

# 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

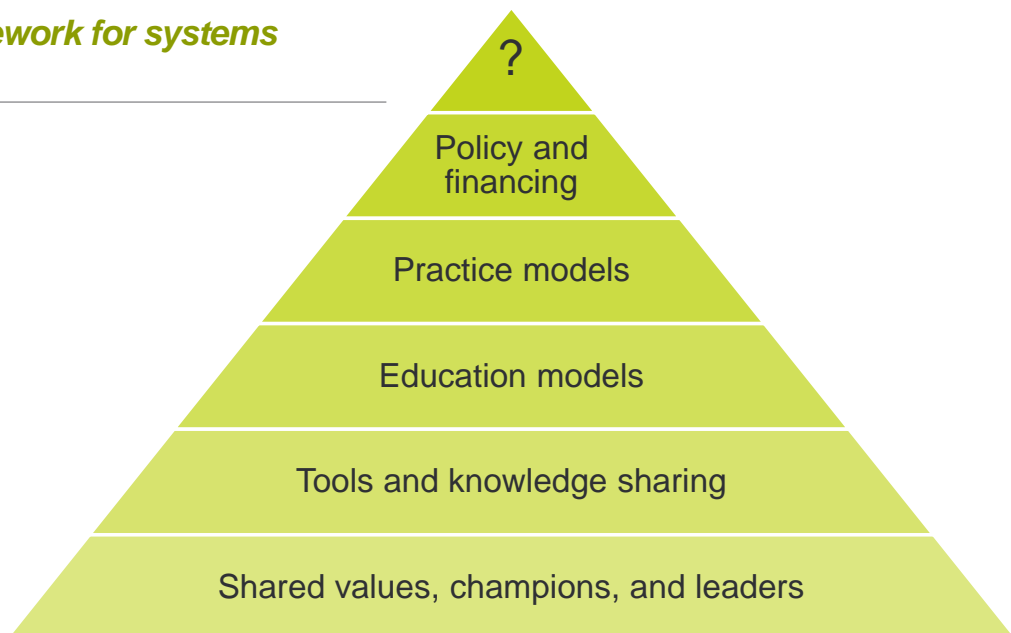
- + Identify components of a systems change needed to incorporate oral health into practice
- + Articulate the case for oral health integration into primary care
- + Using group think, develop strategies for oral health integration

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*A framework for systems change*

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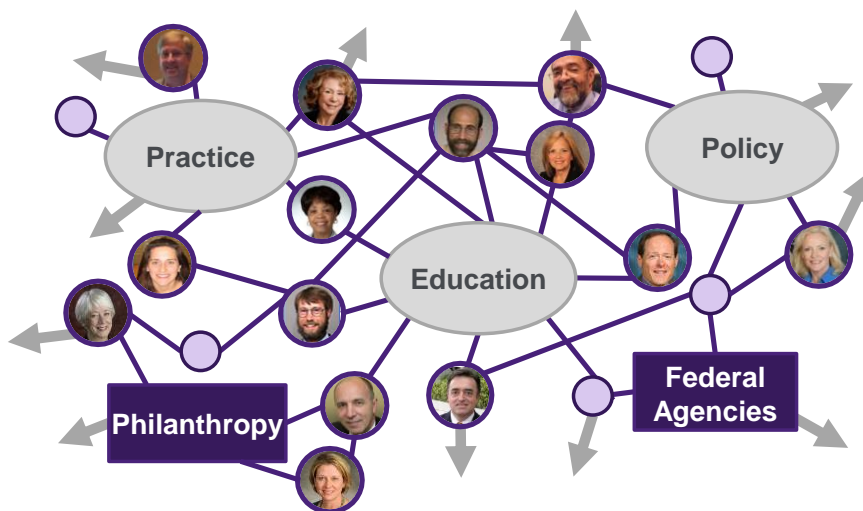
- ✓ *Shared values*
  - ✓ *Leadership*
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Breadth of partners for NIIOH is expanding.

