Integrating Oral Health Education into Primary Care
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Workshop Objectives
• Discuss the prevalence and sequelae of oral disease.
• Describe the inter-relationships between oral and systemic disease.
• Discuss the prevalence, etiology, and consequences of Early Childhood Caries (ECC).
• Recognize the various stages of ECC on oral examination.
• Describe prevention of ECC through use of fluoride, proper hygiene, diet and appropriate dental referral.

Workshop Objectives
• Discuss how to perform a consistent, thorough, and nonthreatening oral, face and neck examination of children.
• Discuss the effects, sources, benefits, and safe use of fluoride.
• Describe the benefits and indications for fluoride varnish.
• Demonstrate the application of fluoride varnish.
• Discuss advice for parents on caries prevention and describe when to arrange dental referral.
• Illustrate the role of the primary care provider in promoting oral health.
The Importance of Oral Health

• Oral health is an important component of overall health.
• Enhances ability to speak, smile, smell, taste, touch, chew, swallow and convey feelings and emotions through facial expression.
• It is the low-hanging fruit of prevention.
• Oral health problems are common, preventable and painful.
• Oral health problems are costly
  • Estimated $108 billion spent on dental services in US in 2010

http://cdeworld.com/images/graphics/4991/lg/figure_1.jpg
Oral-Systemic Connection

- Good evidence for oral/systemic link
  - Infective endocarditis (8% of cases)
  - Prosthetic device infection
  - Diabetes
- Emerging evidence for oral/systemic link
  - Obesity
  - Coronary artery disease
  - Lower respiratory disease
  - Adverse pregnancy outcome
    - Preterm birth and low birth weight
    - Preeclampsia
  - Rheumatoid arthritis
  - Inflammatory bowel disease

The Problem

- Tooth decay affects more than one-fourth of U.S. children aged 2-5 and half of those aged 12-15 (CDC 2011)
- Half of all children and 2/3 of adolescents aged 12-19 from lower-income families have had tooth decay
- 40% Mexican-American children aged 6-8 years have untreated decay compared with 25% of non-Hispanic whites
- In past decade proportion of children ages 2-5 with cavities has increased 15% (CDC 2007)
- Estimated 17 million low-income children go without dental care annually nationwide (CDC 2010)
- 22% of children ages 1-17 years
- Twice as many Americans lack dental insurance as lack medical insurance

The Problem

- Consequences of poor dental health
  - Rampant decay of baby teeth
    - Poor nutrition and delay in speech development
  - 51 million school hours lost per year due to dental related issues.
  - Chronic pain leads to behavior problems
  - Children with severe dental problems are more likely to grow up to be adults with severe dental problems
  - Linked to cardiovascular disease, diabetes and stroke in adults
Connecticut: Current Status

- Increase in access to dental services in recent years for low-income adults and children with Medicaid and CT HUSKY.
  - 2,002 dentists accepted Medicaid or HUSKY plans in 2014.
  - Three times the 703 dentists in 2008 (CT DSS)
  - 192,263 adults on Medicaid or HUSKY utilized dental services (2014 CT DSS)
  - Up from 49,839 (2008 CT DSS)
  - 237,010 HUSKY-enrolled children utilized dental services (2014) up from 67,522 (2008-CT DSS)

Connecticut: Current Status

  - Connecticut earned an “A” (6 of 8 benchmarks reached)
    - Greater than 60% of Medicaid-enrolled children have dental services
    - Dental hygienist can place sealants without dentist’s prior exam
    - Medicaid reimburses medical providers for preventive dental services
    - Dentists receive national average fee for serving Medicaid patients
    - At least 80% of residents have fluoridated community water supplies
    - State tracks data on children’s dental health
    - Sealant programs in less than 25% high-risk schools
    - Does not authorize new types of primary-care dental providers

Why Now?

