Integrating Oral Health into Primary Care Practice: A Systems Change

Wanda C. Gonsalves, M.D.
Professor and Vice Chair
University of Kentucky
Department of Family and Community Medicine

November 6, 2016
Oral Health Integration

Requires a systems change approach

https://www.youtube.com/watch?v=2vojPksdbtI#
Objectives

- Identify components of a systems change needed to incorporate oral health into practice
- Articulate the case for oral health integration into primary care
- Using group think, develop strategies for oral health integration
A framework for systems change

- Shared values, champions, and leaders
- Tools and knowledge sharing
- Education models
- Practice models
- Policy and financing
Breadth of partners for NIIOH is expanding.

Shared values and Leadership

Public health   IPE
Community health   Rural health
Physician assistant   Funders
OB/GYN   Federal agencies   Pediatrics
Dentistry   Midwifery   Early childhood
Students   Nursing   Family medicine
Shared Values and Champion

Practice

Education

Policy

Philanthropy

Federal Agencies
Tools and knowledge sharing


IOM. *Improving access to oral health care for the vulnerable and underserved population*. Washington, DC: The National Academies Press. 2011

HRSA. *Integration of Oral Health and Primary Care Practice*. 2014.

AAMC. *Oral Health in Medicine Competencies for the Undergraduate Medical Education Curriculum*. 2008
Tools and knowledge sharing


Interprofessional Oral Health Faculty Toolkit for Primary Care Nurse Practitioner and Midwifery Programs, Oral Health Nursing Education and Practice (OHNEP) initiative. www.ohnep.org/faculty-toolkit.
Education Models

http://www.smilesforlifeoralhealth.org
Almost **600,000 visits** to the Smiles for Life website as of June 2016

Over **42,000 registered Smiles for Life users** as of July 2016
Survey of Smiles for Life Users March 2015

- Across professions, 85% reported that Smiles for Life influenced their practice (by leading them to start oral health activities, do activities more regularly, and/or do activities better).

- The most common influence reported was improving quality of oral health activities.

- Of those who reported applying fluoride varnish, 47% said Smiles for Life led them to begin this activity when indicated.

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipatory Guidance</td>
<td>60%</td>
</tr>
<tr>
<td>Annual Oral Exams</td>
<td>60%</td>
</tr>
<tr>
<td>Caries Risk Assessments</td>
<td>58%</td>
</tr>
</tbody>
</table>
Education and Practice Models

- Organizational factors matter: Those influenced by SFL (purple bars) were more likely to agree that their organization supported integration. Within my practice area at my organization...

<table>
<thead>
<tr>
<th></th>
<th>Influenced by SFL</th>
<th>NOT influenced by SFL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key individuals are motivated to better integrate oral health into primary care</td>
<td>77%</td>
<td>63%</td>
</tr>
<tr>
<td>Oral health is formally integrated into the work flow</td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>Oral health activities are appropriately delegated to care team members</td>
<td>56%</td>
<td>43%</td>
</tr>
<tr>
<td>Medical record system includes oral health prompts and questions</td>
<td>52%</td>
<td>37%</td>
</tr>
</tbody>
</table>
• Oral Health is a Fit for the PCMH
Patient-Centered

- Whole person
  - puts the mouth back into the body

- Self-management and prevention
  - Diet and oral hygiene are under the patient’s control.
Comprehensive Care

- Brings a formerly “siloed” aspect of health into the medical home
Coordinated care

- Oral health is well-suited to medical teamwork:
  - Physicians
  - PA’s
  - APN’s
  - MA’s
  - Counselors

- Collaboration with oral health professionals.
Brings oral health services into the medical home:
- Education
- Screening for oral disease and correlation with systemic health
- Fluoride
Accountable Systems-based approach to quality and safety

- Oral health has a strong evidence basis
- Outcomes and be identified and quantified:
  - Caries rates
  - Periodontal disease rates
  - Correlation of oral health with chronic diseases like diabetes.
Challenges

- Education about importance
- Skills:
  - Oral exam of children and adults
  - Fluoride varnish application
  - Recognition of normal and abnormal oral findings
- Time and resource allocation
- Payment
- Consultation and referral relationships
Oral Health Literacy

- Very low in the general public
  - “They’re just baby teeth”
  - “Bring him in when he’s 4 and can sit still”
  - “My 3-year old brushes his own teeth”
  - “Fluoride is dangerous”
  - “You lose a tooth for each pregnancy”

- Most medical providers get essentially no oral health education
Solutions & Best Practices

- **Education:**
  - Smiles for Life national oral health curriculum
  - [http://www.smilesforlifeoralhealth.org](http://www.smilesforlifeoralhealth.org)

- **Implementation and Technical Assistance:**
  - The Oral Health Delivery Framework
  - ABCD (Washington State)

