



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

**Kathryn Hyer, PhD, MPP**  
**Principal Investigator**



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This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS), under grant #U1QHP28739, **USF Geriatric Workforce Enhancement Program** for \$ 2.24 M. This information or content and conclusions are those of the presenter and should not be construed as the official position or policy of, nor should any endorsements be inferred by, HRSA, HHS or the U.S. Government.

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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

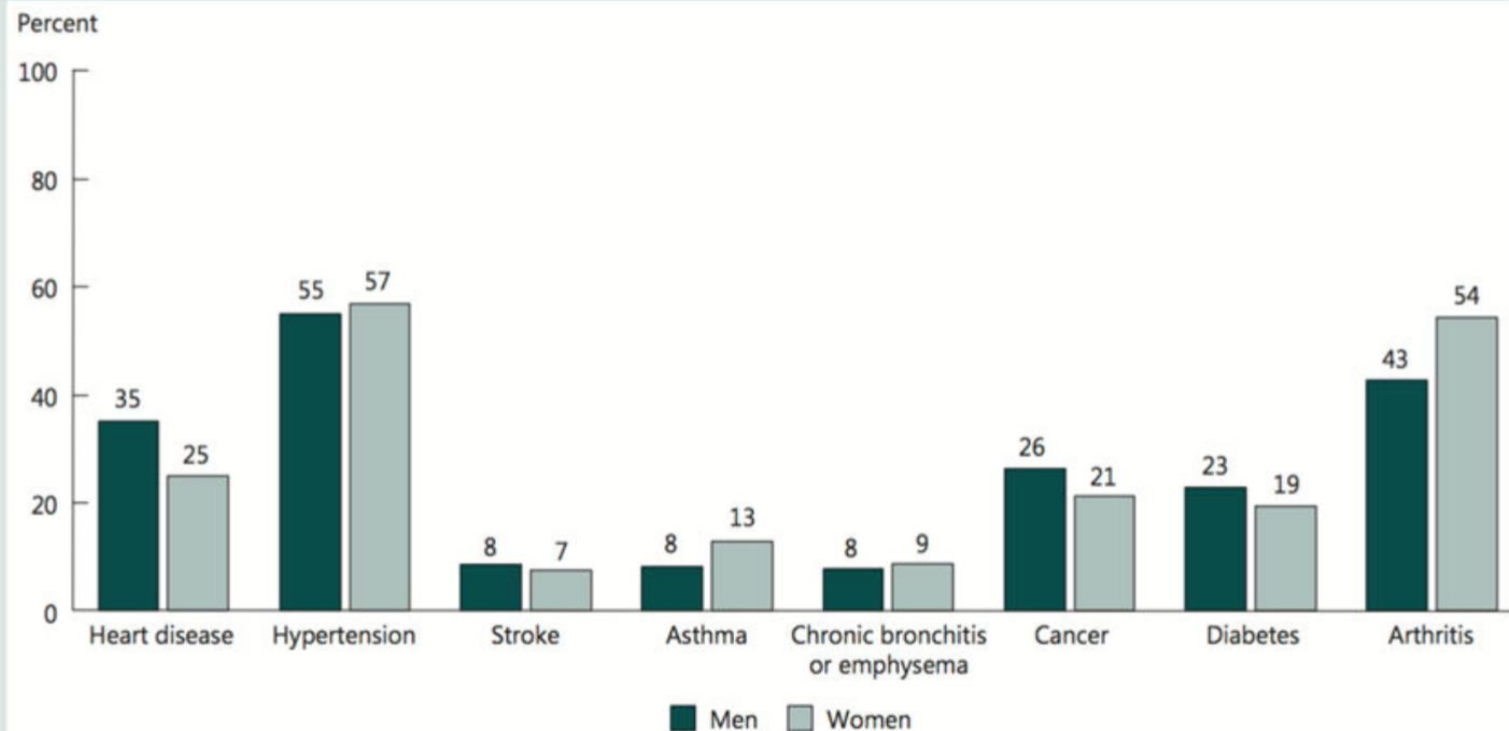
Older adults make up one of the fastest growing segments of the American population



