and lactobacillus species
- Window of Infectivity: MS can colonize the mouth of predentate infants
- Vertical transmission vs. Horizontal transmission of cariogenic bacteria
- Direct vs. Indirect transmission of cariogenic bacteria
Oral Health and School Performance

• Like many infectious diseases, childhood caries has significant economic and social consequences.

• It has no curative drug, no preventive vaccine, and can plague a child into adulthood as an active disease with irreversible consequences.

• Dental caries, periodontal diseases, and other oral conditions, if left untreated, can lead to pain, infection, and loss of function.

• These undesirable outcomes can adversely affect learning, communication, nutrition, and other activities necessary for normal growth and development.

Missing School = Missing out!!
Healthy Primary Dentition

UPPER ARCH

10 healthy teeth
4 molars
2 canines
4 incisors

Maxillary teeth are A through J in the naming system
Healthy Primary Dentition

LOWER ARCH

10 healthy teeth
4 molars
2 canines
4 incisors

Mandibular teeth are K through T in naming system
All primary teeth hold space for permanent teeth and act as a guide for them
Tooth Shedding and Eruption

As a child losses teeth, they leave primary dentition and enter mixed dentition phase where both primary and permanent teeth may be present.

Permanent teeth naming system is numerical 1 through 32.
- Upper central incisors are 8 and 9
- Lower central incisors are 24 and 25
Strategies for Improving Oral Health to Share with Parents/Guardians
(And for your information)

• Establish a dental home – by age one
• Similar to medical home – been in existence for over 40 years
• Provider education and participation
• Incorporate oral health education into pediatrician visits and well-baby checks
• Advise expectant mothers of importance of good oral health and hygiene practices
Oral Health Education - Diet

Quality: Fresh fruits, fresh vegetables, lean meats, nuts, cheese, eggs, whole grain breads, whole grain pasta, etc.

Consistency: Sticky foods or foods with long oral clearance times are more problematic

Quantity: Amount of sugar and highly processed carbohydrates important, but probably not more important than other dietary factors such as…..

Frequency: Number of sugar/simple carbohydrate exposure to teeth very important but often overlooked by parents (bottle/sippy cup issues)

Problem: What do kids want? What do parents give for snacks because it’s fast, easy, cheap, portable?
Oral Health Education - Diet

Teenage years often a time of increased caries risk:

- More autonomy
- More meals outside the home
- Responsible for most diet choices
- Sugary drinks in particular a major problem
- Physical and emotional changes/challenges
Oral Health Education -
Protective Foods

- Detergent-type foods
- Frequency matters
- The importance of cheese!!
Oral Health Education –
Toothbrushing & Flossing

• Current best practice recommendations by the AAPD call for twice-daily brushing with fluoridated toothpaste for all children in optimally-fluoridated and fluoride-deficient communities

• Children less than three should brush with a smear or grain or rice amount of fluoride toothpaste

• Children three to six years old should brush with a pea size amount of fluoride toothpaste

• Children should use a soft bristle toothbrush (not infant brushing aides, tooth-ettes, etc.)
Oral Health Education – Toothbrushing and Flossing

- Parents should assist with brushing and flossing until children are at least 6 years old (must have manual dexterity and motivation to “brush their own teeth”)
  - “Rice” dab of fluoride toothpaste = 0.1mg Fluoride
  - “Pea” dab of fluoride toothpaste = 0.25mg Fluoride
- Flossing should be initiated when interproximal contacts between primary teeth close which for most children is around 4 years old
Soft Tissue Pathology

- Dental Abscess
- Canker Sore
- Primary Herpes and Recurrent Herpes Labialis
- Hand Foot and Mouth Disease
Dental Abscess

- Odontogenic or periodontal
- Red or pink, fluctuant, purulent
- Soft and tender to palpation
- Treat source of infection
- Palliative care
- Antibiotic if appropriate
Geographic Tongue

- Usually on dorsal aspect of tongue
- Cause unknown
- May be tender, complain of burning
- Does not wipe off
- Palliative treatment as needed
Canker Sores

• T cell-mediated immunological reaction
• 20-30% of all children in US get ulcers
• Non-keratinized mucosa
• Single or multiple lesions, painful, recurrent lesions of sudden onset
• Minor, Major or Herpetiform
• Treat with steroids, coating agents
Primary Herpes

- Herpes Simplex Virus Type 1
- Primary exposure to the disease
- History: malaise, fever, chills, arthralgia, anorexia
- Lesions: Vesicles on mucosa of lips, tongue and gingiva. Fiery red edematous gingiva that bleeds easily
- Rx: Self-limiting in 7 to 10 days, treat with antipyretics and analgesia
- No need for antibiotics or steroids.
Recurrent Herpes

- Re-activation of HSV Type 1
- 20-35% prevalence
- 7-14 days duration
- UV light, trauma, fever, dental treatment all risk factors
- Self-limiting, topical anesthetics and antivirals available
Hand-Foot-and-Mouth Disease

- Coxsackie A16 virus (enterovirus)
- Usually affects children 1 to 10 years of age
- Hx; Viral prodrome of low-grade fever and malaise
- Oral lesions: Painful multiple small vesicles on the hard palate, tongue and buccal mucosa that subsequently ulcerate
- Rx: Self limiting, resolves in 7 to 14 days. Treatment is palliative, with antipyretics and analgesics. Mouth rinses can also be useful
Gingivitis/Periodontitis

- Gingivitis and particularly periodontitis more common in teenage populations
- Hormones
- Poor oral hygiene
- Stress
- Poor diet
Persistent tooth
Dental Trauma

- Dental trauma in children occurs in relation to two major milestones
- First incidence is in children 18 months to 3 years as they are learning to walk and navigate (walkers, coffee tables and other furniture)
- Second highest incidence occurs usually in males ages 11 to 15 and is usually related to participation in contact sports (football, basketball, skateboards and swimming pools)
Management of Dental Trauma

• Do not re-implant primary teeth
• If permanent tooth, immediately re-implant or store in HBSS/“Save A-Tooth” solution
• If not available, store in cold milk
• Critical time for best success is 20 minutes
• Replace and have child bite on damp washcloth
• Refer for x-ray, repositioning and splinting immediately at dentist
• Dentist may ask about tetanus status, LOC, etc.
Pictures of Trauma – Primary Teeth
Trauma – Permanent Teeth
UNMC Teledentistry in Elementary Schools

OPS

• SBHCs operated by FQHCs in schools

• 5 elementary school nurses who serve 10 elementary schools
UNMC Teledentistry Elementary Schools

- Part of greater Omaha Oral Health Collaborative

- Consent burden has been lessened with this partnership. Screenings, telehealth and UNMC are all part of the school health services consent form

- User-friendly equipment utilizing secure wireless internet connection

- Nurses/Providers are able to show pediatric dental resident the area in question and get real-time information regarding the condition and recommended treatment
UNMC Teledentistry Elementary Schools
Q&A

• How do we effectively encourage parents to follow through with dental treatment?

• What steps should we take if we have concerns regarding student’s dental health?

• How can we work with area dental providers effectively?

• Who can we call if we have questions regarding oral health issues?

• What do rural nurses without access to resources need to know about taking care of student’s oral health?