Introduction

Chronic Disease, Polypharmacy and Oral Problems in Seniors
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*slides were designed by Dr. Nancy Ordonez
role in the HRSA sponsored Houston Geriatric Education Center.
WELCOME TO MAINE
The way life should be
Oral disease is just a part of growing older.

Dry mouth is a normal part of the aging process. “You just have to learn to live with it”.

One of the problems facing residents in care facilities is that staff do not wish to provide oral care for seniors. “Only dentists will look into someone mouth”.

Myth
Objectives

• Summarize how aging demographics affect your practice and your patients
• Explain the relationships of chronic diseases and aging
• Summarize polypharmacy and its relationship to chronic diseases
• Discuss polypharmacy and its affect on oral health
• Designing a treatment plan for senior patients
Chronic Disease, Polypharmacy and Oral Effects

Dental LifeLine Network

https://www.youtube.com/watch?v=rRryy4w-fb8
Dental Lifeline Network:

- A national humanitarian dental organization providing access to comprehensive dentistry for society’s most vulnerable individuals with disabilities or who are elderly or medically fragile and have no other way to get help.
- Non-profit, established in 1975.
- Strategic Partner of the ADA and supported and/or endorsed by 49 State Dental Associations, AGD, ACD and majority of dental specialty organizations.
Donated Dental Services (DDS) Program started in 1985:

Population Served:

• People with disabilities, or
• Elderly, or
• Medically fragile/compromised, and
• Cannot afford care & not covered by public dental benefits

• Nationally:
  • ~15,700 Dentists volunteer
  • ~3,400 Labs volunteer

• Since inception:
  • Over 125,000 patients served
  • Over $397 million donated

www.WillYouSeeOne.org
Public Dental Benefits

• Dental is not an essential health benefit for Adults according to the Affordable Care Act (ACA).

• Medicare is the health insurance program for people over age 65; it does not include dental care or dentures for its members.
  • Individuals may purchase supplemental dental insurance

• Medicaid benefits are determined by states:
  • Few states provide a comprehensive dental benefit, most provide either emergency, limited care or cap the benefits.

• Veterans Affairs in most cases only provides dental treatment if it is service related.
Demographics
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<th>Percentage of population over 65 years old</th>
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<td>43</td>
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65 and older

Total number of persons age 65 or older, by age group, 1900 to 2050, in millions

Note: Data for the years 2000 to 2050 are middle-series projections of the population.
Reference population: These data refer to the resident population.
Source: U.S. Census Bureau, Decennial Census Data and Population Projections.
• The number of Americans ages 65 and older is projected to more than double from 46 million today to over 98 million by 2060

• 65-and-older age group's share of the total population will rise to nearly 24 percent from 15 percent. 

• The population aged 85 and over, which is the group most likely to need health and long-term care services, is projected to increase by 350%.

• More seniors will be coming through your office doors with chronic diseases
Trend: Seniors seeking dental care

- 1970: 25% seeking dental care
- 1985: 40% seeking dental care
- 2000: 50% seeking dental care
- 2010: 55% seeking dental care
Mrs. Lucy, age 78, presents to her friend’s dentist for a wellness check-up and evaluation. She has limited resources and often relies on her medical home for dental advice. Her limited income prohibits her from seeing a dentist on a regular basis and has opted to avoid most dental care except for emergency treatment at the ER. She complains frequently of the inability to eat and mouth pain. Past smoker.

- Diabetes, Depression, Arthritis, HBP, Acid Reflux
- Requires a kidney transplant; she has been on transplant list for 7 years. Lucy is not a candidate for the procedure until her mouth infections are treated. She has been referred multiple times for dental treatment.
- Her neighbor, Rose, age 74, (healthy and independent) is bringing her to her “own family dentist”, for a consult.
- Lucy’s husband Bill is in Long Term Care since a stroke 4 years ago.
• How could her primary care team been more helpful in dealing with her oral health problems?
Lucy

Chronic Disease

Polypharmacy

Adverse Reactions

Aging Physiology

Oral Health Effects
Bidirectional Association;
Chronic Diseases

Chronic Diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of living or both.

https://www.cdc.gov/chronicdisease/about/index.htm
Chronic Diseases over the age of 65
Who is coming into your offices and what does it mean to you