# 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.

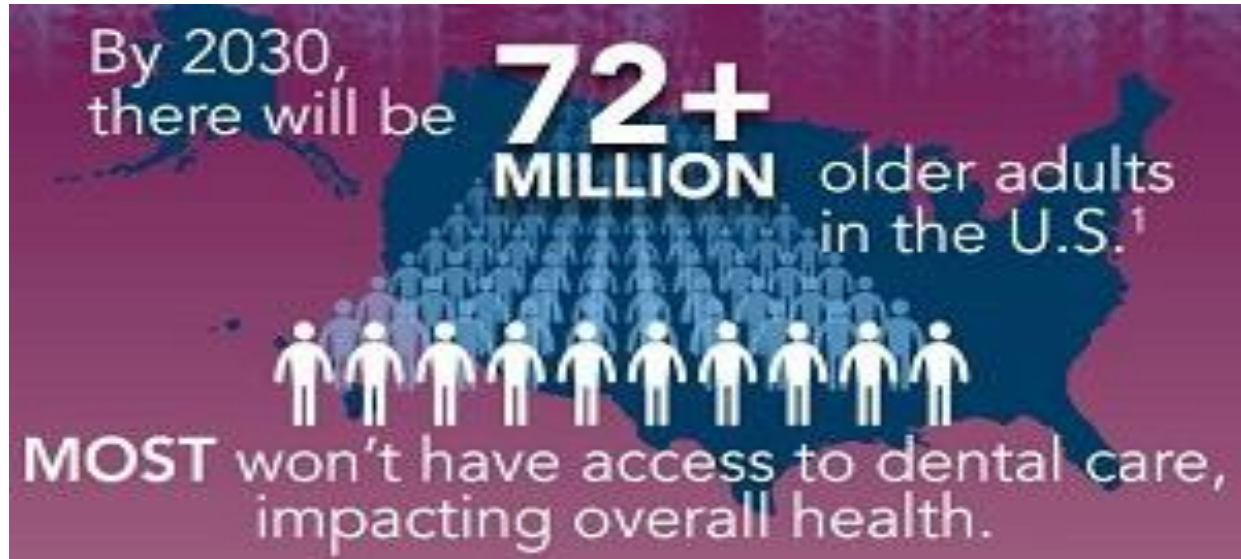
**\*“Oral health is essential to general health...”**

**\*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<sup>1</sup>



# 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



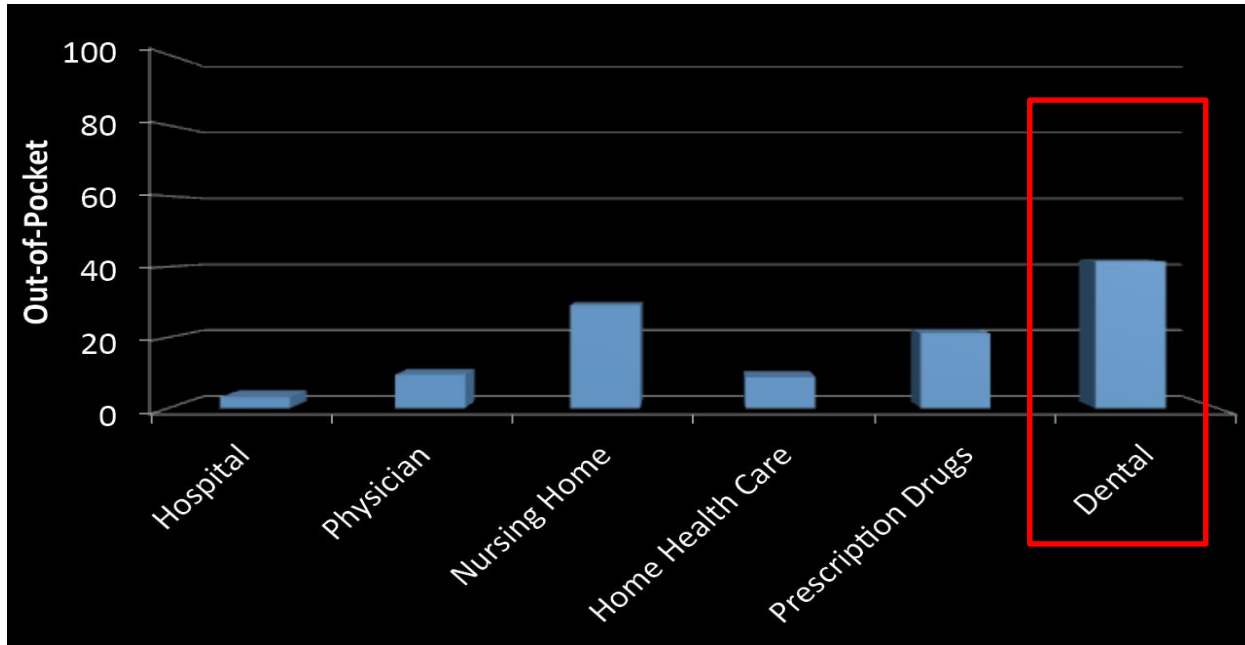
# The Oral Health Challenges of the Older Adult