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

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- ✓ *Shared values*
  - ✓ *Champions*
- 



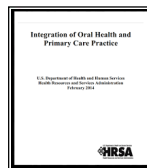
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## ✓ Tools and knowledge sharing

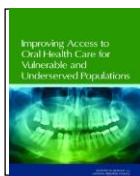
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IOM. *Advancing Oral Health in America*. Washington, DC: National Academies Press 2011.



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



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



*Oral Health in Medicine Competencies for the Undergraduate Medical Education Curriculum*. 2008

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## ✓ Tools and knowledge sharing

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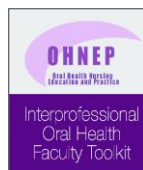
Hummel, Jeffrey, K.E. Phillips, B. Holt, and C. Hayes. *Oral Health: An Essential Component of Primary Care*. Seattle, WA: Qualis Health, June 2015.



Langelier, Margaret H., A.D. Glicker, S. Surdu. *Adoption of Oral Health Curriculum by Physician Assistant Education Programs in 2014*. *Journal of Physician Assistant Education* 26.2 (2015):60–69.



Haber, Judith, E. Hartnett, K. Allen, D. Hallas, C. Dorsen, J. Lange-Kessler, M. Lloyd, et al. *Putting the Mouth Back in the Head: HEENT to HEENOT*. *American Journal of Public Health* 105.3 (2015): 437-441.



*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](http://www.ohnep.org/faculty-toolkit).

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✓ Education models

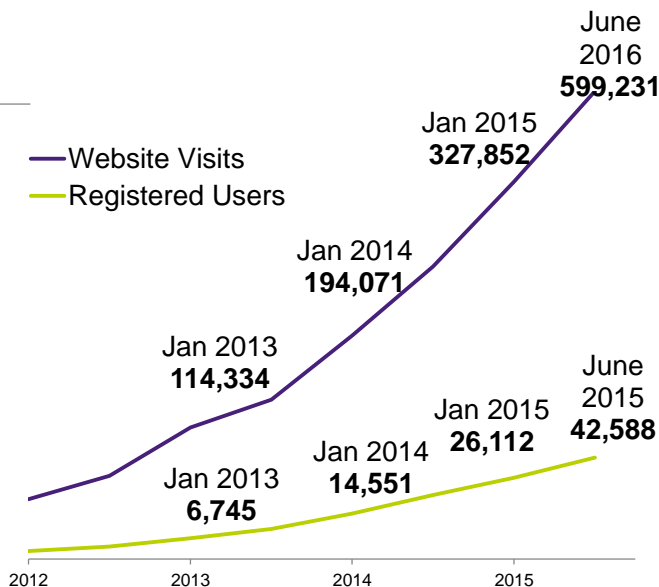
<http://www.smilesforlifeoralhealth.org>

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✓ Education models

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



- ✓ **Education models**
- ✓ **Practice models**

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.

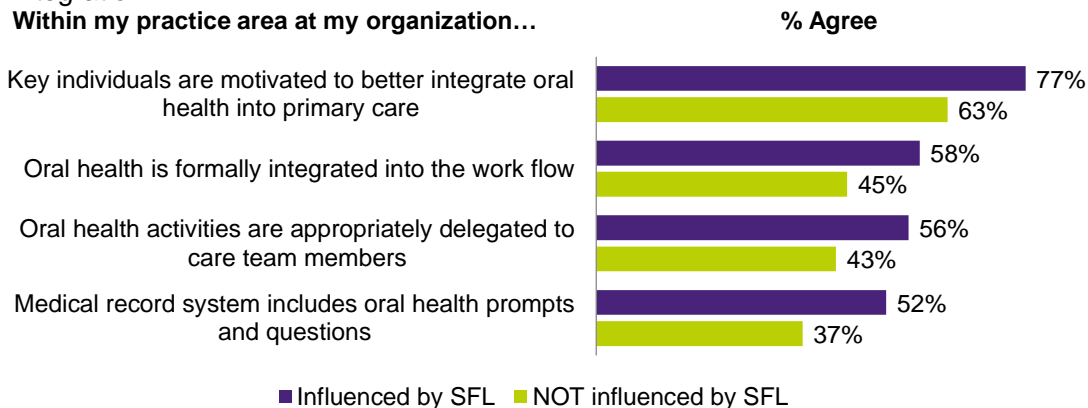
Anticipatory Guidance	Annual Oral Exams	Caries Risk Assessments
<b>60%</b>	<b>60%</b>	<b>58%</b>

