



THE MOUTH: THE 6TH “M” OF GERIATRIC CARE

ENRIQUE VARELA, D.D.S.

DECLARATIONS

- The images used in this module were purchased using a standard Shutterstock license
- Any images not purchased are being used under “fair use” strictly for education purposes
- No financial relationships or conflicts of interest exist for the presenter

OVERVIEW

- The 5 M's of Geriatrics
- The Mind and Mouth
- Medications, Mobility, and the Mouth
- Multicomplexity and What Matters Most
- How to Integrate the Mouth into What You Do
- How to Recognize Need for Dental Intervention

THE 5 M'S OF GERIATRICS

The 4 M's ↔ 5 M's

- Mind
- Medications
- Mobility
- Multi-complexity
- What Matters Most

THE 5 M'S OF GERIATRICS

- Mind
- Medications
- Mobility
- Multi-complexity
- What Matters Most
- Where does the Mouth fit in?

THE MIND

- Mentation
 - Delirium
 - *Dementia*
 - *Depression*

THE MIND AND MOUTH- DEMENTIA

- Periodontal Bacteria
 - *Aggregatibacter actinomycetemcomitans*
 - *Porphyromonas gingivalis*
 - *Tannerella forsythia*
 - *Treponema denticola*
 - *Fusobacterium nucleatum*
 - *Prevotella intermedia*
- There are many, many, more

THE MIND AND MOUTH- DEMENTIA

- Periodontal Disease Risk Factors:
 - Age
 - Genetics
 - Stress
 - Medications
 - Smoking
 - Poor Nutrition/Obesity
 - Systemic Diseases

THE MIND AND MOUTH- DEMENTIA

- All teeth have biofilm
- Perio begins when harmful bacteria grow
- Toxins and chems destroy intracellular connections
- Tissue dehiscence → Bleeding gums, bone shrinkage
- Loose teeth → tooth loss

THE MIND AND MOUTH- DEMENTIA

- Treatment for Perio
 - “Deep Cleaning”
 - Mechanical removal of bacteria
 - Removal of secondary etiology such as calculus (aka tartar)
 - Smoothing or planing of tooth surfaces to discourage bacterial growth

THE MIND AND MOUTH- DEMENTIA

- Periodontal Disease and Dementia
- Patients with Alzheimer's have higher serum antibodies against periodontal pathogens
- TNF- α is also higher in patients with Alzheimer's and Periodontal disease than control

THE MIND AND MOUTH- DEPRESSION

A 62 year old female presents to your clinic for a new patient visit. She mentions that she's been feeling kind of blue. The patient tells you that she has lost some weight, has a reduced appetite, and reduced interest in activities that used to bring her joy. You happen to notice that the patient is wearing ill-fitting dentures.

THE MIND AND MOUTH- DEPRESSION

VDO (Vertical Dimension of Occlusion)

- Shorter VDO = “Collapsed” facial appearance
- Makes patients appear older than they actually are



THE MIND AND MOUTH- DEPRESSION

Edentulous VDO



Normalized VDO



THE MIND AND MOUTH- DEPRESSION

- Studies also show that edentulous patients suffer with more severe obstructive sleep apnea syndrome than patients with teeth, making management more complex.
- 18% Prevalence of MDD among OSA

THE MIND AND MOUTH- DEPRESSION

Partial or complete loss of teeth can also lead to either malnutrition or obesity, depending on the patient.

THE MIND AND MOUTH- DEPRESSION

- Relationships
- Ill-fitting vs. well-fitting dentures
- Affect on social interaction
- Prosthetic malfunction
 - Denture falling out
 - Clacking of denture
 - Whistling sound
 - Marbles in the mouth sound

THE MIND AND MOUTH- DEPRESSION



Self-esteem



Satisfaction with Life



Stress

MEDICATIONS AND THE MOUTH

Medications and Aging

- 85% of adults 60+ take a prescription drug
- 20% of adults 65+ report taking 10+ prescription meds
- Increase in anti-cholinergic burden

MEDICATIONS AND THE MOUTH

Dry Mouth

- Saliva serves to lubricate soft tissues
- Serves to “wet” food for easier digestion
- Flush debris and bacteria from tooth surface
- When salivary flow decreases, incidence of caries increases

MEDICATIONS AND THE MOUTH

Dry Mouth

- Leads to rampant decay
- Failed dental treatment
 - Success of dental treatment depends on adequate salivary flow
- Leads to Mucositis
- Difficulty forming a food bolus
- Difficulty swallowing

MEDICATIONS AND THE MOUTH

Dry Mouth and Radiation

- Radiation damage can occur at doses below 45 Gy
- Salivary glands are extremely sensitive
- Can be damaged or destroyed
- Leads to rampant decay
- Leads to poor dental treatment outcomes

MEDICATIONS AND THE MOUTH

Dry Mouth and Radiation

- Prevention
- Pre-radiation dental visit
- Address urgent dental needs prior to radiation
- Fluoride trays for before, during, and after radiotherapy
- Frequent follow-up