- According to the Surgeon General’s Report on Oral Health in 2000:
  - Dental care is the most common unmet health need.
  - Oral disease can severely affect systemic health
  - Much oral disease is preventable or at least controllable.
  - Profound disparities in oral health and access to care exist for all ages.
Why Now?
- Institute of Medicine's 2011 reports on Advancing Oral Health in America and Improving Access to Oral Health Care for Vulnerable Populations
- Racial minorities, low-income families, seniors, rural
- 2012 Dental Crisis in America Report
- Senator Bernie Sanders-US Senate Committee on Health
- Increased emphasis being placed on alternatives to traditional dental practices for delivery of dental services
- Increased coordination between medicine & dentistry to meet the country's needs

Common Misconceptions
- "They're just baby teeth"
- "Bring him in when he's 4 years old and can sit still"
- "My 3 year old brushes his own teeth"
- "Fluoride is dangerous"
- "You lose a tooth with each pregnancy"
- "Dentures are just a part of getting old"

Common Oral Diseases Across the Lifespan
- Early Childhood Caries (ECC)
- Adult caries
- Gingivitis
- Periodontal disease
- Pregnancy complications
Prevalence of Early Childhood Caries (ECC)

- ECC is a public health crisis
- Prevalence:
  - 5% of all US children
  - 30-50% of low income children
- 80% of caries occurs in 20% of children
- Most common chronic disease of childhood
  - 5 times more common than asthma
  - 7 times more common than hay fever

Prevalence of ECC in Connecticut

- One in five Connecticut preschoolers have tooth decay.
- By age eight and nine,
  - 35% White children
  - 50% African-American children
  - 63% Hispanic children in Connecticut have experienced dental decay.

February 2012 - Child Health and Development Institute Issue Brief - Connecticut Dept. of Public Health

Early Childhood Caries (ECC)

- Leads to tooth loss and/or infection
- Can be vertically transmitted
- Sequelae:
  - Pain
  - impaired chewing and nutrition
  - school/work absences
  - Infection
  - Increased caries in permanent dentition
  - Extensive and expensive dental work

IS PREVENTABLE!!
Oral Health Balance

**Protective Factors**
- Diet
- Brushing/flossing
- Salivary flow
- Fluoride

**Pathologic Factors**
- *mutans strep*
- Carbohydrates
- Reduced salivary flow
- Plaque
- Meds: xerostomia
- Tobacco

Remineralization  ➔ Demineralization

- No caries
- Healthy gums
- Cancer-free

- Caries
- Periodontal disease
- Oral cancer

Caries Etiology Triad

- Oral bacteria (*streptococcus mutans*) break down dietary sugars into acids which break down the tooth
- Bacteria metabolize sugars into acid which dissolves tooth enamel

Caries Transmission

- *S. mutans* is vertically transmitted from primary caregiver to the infant or child
- Caregivers with high bacteria levels usually have:
  - A high frequency of sugar intake
  - Poor oral hygiene
  - High levels of decay
- Caregivers pass bacteria, dietary habits and oral care habits to the child.
Dietary Influences

- Oral bacteria ferment sugars, producing acids that persist for 20-40 minutes after ingestion
- Oral acids demineralize tooth enamel
- Remineralization occurs when acid is buffered
- How often sugars are ingested is more important than how much is ingested

Cariogenicity of Foods

- Highly cariogenic
  - Sweet, sticky foods
- Less or minimally cariogenic
  - Whole grain or non-carbohydrates
  - Meats and nuts

From healthy teeth to caries

- Healthy white teeth
- White spots
White Spots: The Early Stage of Caries

Progression of ECC

White Spots, then Brown Cavitations

Photos: Joanna Douglass BDS DDS
Advanced Caries

Brushing Techniques
Kids Need Help Until Age 6

Prevention of ECC in Connecticut
- Connecticut DPH Home-by-One 5-year program report in 2010 showed:
  - More than 9,400 children younger than three in Connecticut received dental care
    - 2,000 got care from primary care provider
  - 262 pediatric primary care providers certified to provide dental services to children younger than three years old in Connecticut.
Prevention of ECC in Connecticut