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

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- ✓ **Education models**
- ✓ **Practice models**

Organizational factors matter: Those influenced by SFL (purple bars) were more likely to agree that their organization supported integration.

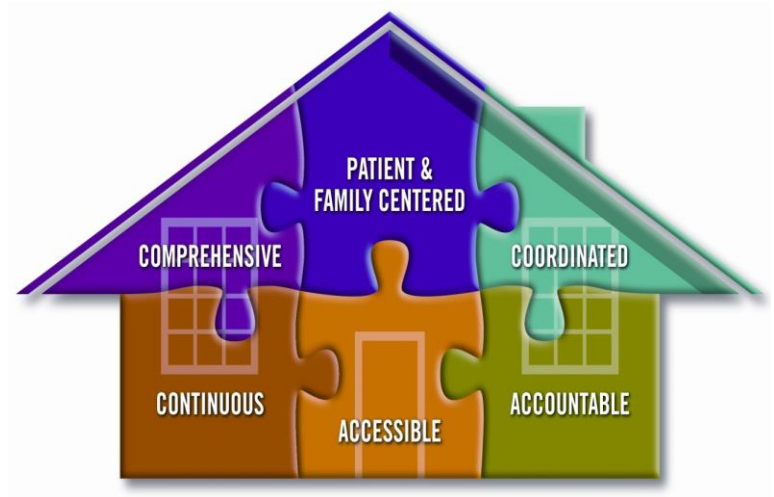


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✓ *Practice models*

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**Oral Health** is a Fit for  
the **PCMH**



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## 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

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## Coordinated care

- + Oral health is well-suited to medical teamwork:
  - Physicians
  - PA's
  - APN's
  - MA's
  - Counselors
- + Collaboration with oral health professionals.

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# Accessibility

- + Brings oral health services into the medical home:**
  - Education
  - Screening for oral disease and correlation with systemic health
  - Fluoride

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## 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.

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# 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
- +<sub>19</sub> 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

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# Solutions & Best Practices

- + Education:
  - Smiles for Life national oral health curriculum
  - <http://www.smilesforlifeoralhealth.org>
- + Implementation and Technical Assistance:
  - The Oral Health Delivery Framework
  - ABCD (Washington State)
- + Operating programs in Four Community Health Centers:
  - <http://www.qualishealth.org/sites/default/files/white-paper-oral-health-integration-pcmh.pdf>

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## ✓ *Practice models*

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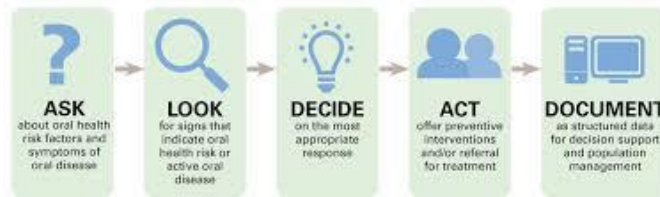
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## ✓ *Practice models*

Hummel, Jeffrey, K.E. Phillips, B. Holt, and C. Hayes. ***Oral Health: An Essential Component of Primary Care.*** Seattle, WA: Qualis Health, June 2015.



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# Why Integrate Oral Health Care?

