University of South Florida
GERIATRIC WORKFORCE ENHANCEMENT PROGRAM (GWEP)
Learn@Lunch
Geriatric Education Series
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Principal Investigator

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Oral Health Implications and Prevention Strategies for Older Adults

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Learning Objectives

• Expand physician’s knowledge of the impact of oral health on the systemic health of the elderly.

• Promote physician’s increased involvement with oral healthcare as part of their patient assessments.

• Recognize the necessity for greater interdisciplinary collaboration in achieving improved patient outcomes.
Older Adult Population

Older adults make up one of the fastest growing segments of the American population.
Geriatric Dentistry

Is the delivery of **dental care to older adults** involving the **diagnosis, prevention, and treatment of problems** associated with normal aging and age-related diseases as part of an **interdisciplinary team** with other health care professionals.

Percentage of people age 65 and over who reported having selected chronic health conditions, by sex, 2013–2014

NOTE: Data are based on a 2-year average from 2013–2014. Reference population: These data refer to the civilian noninstitutionalized population. SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.
"Oral health is essential to general health…"

*Dr. David Satcher, US Surgeon General’s Report May 25, 2000*
Older Adult Population in U.S.

• Close to 70 percent of older Americans do not have dental insurance\(^1\)

Changing Trends - Older Adult Population in U.S.

• **Decline in edentulism** in older adults 1960-2010

• **More retained teeth** with higher prevalence of root caries and risk of PD

• **Greater awareness**, leads to higher expectations for healthcare
  – Increasing the need for change in traditional dental practice

Adapted from ADEA Curriculum Resource Center: Health, United States, 2011 Washington DC: U.S. department of health and human services, Center for Disease Control and prevention, National Center for Health Statistics 2012,
The Oral Health Challenges of the Older Adult

- Periodontal Disease
- Receding Gums
- Tooth Decay
- Excessive Tooth Wear
- Missing Teeth
- Thinning Oral Mucosa
- Salivary Gland Atrophy
- Impaired Wound Healing
- Loss of Taste Sensation
- Oral Cancer
- Head and Neck Radiation

Medicare Does Not Provide Coverage
Out-of-Pocket Expenses on Healthcare

Adults >65 years

Adapted from ADEA Curriculum Resource Center: Health, United States, 2011 Washington DC: U.S. department of health and human services, Center for Disease Control and prevention, National Center for Health Statistics 2012, Table 129
The Mouth Is A Pretty Dirty Place

Dental Plaque Is A Microbial Infection
## The Human Oral Microbiome

<table>
<thead>
<tr>
<th>Oral Cavity</th>
<th>Contiguous</th>
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<tbody>
<tr>
<td><strong>Extensions</strong></td>
<td></td>
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<tr>
<td>Teeth</td>
<td>Tonsils</td>
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<tr>
<td>Gingival Sulcus</td>
<td>Pharynx</td>
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<tr>
<td>Attached Gingiva</td>
<td>Esophagus</td>
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<td>Tongue</td>
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<tr>
<td>Cheek</td>
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<tr>
<td>Lip</td>
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<tr>
<td>Hard Palate</td>
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<tr>
<td>Soft Palate</td>
<td></td>
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<tr>
<td>Capillary/Lymphatic Supply</td>
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Periodontal Disease and the Systemic Connection

- Cardiovascular Disease
- Cerebrovascular Disease
- Diabetes
- Respiratory Disease
- Rheumatoid Arthritis
- Kidney Disease
- Preterm Low Birth Weight Infants
- Other

“Tridirectional Relationship”

[1, 5, 7, 8, 9]
The interest in inflammation has been heightened because the etiology of many systemic diseases has been associated with some component of the inflammatory process.
Mattila (1989)-patients who suffered MI had worse oral health than a control group.

Herzberg (1998)-dental plaque bacteremia may contribute to the chance of acute thromboembolic events.

Haraszthy (1998)-found *P. gingivalis* in carotid and coronary atheromas.

Beck (1996)-patients with >20% bone loss had a 50% increased risk of coronary heart disease.