- About one third of Connecticut’s children are enrolled in HUSKY Health
- Over sixty percent of HUSKY Health kids get dental care in a year.
  - Highest in the nation
- About 50% of HUSKY Health adults get dental care in a year.
  - Include many non-parents
- List of CT HUSKY dentists at 1-877-284-8759

Oral Health in Pregnancy

- No formal national guidelines for dental treatment in pregnancy
- Gingivitis is common in pregnancy
- Periodontal disease is associated with adverse pregnancy outcomes
  - Preterm birth
- Pregnancy Granuloma found in 5% of pregnant women
  - From poor hygiene
- Treatment during pregnancy is safe, but both medical and dental providers may be reluctant to treat.
- The best way to improve infant oral health is to improve maternal oral health:
  - S. mutans vertically transmitted.
  - Mother’s oral health practices and diet influence child practices.

Healthcare Providers Should Know......

- Many women neglect oral health during pregnancy
- Many patients take medications that may affect oral health (xerostomia)
- Patients with poor dental hygiene can suffer from a lack of food intake, poor nutrition, and weight loss
The Opportunity

- Most children have access to primary care
  - 89% of poor children have a usual source of medical care
  - Primary care providers have regular, consistent contact with children for well checks and immunizations
- Principles of risk assessment, screening and behavior change counseling are fundamental to primary care providers

Well-Child Visit Frequency
Medical Setting Opportunities

<table>
<thead>
<tr>
<th>Infants &amp; Children</th>
<th>Pregnancy</th>
<th>Adults</th>
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<tbody>
<tr>
<td>Risk assessment</td>
<td>Diet</td>
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<td>Oral hygiene</td>
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<td>Family oral health</td>
<td>Tobacco ETOH / Drugs</td>
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<td>Screening and counseling</td>
<td>Caries Parental care</td>
<td>Periodontal Dz Self-care</td>
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<tr>
<td>Treatment and referral</td>
<td>Fluoride Dental visit</td>
<td>Rinses Xylitol Dental visit</td>
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Importance of the Oral Exam

- Identify dental issues
  - ECC
  - Infections/abscess
  - Gingivitis/periodontitis
  - Oral malignancies

Preparing for the Exam

- Light
- Gloves
- Gauze
- Tongue blade
- Mirror (optional)
Performing the Oral Exam

- Complete history
  - Including oral health symptoms, and risk factors
- Evaluate for:
  - Condition of tonsils and tongue
  - Number of teeth
  - Lymphadenopathy
  - Presence of caries
  - Gingivitis and periodontitis
  - Common oral lesions
- Typical exam takes about 3 minutes


Physical Exam of the Oral Cavity

**Inspect:**
- Face
- Lips
- Gingiva
- Buccal mucosa
- Teeth
- Tongue
- Floor of mouth
- Hard and soft palate
- Posterior oropharynx

**Palpate:**
- Gingiva
- Buccal mucosa
- Tongue
  - Include lateral aspect
- Floor of mouth
- Hard palate
- Tap teeth
- Lymph nodes of the head and neck

Chart Your Findings

- Severe decay of central incisors
- Tooth loss
- Brown streaks/spots across central incisors

http://www.toothwisdomu.com/images/pictures_of_tooth_decay.jpg

https://drecoaching.files.wordpress.com/2013/05/early-childhood-caries.jpg
MESSAGES FOR PATIENTS