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## 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 47<sup>th</sup> 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

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Times free press 5/21/2012

## Tennessee Access to Care

- + Almost all counties in Chattanooga area quality for federally underserved dental areas
  - <1 dentist for 50k residents
- + Chattanooga'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

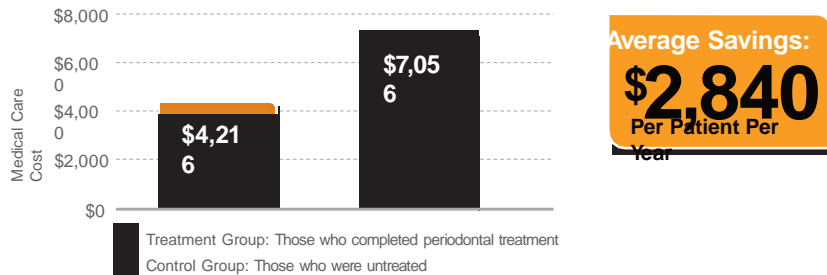
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Times free press 5/21/2012

# 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.

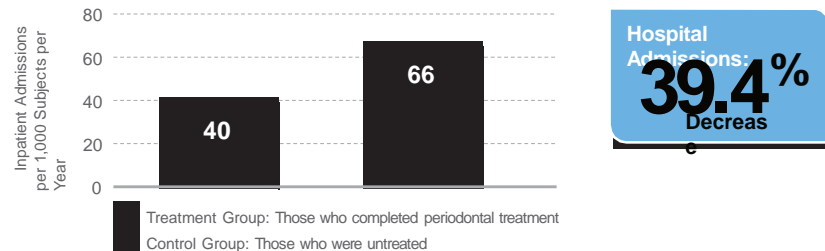


This data represents an averaged **savings of \$2,840 (40.2%)** per patient per year for those who received periodontal treatment at a statistically significant level of  $p < 0.04$ .

Jeffcoat MK, Jeffcoat RL, Gladkowski PA, Bramson JB, Blum JJ. Impact of Periodontal Therapy on General Health: Evidence from Insurance Data for Five Systemic conditions. American Journal of Preventive Medicine, 47 (2014) pp. 174-182. DOI: 10.1016/J.Amerpre.2014.04.001 29

## 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.



This data represents an **admission rate drop of 39.4%** for those who received and completed periodontal treatment at a statistically significant level of  $p < 0.05$ .

Jeffcoat MK, Jeffcoat RL, Gladkowski PA, Bramson JB, Blum JJ. Impact of Periodontal Therapy on General Health: Evidence from Insurance Data for Five Systemic conditions. American Journal of Preventive Medicine, 47 (2014) pp. 174-182. DOI: 10.1016/J.Amerpre.2014.04.001 30

# 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**



# 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

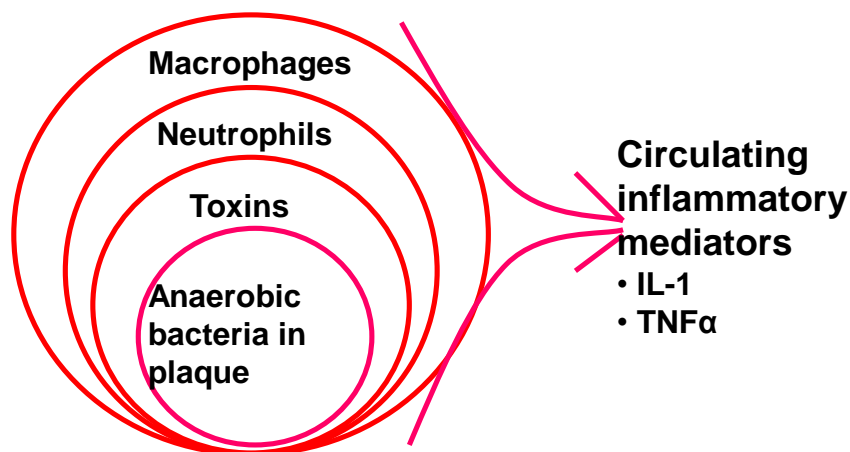
### ■ Respiratory

- Aspirations of oral bacteria



## + <sup>37</sup>Inflammatory Response

## Inflammation & host response



# 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
- + Periodontal disease and diabetes: A two-way street *J Am Dent Assoc* 2006;137;26-31