75-80% have at least 3-4 Chronic Disease

80% have at least one Chronic Disease
Chronic Conditions in the USA

NHIS, 2008-2010 Percent with condition

CDC 2019

- arthritis
- cancer
- stroke
- MI
- CHD
- Heart Disease
- Cholesterol

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<td>CHD</td>
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<tr>
<td>Cholesterol</td>
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Epidemiology Alcohol Use
(2003 National Survey on Drug Use and Health)

- 15% seniors may be classified as problem and at risk drinkers
  - (Blow, 2000; Korper & Council, 2002)
- 12% Binge drinking in over 50
Most chronic diseases are caused by a short list of risk behaviors:
https://www.cdc.gov/chronicdisease/about/index.htm

Need to screen for on Health Histories

- Tobacco Use
- Poor Nutrition
- Lack of Physical Activity
- Excessive Alcohol Use
Healthcare Costs

• Approximately 71% of the total health care spending in the United States is associated with care for the Americans with more than one chronic condition.
Trend in Chronic Diseases for Seniors over 65

NHIS, 2008-2010 Percent with condition

- 80% have at least one Chronic Disease
- 75% have at least 3-4 Chronic Disease
- Most Chronic Diseases require Medications

Aging Physiology
Aging Effect on Physiology
Seniors are *physiologically* very different
Different medical and dental profile, less reserve
Changes in Aging Physiology

Absorption
Distribution
Metabolism
Elimination
All vital organs begin to lose some function as you age during adulthood. Aging changes occur in all of the body's cells, tissues, and organs, and these changes affect the functioning of all body systems.

Flaherty JH. *Clin Geri Med* 1998

https://medlineplus.gov/ency/article/004012.htm
Pharmacokinetics and Aging

- Change in Body Composition
- Change in Elimination
- Change in Half-Life
The Aging Mouth

Conceivably, aging itself has no substantial effects on the oral mucosa or its protective mechanism, provided that the individual is in good health”

Baum, Caruso, Ship, Wolff, Oral Physiology, Geriatric Dentistry: Aging and Oral Health

For more than 99.9% of the time humans have roamed the earth, life expectancies topped out at 30 or 40

Old Age is a new concept
Dehydration

- The elderly are at more risk of dehydration through a variety of age related diseases and influences.
- Age affects the “experience of thirst” and response to it. An altered thirst mechanism – risks develops.

Seniors tend not to eat before dental visits

Seniors will avoid food and hydration after visits

- Ayus & Arieff 1996
- Ship & Fisher 1997
Sensory Impairment by Age, USA. 1999-2006


- visual
- hearing
- balance
- loss of feeling in feet

70-79
80+
Difficulty with ADL, 65+ year-old, USA

Source: MCBS, 2010, cdc.gov by Percent
Polypharmacy: *Polypharmacy occurs when a person is taking many different medications at the same time.*  
• 80% of seniors take at least one medication

• At hospital discharge, they receive 6 or more drugs

• In nursing homes, patients often receive 12 to 15 drugs
Factors Contributing to Polypharmacy

• Increasing age
• Increasing risk factors
• Multiple symptoms
• Multiple medical problems
• Copious prescribing
• Multiple providers
Risk of Drug Interactions *

• Increased probability of drug-drug interactions in patients taking more medications
• Study of community-dwelling older adults
  • 5 to 9 meds: 50% probability
  • 20 or more meds: 100%

Cascades

Systemic Cascade

• Multiple Prescribers

• Multiple pharmacies

• Prescribing Cascade

Adverse Reactions

Drug 1

Averse Drug Reaction misinterpreted as new medical condition

Drug 2

Averse Drug Reaction misinterpreted as new medical condition

Drug 3

Averse Drug Reaction misinterpreted as new medical condition
The Prescribing Cascade

**INITIAL CONDITION**
- ARTHRITIS
- DEPRESSION
- AGITATION

**THERAPY**
- NSAID
- Tricyclic Antidepressant
- ANTIPSYCHOTIC

**NEW SYMPTOM**
- Blood Pressure
- CONSTIPATION
- Extra-Pyramidal Syndromes

**SUBSEQUENT**
- BP Med
- LAXITIVE USE
- PARKINSONS MED

**REFERENCES**
- HRSA
- Gurwitz JH. P&T. 1997
Potentially Inappropriate Prescribing (PIP) HRSA *


- Studies show prevalence of at least one inappropriate medication being prescribed for up to 40% of nursing home residents and 21% of community-dwelling elderly.
- If medication-related problems were ranked as a disease by cause of death, it would be the fifth leading cause of death in the United States.
What is the most common adverse drug effect seen in the elderly?