- 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

## Oral Cavity

## Extensions

*Teeth*

*Gingival Sulcus*

*Attached Gingiva*

*Tongue*

*Cheek*

*Lip*

*Hard Palate*

*Soft Palate*

*Capillary/Lymphatic Supply*

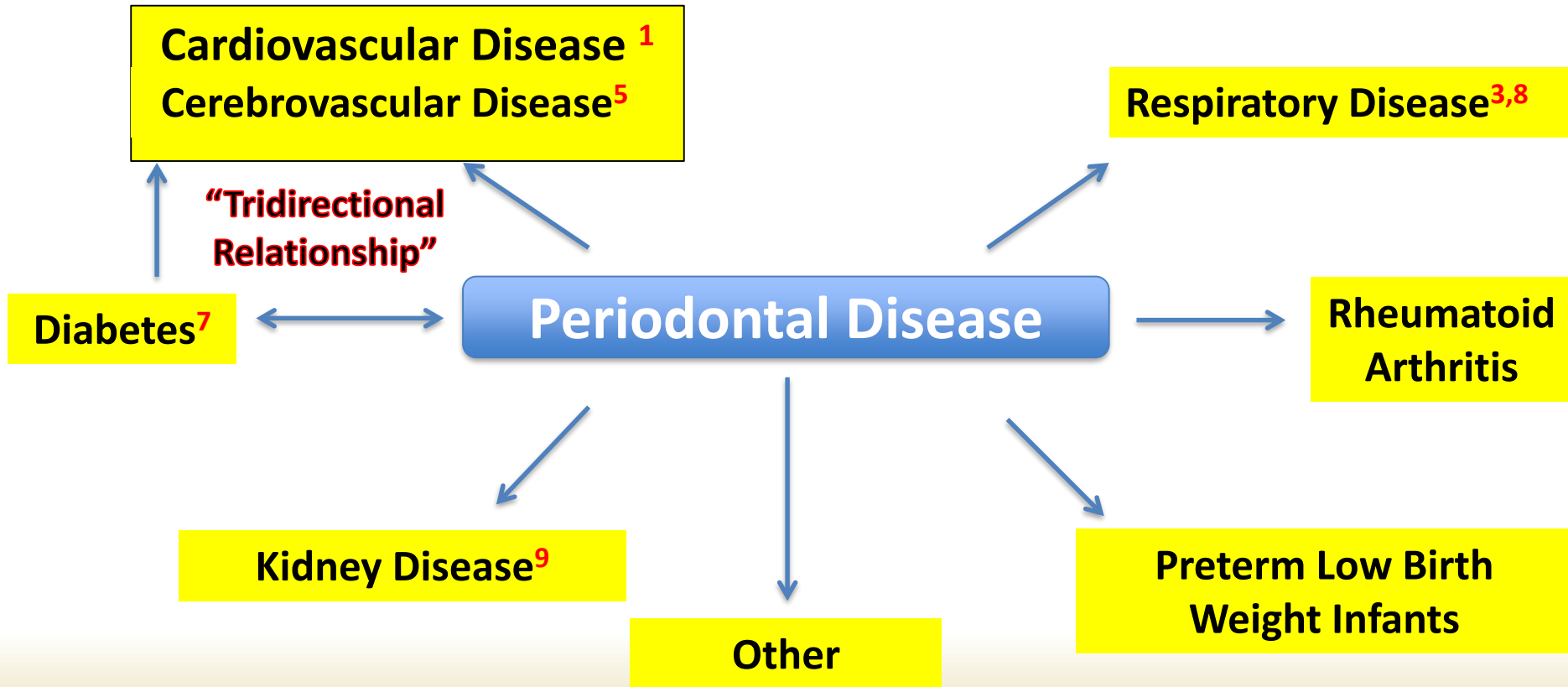
## Contiguous

*Tonsils*

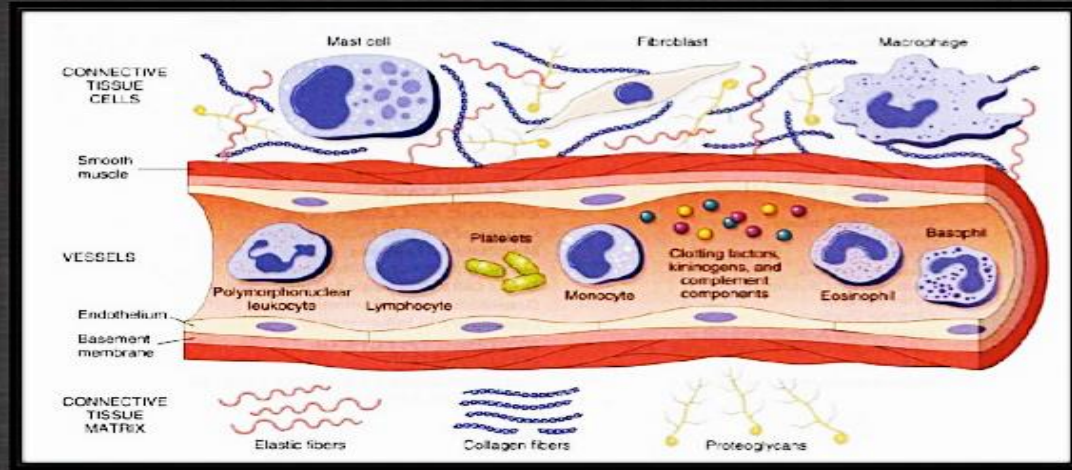
*Pharynx*

*Esophagus*

# Periodontal Disease and the Systemic Connection



## COMPONENTS OF INFLAMMATION



Robbins And Cotran, Pathologic basics of diseases, 2005, 7<sup>th</sup> ed

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.

# Risk Factors For PD and Cardiovascular Disease

## Periodontal Disease

- Smoking