+ <http://youtube.com/watch?v=to8uSqrDMMU&feature=youtu.be>

# Obesity

- + Fat tissue releases  $\text{TNF}\alpha$  and IL6 which potentiate inflammation, including periodontal disease
- +  $\text{TNF}\alpha$  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

Beck, JD, Eke P, Heiss G. et. al. Periodontal Disease and Coronary Heart Disease A Reappraisal of the Exposure. Circulation. 2005;112:19-24

## Pregnancy: PTB and LBW

Meta-analysis of periodontal disease	
Condition	Odds ratio
Preterm birth	4.3
Preterm low birth wt.	5.3

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

Michalowicz BS, Hodges JS, DiAngelis AJ. Et.al. Treatment of Periodontal Disease and the Risk of Preterm Birth. N Engl J Med 2006;355:1885-94.

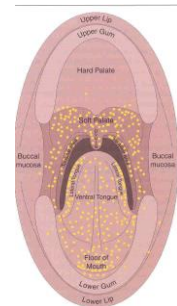


# Lower respiratory DZ

- + 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

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## 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

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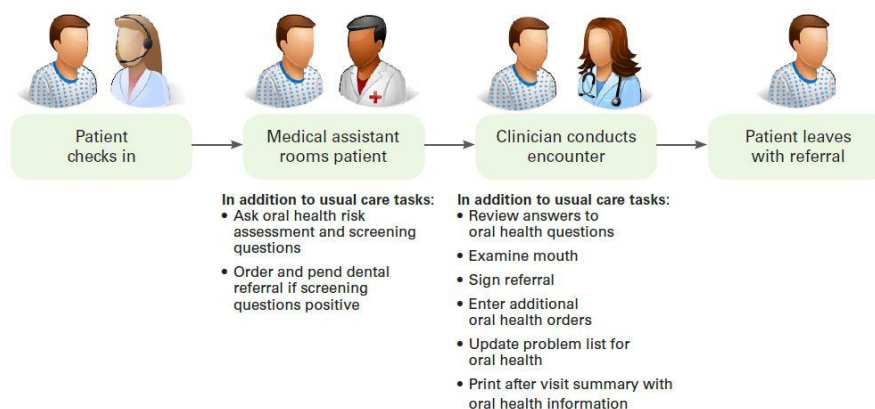
## Case 2: Child and Adolescent clinic

- + 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

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## Example Workflow

Figure 3: Small Practice Workflow Example: Medical Assistant and Provider Dyad



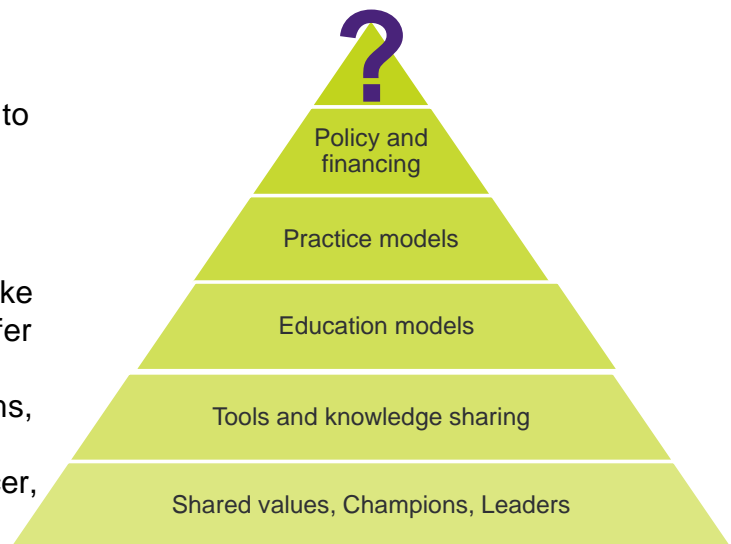
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# Take Home Messages

- + 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 .**