Adverse drug reactions in older adults
- falls: 25% of seniors who fractured hip will die within 6 months
- orthostatic hypotension
- delirium
- renal failure
- gastrointestinal
- intracranial bleeding
*Polypharmacy and falls*


Fall risk increasing drugs (FRID) include:

- Opioids
- Antipsychotics
- Anxiolytics
- Hypnotics
- Sedatives
- Antihypertensives
- Dopaminergic
Beers Criteria
The AGS Beers Criteria® includes lists of certain medications worth discussing with health professionals because they may not be the safest or most appropriate options for older adults.
Published in its entirety in the Journal of the American Geriatrics Society (DOI: 10.1111/jgs.15767),

- Avoided by most older people (outside of hospice and palliative care settings);
- Avoided by older people with specific health conditions;
- Avoided in combination with other treatments because of the risk for harmful “drug-drug” interactions;
- Used with caution because of the potential for harmful side effects; or
- Dosed differently or avoided among people with reduced kidney function, which impacts how the body processes medicine.
Oral Health effects
Medications’ impact on oral health


- **Behavior Altering Agents**—lethargy, reduced motivation, increased plaque index, anti dysrhythmics
- **Agents that affect plaque composition and PH**: antifungal agents, many liquid medications, cough drops and chewable tablets, including vitamins.
- **Agents that affect salivary flow and PH**: Antidepressants, anticholinergics, antipsychotics, antihypertensives, antihistamines, decongestants etc.
- **Agents that affect taste**: Beta adrenergic Blocking Agents, Carbonic Anhydrase, Cardiovascular Agents, CNS Stimulants, Nonsteroidal Anti-inflammatory Drugs, Respiratory Inhalants, Smoking Cessation Drugs etc.
- **Agents that affect gingival enlargement**: Calcium channel blockers, dihydropyridines cyclosporine, sodium valproate, phenytoin etc.
- **Agents that affect mucosa lesions**: Antibiotic: Clindamycin, Barbiturates (Phenobarbital, Secobarbital), Ibuprofen
- **Agents that affect angioedema**: Angiotensin-converting enzyme, or ACE inhibitors, angiotensin receptor blockers and nonsteroidal anti-inflammatory drugs, or NSAIDs,
- **Agents that affect hemostasis**: anticoagulants and antithrombic agents but also in patients taking NSAIDs, ginger, gingko biloba and garlic.
- **Agents that affect oral pigmentation**: tetracycline agent minocycline, (gingiva and bone)
Lucy’s Chronic Diseases and Medications

Depression and agitation managed by medication------------------Lethargy, Motivation, Dry Mouth, Bruxism

Arthritis-----------------------------------------------NSAIDs Methotrexate, Corticosteroids, Dry Mouth

HBP managed by medication-------------------------------Taste, Dry Mouth

Chronic Kidney Disease-----------------------------------------Susceptable to infection, Swollen Tongue, Mouth Ulcers, Candidiasis, Burning Tongue

Diabetes----------------------------------------------Oral Hypoglycemics (Insulin, Lichenoid, Taste, Bad Breath Metformin (taste, dry mouth, nausea and vomiting, Dry Mouth, Bad Taste

Acid Reflux-----------------------------------------------Antacids (sugars)

Pain-------------------------------------------NSAIDs (Lichenoid), Dry mouth and taste distortion
Sleep Aids--------------------------------------------NyQuil (Sugar)
Taste-----------------------------------------------Pain Meds (NSAIDs),
Infection---------------------------------------------clindamycin (Erythematous Lesions)
Behavior Altering Agents

• Patients that take medications that affect the CNS for a long time may experience behaviors that oral cavity
  • Psychotropic Drugs can cause lethargy and fatigue
  • Other drugs can cause similar affects i.e., cardiovascular therapy
Agents that affect plaque composition and PH

• Remember that many medications have sugar as a major constituent
  • Antacids
  • Antifungals
  • Many Liquid medications
  • Cough Drops
  • Chewable tablets including vitamins
Agents that affect salivary flow and PH