- **Operating programs in Four Community Health Centers:**
Practice Models

Why Integrate Oral Health Care?
Prevalence of Oral Disease

- Dental caries most common chronic disease of childhood
  - 5 times more common than asthma
  - 50% in low income children - up to 70% in Native Americans
- Severe gum disease affects 19% of adults age 25-44
- 30,000 oral cancers diagnosed annually; 8000 die
Epidemiology of Treatment

- Dental visit in past year:
  - 44.5% of children < 2 years old
  - 30.2% for those living in poverty
- Children age 6-9 receiving dental sealants – 25.5%
- 76.4% of adults 45-64 have had a tooth extracted
Adults aged 18+ who have visited a dentist or dental clinic in the past year

South Carolina - 2014
Adults aged 18+ who have visited a dentist or dental clinic in the past year
Response: (All)

Percent (%)

0 20 40 60 80 100

Yes No

Adults aged 65+ who have lost all of their natural teeth due to tooth decay or gum disease

South Carolina - 2014
Adults aged 65+ who have lost all of their natural teeth due to tooth decay or gum disease
Response: (All)

Percent (%)

0 20 40 60 80

Yes No
Adults aged 65+ who have lost six or more teeth due to tooth decay or gum disease

Response: (All)

Footnotes
N/A Not available if the unweighted sample size for the denominator was <50 or RSE>30% for any cell, or if the state did not collect data for that calendar year

Data Source: Behavioral Risk Factor Surveillance System (BRFSS)
Rankings of State dental visits

Statistical significance: p<.05
SC Dentist/County: Access to Care

- Lowest dentist ratio
  - Fairfield 1: 23,917:1
  - McCormick 1: 10,162:1
  - Lee 2: 11,486:1
  - Allendale 2: 5,394:1

- Highest dentist ratios
  - Charleston 286:1,179:1
  - Greenville 238:1,798:1
  - Richland 201:1,821:1
  - Lexington 112:2,201:1
  - Spartanburg 103:2,662:1
91,242 members in the study were identified with both type 2 diabetes and periodontal disease. Of these members identified, 913 completed periodontal treatment; 90,329 didn’t complete treatment.

This data represents an averaged savings of $2,840 (40.2%) per patient per year for those who received periodontal treatment at a statistically significant level of p<0.04.

In the case of hospitalizations, of the 91,242 members identified with type 2 diabetes and periodontitis, 40 completed treatment and were hospitalized compared to 66 who didn’t complete treatment and were hospitalized. This data represents an admission rate drop of 39.4% for those who received and completed periodontal treatment at a statistically significant level of p<0.05.

Mechanism connecting oral health and overall health

- **Local infections**
  - Untreated oral infections can spread

- **Systemic infections**
  - Bacteremia/Sepsis
    - Higher risk in patients with valve disease
  - Respiratory
    - Aspirations of oral bacteria

- **Inflammatory Response**
Inflammation & host response

- Anaerobic bacteria in plaque
- Neutrophils
- Macrophages
- Toxins

Circulating inflammatory mediators
- IL-1
- TNFα
• Early Childhood Caries (ECC)
  ○ Public health crisis!
  ○ Infectious and transmissible
  ○ Destroys tooth structure
  ○ Affects children under 5

• Prevalence:
  ○ 5% of all U.S. children
  ○ 30-50% of low income children
  ○ Most common chronic disease in children
White Spots

- White spots indicate acids have demineralized enamel
- First clinical signs of caries
- White spots place a child at high risk for developing cavities
- Indication for dental referral
Oral bacteria (*Mutans Strep*) break down dietary sugars into acids which eat away the tooth.
Vertical Transmission

- Pacifier-sharing
- Pacifier “cleaning”
- Food tasting
Preventing ECC in the Medical Home

- Perform screening exams
- Oral hygiene: brush 2x daily; help till age 6
- Dietary guidance
- Fluoride – systemic and topical
- Inform/advise about dental sealants
- Encourage an age 1 dental visit
- Improve parent oral health and dietary habits
Preventing ECC in the Medical Home

Fluoride varnish application easily applied by your MA or provider

https://www.youtube.com/watch?v=T4kWk8e6HYs&spfreload=10
Periodontal Disease

**Etiology:**
- Chronic plaque at gum line
- Bacterial infection
- Host inflammatory response

**Three types:**
- Gingivitis
- Chronic periodontitis
- Aggressive periodontitis
Gingivitis

- Mildest form of PD
  - Mild gum swelling, tenderness, erythema
  - Gums bleed during brushing
  - Can occur acutely with foreign body
  - Reversible

- Etiologies
  - Plaque
  - Pregnancy
  - Disease
  - Trauma
Chronic Periodontitis

- More severe than gingivitis
- Infection and inflammation induce loss of bone and tooth attachment
- Rare in children, present in 50% of adults
- Can start in teen years
- Smoking a major risk
- Prevention:
  - good oral hygiene
  - brushing and flossing
  - avoid tobacco
Specific Diseases