Oral Self-Care 101

- **Brush** twice a day, especially after meals
  - Soft toothbrush, for about 3 minutes
- **Floss**
  - At night to remove plaque so bacteria do not multiply
  - Use unwaxed floss because fibers capture more plaque
- **Preventive measures**
  - Anti-cavity mouthwash
  - Fluoride rinse important in areas without additive in water (use at night)
  - Chewing gum with xylitol after meals—Does NOT replace brushing and flossing
- If you’re going to do it...
  - Have sugar all at once, not scattered throughout the day
  - Don’t give bacteria regular “feedings” by snacking on sugar or carbohydrates

http://rack.2.mshcdn.com/media/ZgkyMDEzLzAxLzMxL2VlL2dhZGdldHNoZWxwLjg5ZjM5Lm.wavZwpwCXRodW1iCTk1MHg1MzQjCmUJanBn/d28bd55e/88c/gadgetshelpkidsbrushteeth.jpg

Part 4

FLUORIDE
Fluoride

- Naturally occurring mineral found in water and soil.
- In the mouth, fluoride is concentrated in saliva and plaque.
- Helps stop enamel from being broken down.
- Enhances recovery of demineralized enamel.
- Improves structure of teeth.
- Teeth more acid resistant.

Community Water Fluoridation

- Adjustment of fluoride that occurs naturally in water to optimal levels to protect oral health (0.7 ppm).
- Named by CDC as one of the 10 great public health achievements of the 20th century.
- Benefits everyone, especially those without access to regular dental care.
- Effective; reduces tooth decay by about 25% (up to 40%) in children and adults across the lifespan.

Community Water Fluoridation

- Every $1 invested in water fluoridation saves $38 in dental treatment costs.
- Determined to be safe.
- Over 60 years of research and practical experience.
- No court has found fluoridation to be unlawful.
- Average cost for a community to fluoridate its water ranges from $0.50 a year per person to $3.00 a year per person in small communities.
- Cost of one filling $40; cost of prescription fluoride for one child for one year $38 - $48.
- ADA one of the most widely respected sources of information on fluoridation and fluorides.
Fluoride Mechanism of Action

- **Topical** (greater effect)
  - Inhibits demineralization
    - Creates fluorapatite and fluoridated hydroxyapatite
  - Promotes remineralization
    - Precipitates calcium and phosphate
    - Repairs early white spots
  - Produces anti-bacterial activity
    - Inhibits metabolism; decreases acid production
  - Also effective in older adults
- **Systemic** (less effective)
  - Reduces enamel solubility by incorporation into its structure

Community Water Fluoridation in Connecticut

- Public water systems serving more than 20,000 required to add fluoride.
- 33 public water systems adjust their fluoride levels and some sell to other public water systems in the state.
- Currently 66 percent of Connecticut’s residents have access to fluoridated water
  - 76 percent nationwide
- The 34% of the population without water fluoridation scattered over 75 towns in CT.

Billing

- Coverage varies from state to state
- Medicaid provides enhanced payments if modifier EP on claim for well child visit
- Medicaid in most states pays medical providers for child oral health services
  - Exam, risk assessment and guidance
  - Fluoride varnish application
  - Must be combined with well-child exam risk assessment and education in Connecticut.
  - Use CPT code 99499 with modifier SC
Dental Sealants

- Thin plastic coatings applied to chewing surface of back teeth.
- Protects chewing surfaces from decay.
  - Keeps food and bacteria from teeth
- Systematic review → sealants in school-based programs can prevent up to 60% of tooth decay for 5 years
- In CT, less than 25% of high-risk schools have sealant programs (does not meet the Pew benchmark).
- 17.8% of third-graders with tooth decay and 38.1% of third-graders with dental sealants in place (2006-07 data Pew report card)
- Hygienists can place sealants without dentist's prior exam.

http://www.cdc.gov/chronicdisease/resources/publications/aag/doh.htm#aag

Part 5
MESSAGE FOR HEALTHCARE PROVIDERS
Healthcare Provider’s Role in Oral Health

- Teach patients about oral health
  - Good oral health promotes good overall health
  - Importance of anticipatory guidance
    - Diet and good oral hygiene can help prevent ECC in children
- Improve oral hygiene
  - Reinforce self-care practices
  - Promote dental exam every 6 months