• Xerostomia is thought to be caused by top 400-500 drugs
• Consider:
  • Smoking Cessation Agents
  • Antacids
  • Antihypertensives
  • Sedatives
  • Non Steroids anti-inflammatory
Agents that affect mucosa, lesions*

- Medications that predisposed to lesions: i.e.: Atenolol, Metoprolol
  - Erythema multiformans
  - Lichenoid Lesions
Agents that affect Taste: Bitter and Metallic Taste

Compensation is salt and sugar

Medical:
- Respiratory Medications
  - Respiratory: Inhalers
  - Heart: Diltiazem
- CNS
- Pain: NSAIDs
  - Smoking Cessation Medications

Dental:
- Chlorhexidine
- Metronidazole
Agents that Cause Gingival enlargement

- Dilantin
- Cyclosporine
Over the counter Medications

**HERBAL PRODUCTS:** 25 percent of our population routinely uses herbal products and other dietary supplements. Many of these agents may have adverse effects on oral tissue.

- **Ephedra:** Hypertension, fast heart rate, anxiety, psychosis, palpitations, stroke
- **Garlic:** Increased bleeding
- **Gingko Biloba:** Immunosuppression, decreased wound healing, liver toxicity
- **Ginseng:** Increased bleeding, elevated blood pressure
- **Kava:** Enhanced effect of sedatives
- **St. John’s Wort:** Increased metabolism of other drugs, photosensitivity
- **Valerian Root:** Enhanced effect of sedatives
Drug induced

Over 500 medications produce xerostomia as a side effect

Over 200 of the most commonly prescribed drugs cause taste disturbances
Obtain an accurate medication history.

Assume a new symptom is an adverse drug effect until proven otherwise.

Assess benefits and risks, using clinical judgment and validated prescribing tools.

Reduce medications as feasible; identify and prioritize medications to be targeted for cessation. Medications most implicated in serious adverse events include anticoagulants (e.g., warfarin), hypoglycemics (e.g., insulin or oral agents), opioid analgesics, and digoxin.

Monitor for medication effects in collaboration with the patient, caregivers, and other medical professionals.

Always follow up with a senior patient after a med change or dental procedure.
Volunteer Dentists and Labs Needed

Will you see ONE to change a life?

Volunteering is easy:

- Review pre-screened patient profile in advance
- Choose to see or decline patient
- See 1 or 2 patients per year, in your office and on your schedule
- Program Coordinator screens patients/arranges for labs & specialists
- No lab costs; no extra paperwork
For more information:
Go to: www.dentallifeline.org
Email: Hstevenson@DentalLifeline.org Or call 888-471-6334
Discussion
Frequently used dental drugs: Antibiotics: Penicillin, Amoxicillin, Erythromycin, Clindamycin

- Amoxicillin has moderate interactions with at least 27 different drugs

- **Chlorhexidine**: (marketed Peridex, Periochip, and PerioGard) Chlorhexidine comes as a chip, which is used as an adjunct to scaling Taste-stain

- **Tetracyclines**: such as doxycycline (Atridox).
  - Antacids.
  - Calcium supplements.
  - Iron supplements and laxatives that contain magnesium.
  - Penicillin.
  - Blood thinners, such as warfarin (Coumadin)
  - Barbiturates and anti-seizure **drugs**, such as carbamazepine (Tegretol) and phenytoin (Dilantin)
  - Oral birth control pills
Other Medications used in Dentistry

• **Fluorides**
  Toothpastes, Prescription strength fluoride

• **Antiseptics**
  • Antiseptics are available as over-the-counter mouth rinses.

• **Benzodiazepines**
  • Benzodiazepines and diazepam are used for the management of anxiety disorders or for the short-term relief of the symptoms of anxiety.

• **Saliva substitutes**
  • Saliva substitutes such as Moi-Stir, Mouth Kote, Optimoist, Saliva Substitute, Salivar, Salix
Frequently used dental drugs

- **Anesthetics**: Topicals, ointments, sprays or liquids, i.e. Anbesol and Orajel.
- **Local anesthetics**: Common local anesthetics are 2% lidocaine hydrochloride and 2% mepivacaine Carbocaine.
- **General anesthetics**
Antifungals

- Antifungals such as nystatin. Nystatin (Mycostatin) comes in lozenges/troches and oral suspension.