- **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
  - Adverse pregnancy outcome
    - Preterm birth and low birth weight
    - Preeclampsia
  - Lower respiratory disease
Diabetes

- Poor glycemic control is associated with a threefold increased risk of having periodontitis in diabetics Vs controls
- Diabetics with good glycemic control have no significant increased risk of periodontal disease
- Chronic infection (like periodontal disease) complicates glucose control

Obesity

- Fat tissue releases TNFα and IL6 which potentiate inflammation, including periodontal disease
- TNFα also causes insulin resistance
- The relationship between obesity and oral disease is therefore complex and includes diabetes
Coronary Heart DZ and Stroke

- CHD and periodontitis are associated, but causation is not clear
- Inflammatory cytokines implicated in atherogenesis are also produced by periodontitis
- Dental plaque organisms have been found in vascular plaque and induce platelet aggregation
- Systemic antibody response to periodontitis is associated with CHD
- Smoking is associated with both
- Both share elevated CRP levels

## Pregnancy: PTB and LBW

<table>
<thead>
<tr>
<th>Condition</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm birth</td>
<td>4.3</td>
</tr>
<tr>
<td>Preterm low birth wtt.</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Meta-analysis of periodontal disease

J Periodontol 2005;76:161-165
Women with periodontitis were twice as likely to develop preeclampsia and specific organisms were associated.

Endothelial cell damage due to inflammatory mediators is a proposed mechanism.

J Periodontol 2006; 77:182-188.
Treatment of periodontal disease in pregnancy is safe.

Does not alter rates of preterm birth or low birth weight.

Lower respiratory DZ

- Chronic aspiration of oral bacteria
  - Chronic obstructive pulmonary DZ
  - Acute pneumonia
- Hospitalized/ventilated patients are particularly at risk.
  - Oral care protocol interventions lead to an 89.7% reduction in ventilator associated pneumonia
Ms. G is a 69 yr old woman suffering from obesity, DM, HTN, and asthma. Her medical care is managed largely in a primary care clinic, which monitors her blood sugar and blood pressure every 3 months, and adjusts her medications accordingly. Her asthma severity is briefly assessed at each visit, and every autumn (before influenza season) her care team reviews her lung function, adjusts her medications if necessary, and makes sure she receives her flu shot. At a yearly visit, special attention is given to testing for kidney disease and loss of sensation in her feet. She is seen by an optometrist for an eye exam.
Clerk asks who is her dentist and enters information into the patient’s chart

- EHR with oral health risk assessment completed by MA after rooming patient
- MA discusses importance of OH with patient
- Provider reviews the risk assessment, addresses other chronic illness then returns to perform an oral exam to assess si/sx of oral disease
- Provider makes referral as needed and counsels patient about oral disease
Case 2: Child and Adolescent clinic

- At check-in, patients and family given flyer describing oral health program, importance of good oral health, and the recommended schedule for fluoride varnish. Flyer includes screening questions.
- At beginning of visit, family health education is provided. Each exam room includes a flip chart of images of common problems that parents should look for.
- Provider then enters room, does well child exam, discusses fluoride varnish and orders it to be applied by MA. Also determines need for referral.
Figure 3: Small Practice Workflow Example: Medical Assistant and Provider Dyad

Patient checks in → Medical assistant rooms patient → Clinician conducts encounter → Patient leaves with referral

In addition to usual care tasks:
- Ask oral health risk assessment and screening questions
- Order and pend dental referral if screening questions positive

In addition to usual care tasks:
- Review answers to oral health questions
- Examine mouth
- Sign referral
- Enter additional oral health orders
- Update problem list for oral health
- Print after visit summary with oral health information
Medical Framework: Barriers to Guideline Compliance


Sequence to behavior change

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Attitudes</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Familiarity</td>
<td>Lack of Agreement</td>
<td>External Barriers</td>
</tr>
<tr>
<td>Lack of Awareness</td>
<td>Lack of Outcome Expectancy</td>
<td>Patient Factors</td>
</tr>
<tr>
<td></td>
<td>Lack of Self-Efficacy</td>
<td>Guideline Factors</td>
</tr>
<tr>
<td></td>
<td>Inertia of Previous Practice</td>
<td>Environmental Factors</td>
</tr>
</tbody>
</table>
Lessons Learned

- Start small
- Form groups that you know are advocates for oral health integration
- Remember to include IT and Dentistry in your group
- Choose a patient population for your intervention
- Meet frequently early on to discuss the process and progress
1. What strategies are under consideration at your facility to integrate oral health care? You have 20 mins.

2. Plan changes you would make in a primary care office to offer more effective oral health screenings, oral health exams, anticipatory guidance and referrals. Consider oral cancer, caries, periodontitis, and education levels of patients. You have 20 mins.
Write down two things you plan doing in the next week for a systems change to integrate oral health.