- Alcohol
- Diabetes
- Obesity
- Dyslipidemia
- Genetic Factors
- Poor Oral Hygiene
- Stress
- Socioeconomic Status
- Age
- Gender (Male)

## Cardiovascular Disease

- Smoking
- Alcohol
- Diabetes
- Obesity
- Dyslipidemia
- Genetic Factors
- Stress
- Socioeconomic Status
- Age
- Gender (Male)

# 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- $\alpha$ , 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

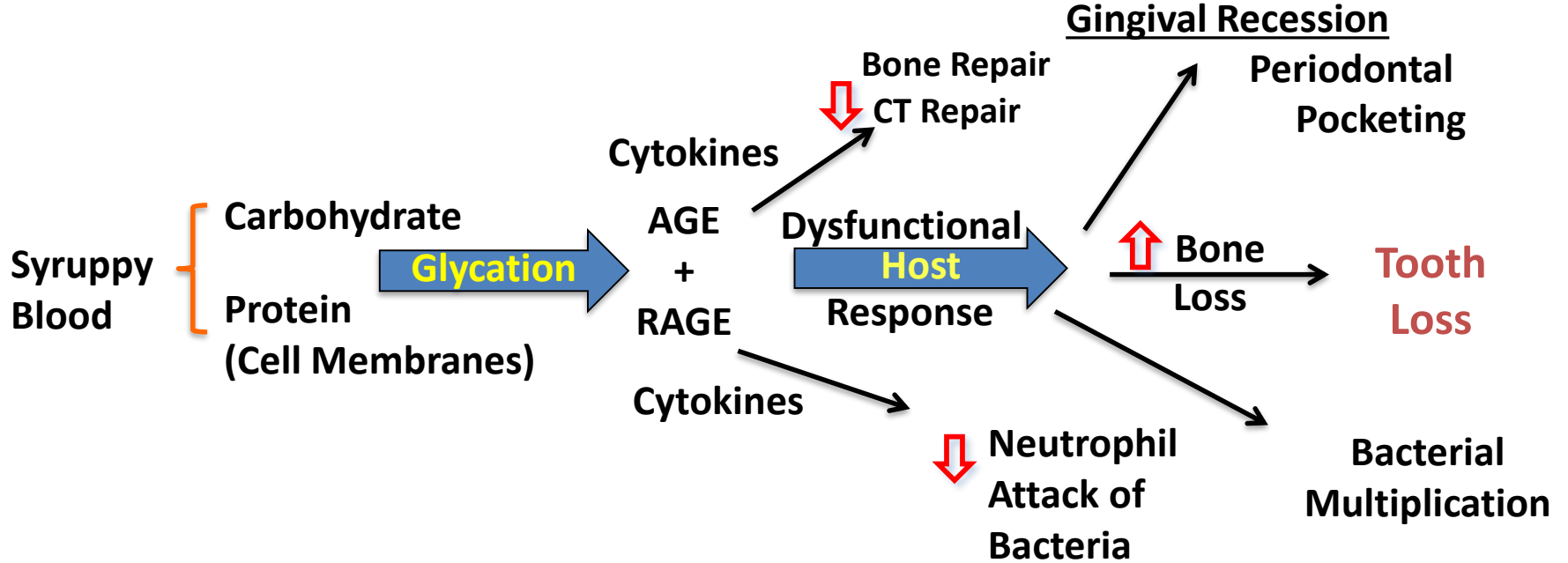
- 26% Of US Adults Age 65 Or Older Live With Diabetes
- People With Poorly Controlled Diabetes Are **2-3 times** More Likely To Develop Periodontal Disease.