Arbes (1999)-risk of heart attack was 3.8X greater if there was attachment loss >3mm in 67% of measured sites.
<table>
<thead>
<tr>
<th>Periodontal Disease</th>
<th>Cardiovascular Disease</th>
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<tbody>
<tr>
<td>Smoking</td>
<td>Smoking</td>
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<tr>
<td>Alcohol</td>
<td>Alcohol</td>
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<tr>
<td>Diabetes</td>
<td>Diabetes</td>
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<td>Obesity</td>
<td>Obesity</td>
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<tr>
<td>Dyslipidemia</td>
<td>Dyslipidemia</td>
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<tr>
<td>Genetic Factors</td>
<td>Genetic Factors</td>
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<tr>
<td>Poor Oral Hygiene</td>
<td>Stress</td>
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<tr>
<td>Stress</td>
<td>Socioeconomic Status</td>
</tr>
<tr>
<td>Age</td>
<td>Age</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>Gender (Male)</td>
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</tbody>
</table>
Periodontal Disease in Relation to Systemic Conditions

Cardiovascular/Cerebrovascular Disease-Individuals With PD At Greater Risk

• Periodontal Pathogens Stimulate Immune Response

• Cytokine Release Into Systemic Circulation (TNF-α, IL-6, CRP)

• Periodontal pathogens isolated from carotid intima
AHA Position Statement On PD and CVD

“… although observational studies support an association between periodontal disease and atherosclerotic vascular disease independent of known confounders, they do not support a causative relationship.”
AAP Position Statement On PD and CVD

“While current research does not yet provide evidence of a causal relationship between the two diseases, scientists have identified biologic factors, such as chronic inflammation, that independently link periodontal disease to the development or progression of cardiovascular disease in some patients. The lack of causal evidence should not diminish concern about the impact of periodontal status on cardiovascular health.”
Prevalence of Periodontal Disease/Diabetes In Seniors

• 26% Of US Adults Age 65 Or Older Live With Diabetes

• People With Poorly Controlled Diabetes Are 2-3 times More Likely To Develop Periodontal Disease.

Diabetes Mellitus is the only chronic disease that is a validated risk factor for Periodontal Disease!

DIABETES → PERIODONTAL DISEASE

Syruppy Blood

Carbohydrate + Protein (Cell Membranes)

Glycation

AGE + RAGE

Dysfunctional Host Response

Bone Repair CT Repair

Gingival Recession
Periodontal Pocketing

Bone Loss

Tooth Loss

Bacterial Multiplication

Cytokines

Neutrophil Attack of Bacteria

Bacterial Multiplication

CT Repair
Diabetes & Periodontal Disease

• Poorly controlled diabetics are a risk-factor for periodontal disease.

• Altered wound-healing because of high glucose cellular environment (AGE’S).

• Impaired function of neutrophils, macrophages, and monocytes.

• Dysfunctional immune response is destructive.

• Impaired fibroblast function.

• Collagen degradation.
Impact of Periodontal Disease On Diabetes

- Elevated levels pro-inflammatory cytokines sulcus
- Cytokines released into systemic circulation
- Cytokines involved with insulin resistance.
# Table 3.1—Components of the comprehensive diabetes medical evaluation*

## Medical history
- Age and characteristics of onset of diabetes (e.g., DKA, asymptomatic lab
- Eating patterns, nutritional status, weight hx, sleep behaviors (pattern and duration), and physical activity habits, nutrit education, behav supp hx…
- Complimentary and alternative medicine use
- **Presence of common comorbidities and dental disease**
  - Screen for depression, anxiety, and disordered eating using valid and ...
  - Screen for diabetes distress using validated and appropriate measures**
  - Screen for psychosocial problems and other barriers to DSM, such as ...
  - History of tobacco use, alcohol consumption, and substance abuse
  - Diabetes education, self-management, and support history and needs
  - Review of previous treatment regimens and response to therapy (A1C)

*Diabetes Care 2017;40(Suppl.1):S26-S27*
Table 3.2—Referrals for initial care management

- Eye care professional for annual dilated eye exam
- Family planning for women of reproductive age
- Registered dietician for MNT
- DSME/DSMS
- Dentist for comprehensive dental and periodontal examination
- Mental health professional, if indicated
• Healthy Gum Tissue
  • Pink Gum Tissue
  • Stippled Appearance
  • No Swelling
  • Probe Depth 3mm Or Less
  • No Bleeding When Probing
Gingivitis

- Redness
- Puffiness
- Bleeding

Probe Depth <3mm
No Recession
Dental Plaque ➔ Bacterial Invasion
Periodontal Changes Seen In A Patient With Poorly-Controlled Diabetes
Alveolar Bone Loss Associated With Periodontitis
Effect of Periodontal Therapy On Glycemic Control

“...non-surgical periodontal treatment results in a mean reduction in HbA1C of 0.36%.”