Healthcare Provider’s Role in Oral Health

- Perform Risk Assessment for:
  - ECC
    - Diet high in sugar intake
    - Poor oral hygiene
  - Gingivitis and Periodontitis
  - Oral cancer
  - Xerostomia
  - Osteonecrosis of jaw
- Awareness of oral-systemic connection
  - Identify and address systemic health issues
  - Inflammation may be a red flag for underlying and possibly undiagnosed systemic illness (i.e., diabetes, HIV, HPV)

Healthcare Provider’s Role in Oral Health

- Identification of and need for referral:
  - Caries
  - Acute problems/trauma
    - Dental abscess
    - Broken teeth/tooth loss
  - Periodontal disease
  - Oral cancers including sites often neglected by medical providers
  - Model collaborative medicine for other practitioners
Primary Care and Dentistry: The Bidirectional Referral

- Primary care providers can help dentists
  - Reinforce oral hygiene messages
  - Accurate and timely response to acute oral issues
    - Abscess, malignancy
  - Promote oral exam by dentist every 6 months
- Dentists can support primary care providers
  - Identify undiagnosed conditions (diabetes, HIV, HPV)
  - Identify substance abuse issues (meth mouth)
  - Improve glycemic control by treating periodontal disease

Collaboration is Key

- Interprofessional oral health initiatives that bridge education and practice foster professionals who:
  - View themselves as interprofessional partners
  - Share patient management with other providers
  - Focus on patient need, not on the disease process.

Collaborate with Health Professions Schools

- Partner with area colleges and universities with schools of medicine, dental medicine, physician assistant and nursing.
- Provide services from education to screenings and procedures
- In Connecticut: UCONN UST, Quinnipiac University
  - Project in a box
  - Brushing Bunnies
Integration of Oral Health into Community Outreach

- Health Fairs
- High School Transition students
- Daycare Centers
- Senior Centers
- Migrant Farm Clinic
- Connecticut Mission of Mercy
- School-based health cntrs

Part 6
ORAL HEALTH EDUCATION
The Smiles for Life Curriculum

- Eight Modules
  - Oral-Systemic Connection
  - Child Oral Health
  - Adult Oral Health
  - Acute Dental Problems
  - Oral Health in Pregnancy
  - Fluoride Varnish
  - The Oral Examination
  - Geriatric Oral Health

www.Smilesforlifeoralhealth.org

- Modules
  - Each designed to take about 45 minutes
  - Can be completed online and followed by a test
  - Certificate of completion issued
  - Free CME
  - Can be downloaded
  - Speaker notes

- Other Resources
  - Videos
    - Knee-to-knee exam
    - Fluoride varnish
    - Brushing a child's teeth
  - Posters
  - Pocket cards
  - Learning objectives
  - Curriculum implementation guide
  - Test questions

Answering the Call - Joining the Fight for Oral Health
Take Home Points

- Early childhood caries is an infectious, vertically-transmitted, preventable disease
- Oral health and systemic health are related across the lifespan
- Primary care providers are well-positioned to help patients improve their oral health through education, screening and referral
- The Smiles for Life National Oral Health Curriculum can improve knowledge and skills in oral health.

References

- Smiles for Life – Oral Health Curriculum
- Oral Health Improvement Plan for CT 2013-2018
- CT Dept. of Public Health – A Guide to Keeping Your Child’s Smile Shining Through!
- CT Dept. of Public Health – Every Smile Counts Report 2012
- Connecticut Statewide Fluoridation Plan 2011
- CDC Community Water Fluoridation
- ADA Fluoridation Facts

References

- 2011 CDC Oral Health Success Stories
- 2011 CDC Oral Health At A Glance
- Healthy People 2020 – Oral Health Objectives
- Dental Crisis in America – The Need to Expand Access
- National Interprofessional Initiative on Oral Health
- nccPA Health Foundation