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

# DIABETES



# PERIODONTAL DISEASE



# 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)

## Table 3.2—Referrals for initial care management

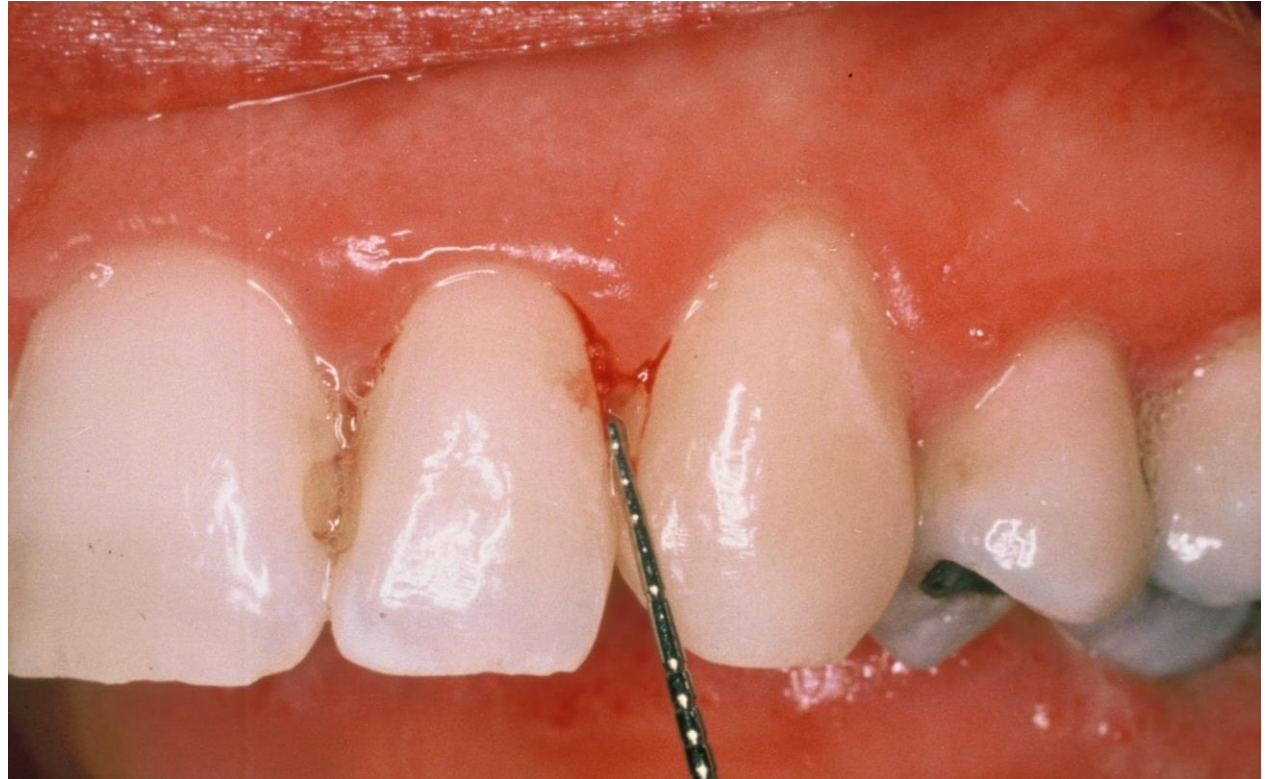
- Eye care professional for annual dilated eye exam
- Family planning for women of reproductive age
- Registered dietician for MNT
- DSME/DSMS
- Dentist for comprehensive dental and periodontal examination
- Mental health professional, if indicated



- **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%.”

Engebretson & Kocher, J Clin Periodontol 2013.



