Integrating Oral Health into Primary Care Practice: A Systems Change

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Oral Health Integration

- Requires a systems change approach
- https://www.youtube.com/watch?v=2vojPksdbtl#
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

- Policy and financing
- Practice models
- Education models
- Tools and knowledge sharing
- Shared values, champions, and leaders
✓ Shared values
✓ Leadership

Breadth of partners for NIIOH is expanding.

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
✓ Champions
**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
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.

### Education models
### Practice models

Survey of Smiles for Life Users
March 2015

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>Description</th>
<th>Influenced by SFL</th>
<th>NOT influenced by SFL</th>
<th>% Agree</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>
<td></td>
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<tr>
<td>Oral health is formally integrated into the work flow</td>
<td>58%</td>
<td>45%</td>
<td></td>
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<tr>
<td>Oral health activities are appropriately delegated to care team members</td>
<td>56%</td>
<td>43%</td>
<td></td>
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<tr>
<td>Medical record system includes oral health prompts and questions</td>
<td>52%</td>
<td>37%</td>
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Influenced by SFL  NOT influenced by SFL
 ✓ Practice models

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.
Accessibility

- 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:**

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✓ **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
Tennessee dental health - ranked 47th in the nation

+ 22% of adults 18-64 lost 6 or more teeth from decay or gum disease (2x national median)

+ 66% visited a dentist or dental clinic in 2010

+ Almost 54K visited a ER for dental care in 2009, 24K were preventable dental conditions
  - 41% preventable were Medicaid enrollees
  - 41% were uninsured

Times free press 5/21/2012

Tennessee Access to Care

+ Almost all counties in Chattanooga area qualify for federally underserved dental areas
  - <1 dentist for 50k residents
+ Chattanoog’s FQHCs see adults
+ County health departments are located in 54 of 89 rural counties and 5 of the 6 metropolitan regions
  - Provide care to children and only emergency care to adults

Times free press 5/21/2012
**DIABETES**

**Annual Medical Costs**

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.

![Graph showing annual medical costs](image)

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.


**Hospital Admissions**

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.

![Graph showing hospital admissions](image)

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.

Early Childhood Caries

- Early Childhood Caries (ECC)
  - Infectious and transmissible
  - Destroys tooth structure
  - Affects children under 5

- Previously called “Nursing Caries” and “Baby Bottle Tooth Decay”

Prevalence

- ECC is a public health crisis!
- Prevalence:
  - 5% of all U.S. children
  - 30-50% of low income children
- 80% of decay occurs in 20% of children
- Most common chronic disease in children
  - 5 times more common than asthma
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

The Etiology Triad

Oral bacteria (*Mutans Strep*) break down dietary sugars into acids which eat away the tooth

Bacteria  Teeth  Sugars  Caries
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
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

- Macrophages
- Neutrophils
- Toxins
- Anaerobic bacteria in plaque

Circulating inflammatory mediators
- IL-1
- TNFα
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 & 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>
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<tbody>
<tr>
<td>Preterm birth</td>
<td>4.3</td>
</tr>
<tr>
<td>Preterm low birth wt.</td>
<td>5.3</td>
</tr>
</tbody>
</table>

J Periodontol 2005;76:161-165
Pregnancy: preeclampsia

- 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 in pregnancy

- 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

Oral Cancer and pre-cancer

- Alcohol and tobacco increase risk of oral cancers – including spit tobacco
- Early lesions may be asymptomatic
- Sites we must look at: Lateral tongue, floor of mouth, inside of lips
Iatrogenic: xerostomia

+ Decreased saliva promotes periodontal disease
+ Many medications reduce salivary flow
  - steroids
  - antihistamines
  - diuretics
  - antihypertensives
  - anticholinergics
  - antidepressants

Iatrogenic

+ Gingival hyperplasia – phenytoin
+ Osteonecrosis – bisphosphonates
+ Stomatitis and mucositis – cancer chemotherapy and radiation therapy
+ Candidiasis – steroids
+ Periodontal disease – nifedipine in Type II diabetics and immunosuppressives
+ Dental erosions due to GI reflux – progesterone, nitrates, beta and Ca++ blockers
+ Dental caries: sugar-containing medications
Example Case: Care for Ms. G

+ 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 as 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

Marshfield Clinic in Wisconsin

+ Clerk ask 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, provides family health education. 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.

Example Workflow

Figure 2: Small Practice Workflow Example: Medical Assistant and Provider Dyad
Take Home Messages

+ Oral and systemic health are interrelated
+ Oral exams must include “hidden” areas
+ Dental caries is an infectious, transmissible disease that is preventable
+ Physicians can have a major impact on the oral health of individuals and communities through their own work and by collaborating with oral health professionals

✓ Group Think

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.
Wrap Up

Write down two things you plan doing in the next week for a systems change to integrate oral health.