Scaling and Root Planing
Calcium Channel-Blockers and Oral Health

• Associated with gingival overgrowth
• Greater risk when:
  Taking greater than prescribed dose
  Medication used > 12 months.

Dry Mouth / Xerostomia in Older Adults

Indicators

- Feeling of dryness of oral mucosal surfaces
- Sensitive mucosa
- Dry lips/tongue
- Bad breath

Causes difficulty in:

- Mastication
- Swallowing
- Speaking
- Solubilizing food components
- Tasting

*Adapted from ADEA Curriculum Resource Center- presentation on Older Adults
Etiology of Dry Mouth In The Elderly

Dry Mouth-
• Polypharmacy
• Hyperglycemic
• Neuropathic Association?
• Hyposalivation

Clinical Significance:
Caries
Mucositis
Impaired Denture Retention
Candida Infection
Angular Cheilitis - Mucositis

Burning Mouth Syndrome
Special Considerations For Dry Mouth

Avoid-

- Smoking
- Alcohol-based mouthwash*
- Caffeine (incl. chocolate)
- Mint

Encourage-

- Frequent sips of $\text{H}_2\text{O}$
- Chew on sugarless gum
- Salese lozenges
- Xylimelts oral discs
- Oramoist dry mouth patch
- Rx for high-conc FI$_2$

*Use antimicrobial rinse with CPC
Candida Albicans (Thrush)
Candida Infection

Hard Palate
How do we address the “Healthy Eating” behavior with our patients?

- Dental caries
- Edentulism/missing teeth
Dental Caries in Older Adults

- Prevalence of root caries and recurrent caries is higher
- Caries risk factors
  - Reduced salivary flow (dry mouth)
  - Reduced frequency and effectiveness of oral self-care (mechanical plaque removal)
  - Marginal breakdown/recurrent caries
  - Presence of removable partial dentures
  - Increased consumption of sugars and simple carbohydrates
Oral Cancer in Older Adults

- **Oral Cancer statistics in U.S.**
  - Median age at diagnosis: 62 years
  - Traditional risk factors
    - Smoking
    - Alcohol consumption
  - For oral squamous cell carcinoma, the stage at diagnosis and survival rates are worse for African Americans than Whites
  - 48,000 new cases reported each year in U.S. resulting in 9,600 deaths

American Cancer Society’s Cancer Statistics Center, 1/27/2016
Oral Cancer in Older Adults

Carcinoma *in situ*
65 year old female who smoked one pack of cigarettes per day for 45 years

Squamous Cell Carcinoma
67 year old male history of heavy cigarette smoking
Oral Cancer
Risk Management

• Obstructive Sleep Apnea

  Commonly with ↑ BMI

Oral Appliance Therapy
Exiting The Healthcare Silo

- Improved professional communication/collaboration.
- Inclusion of oral health into the systemic equation.
- Increased focus on oral health maintenance and dental referrals when necessary.
Summary

• Oral health is a vital component of overall wellness as well as the quality of life for older Americans.

• Attaining optimal oral wellness is an essential health goal for older adults.

• Older adults engage in lifelong habits that increase their risk for oral and systemic disease.

• Behavior modifications are a necessary challenge for overcoming risks of oral, and systemic health.
Conclusions

• The elderly population in the US is growing rapidly.

• The emphasis on tooth retention means that extensive care will be required because of disease, trauma, and use.

• The care of older results will require an interprofessional approach (collaboration).
Thank You All So Much!!!

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References For Oral Health and Older Adults


References (Con’t)


References (Con’t)


References


Inflammation and Alzheimer's disease: Possible role of periodontal diseases

References (Con’t)


38. CDC, National Center For Health Statistics, National Health Interview Survey 2013-2014.


41. Adapted from ADEA Curriculum Resource Center: *Health, United States, 2011* Washington DC: U.S. department of health and human services, Center for Disease Control and prevention, National Center for Health Statistics 2012, Table 129
References (Con’t)


References (Con’t)

57. Perio.org AAP position statement on the relationship between Periodontal Disease and ASVD. April 18, 2012.
References (Con’t)