## 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.

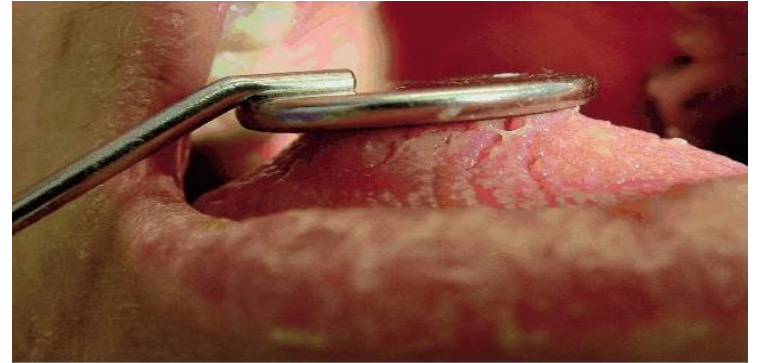
# Dry Mouth / Xerostomia in Older Adults

## 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



# 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



# Special Considerations For Dry Mouth

## Avoid-

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

## • Encourage-

- Frequent sips of H<sub>2</sub>O
- Chew on sugarless gum
- Salivase lozenges
- Xylimelts oral discs
- Oramoist dry mouth patch
- Rx for high-conc Fl<sub>2</sub>

\*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

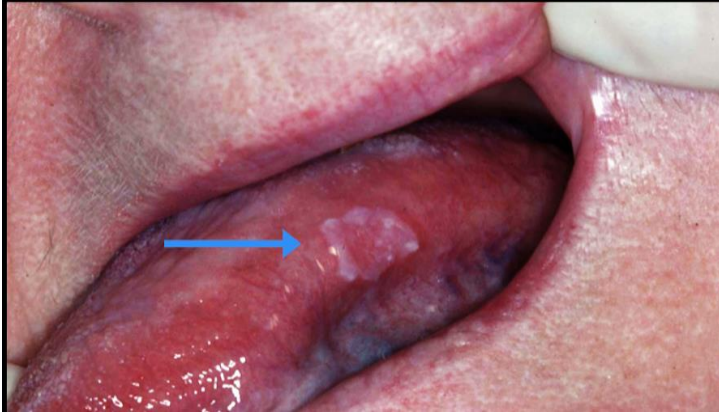
- Prevalence of root caries and recurrent caries is higher
- Caries risk factors
  - Reduced salivary flow (dry mouth)
  - Reduced frequency and effectiveness of oral self-care (mechanical plaque removal)
  - Marginal breakdown/recurrent caries
  - Presence of removable partial dentures
  - Increased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



# Oral Cancer in Older Adults

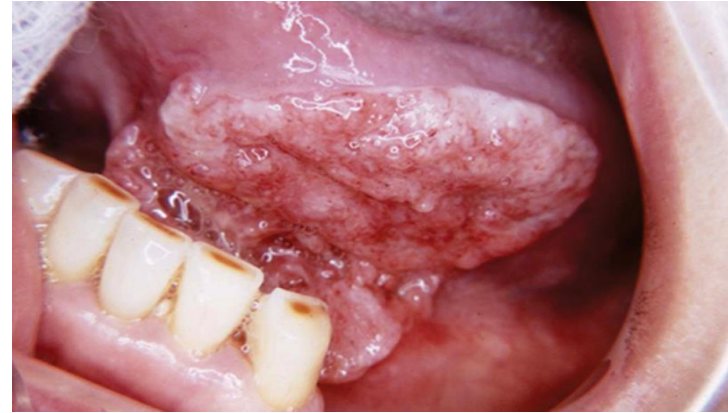
- **Oral Cancer statistics in U.S.**
  - Median age at diagnosis: 62 years
  - Traditional risk factors
    - Smoking
    - Alcohol consumption
  - For oral squamous cell carcinoma, the stage at diagnosis and survival rates are worse for African Americans than Whites
  - *48,000 new cases reported each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

# 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**

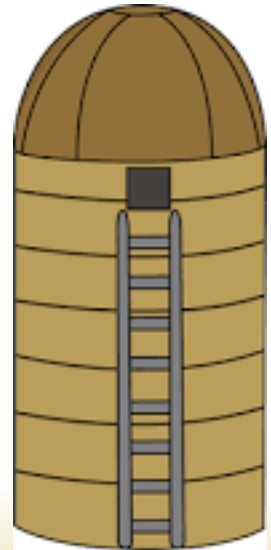
**Commonly with ↑ BMI**

**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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