MEDICATIONS AND THE MOUTH

Radiation and Bone

- Therapeutic doses destroy vasculature
- Leads to tissue hypoxia
- Leads to necrosis
- Surgical intervention is needed
- Patients may experience
 - Loosening of teeth
 - Exposure of bone
 - Generalized infection, localized abscesses

MEDICATIONS AND THE MOUTH

Medication and Bone

- Anti-resorptive and Anti-angiogenic drugs
- Bisphosphonates
 - Pamidronate
 - Zoledronate
 - Ibandronate
 - Alendronate
 - Higher doses = Higher Risk
- RANKL Inhibitor
 - Denosumab

MEDICATIONS AND THE MOUTH

Medication and Bone

- Anti-resorptive and Anti-angiogenic drugs
- Bisphosphonates
 - Pamidronate
 - Zoledronate
 - Ibandronate
 - Alendronate
 - Higher doses = Higher Risk
- RANKL Inhibitor
 - Denosumab

MULTI-COMP. & MATTERS MOST

Original Contributions

Comprehensive oral care improves treatment outcomes in male and female patients with high-severity and chronic substance use disorders



Glen R. Hanson, DDS, PhD; Shawn McMillan, MPA; Kali Mower, BS; Carter T. Bruett, BS; Lley Duarte, BS; Sri Koduri, MS, MPA; Lilliam Pinzon, DDS, MS, MPH; Matt Warthen, BS; Ken Smith, PhD; Huong Meeks, PhD; Bryan Trump, DDS, MS

ABSTRACT

Background. Using data from a workforce training program funded by the Health Resources and Services Administration, the authors de-identified pre- and posttreatment assessments of high-severity and chronic substance use disorders (SUDs) to test the effect of integrated comprehensive oral health care for patients with SUDs on SUD therapeutic outcomes.

Methods. After 1 through 2 months of treatment at a SUD treatment facility, 158 male self-selected (First Step House) or 128 randomly selected sex-mixed (Odyssey House) patients aged 20 through 50 years with major dental needs received integrated comprehensive dental treatment. The SUD treatment outcomes for these groups were compared with those of matched 862 male or 142 sex-mixed patients, respectively, similarly treated for SUDs, but with no comprehensive oral health care (dental controls). Effects of age, primary drug of abuse, sex, and SUD treatment facility—influenced outcomes were determined with multivariate analyses.

Results. The dental treatment versus dental control significant outcomes were hazard ratio (95% confidence interval [CI]) 3.24 (2.35 to 4.46) increase for completion of SUD treatment, and odds ratios (95% CI) at discharge were 2.44 (1.66 to 3.59) increase for employment, 2.19 (1.44 to 3.33) increase in drug abstinence, and 0.27 (0.11 to 0.68) reduction in homelessness. Identified variables did not contribute to the outcomes.

Conclusions and Practical Implications. Improvement in SUD treatment outcomes at discharge suggests that complementary comprehensive oral health care improves SUD therapeutic results in patients with SUDs. Integrated comprehensive oral health care of major dental problems signifi-

MULTI-COMP. & MATTERS MOST

- Risk factors for Periodontal Disease
- Age
- Smoking/Tobacco Use
- Genetics
- Stress
- Medications
- Obesity/Poor Nutrition
- Diabetes

- Risk factors for Heart Disease
- Age
- Sex
- Family History
- Smoking
- Poor Diet/Obesity
- Diabetes
- High Blood Pressure
- High Blood Cholesterol
- Physical Inactivity
- Stress

MULTI-COMP. & MATTERS MOST

- Oral Health-Related Quality of Life (OHRQoL)
 - Oral Health
 - Functional Well-being
 - Emotional Well-being
 - Expectations
 - Satisfaction with Care
 - Sense of Self

INTEGRATING THE MOUTH INTO GERIATRIC CARE

Color, Contour, and Consistency

- Color
- Contour
- Consistency

Image Credits

MRONJ Images:

<https://www.cfp.ca/content/54/7/1019>

<https://www.karger.com/Article/Pdf/97876>

<https://www.rdhmag.com/pathology/article/14197577/risks-of-medicationrelated-osteonecrosis-of-the-jaw-in-cancer-patients>

<https://www.semanticscholar.org/paper/Bisphosphonate-related-osteonecrosis-of-the-jaw.-A-Frank-Fio%20na/1cc3bf9e95f5ed011bfb21c4b5524c10fef04ded/figure/0>

References (con't)

- https://www.va.gov/covidtraining/docs/HIA_TipSheet_Geriatric_5Ms_19.pdf
- <https://www.healthinaging.org/tools-and-tips/tip-sheet-5ms-geriatrics>
- Molnar F, Frank CC. Optimizing geriatric care with the GERIATRIC 5Ms. *Can Fam Physician*. 2019;65(1):39.
- Tinetti, Mary, Allen Huang, and Frank Molnar. "The Geriatrics 5M's: A New Way of Communicating What We Do." *Journal of the American Geriatrics Society (JAGS)* 65.9 (2017): 2115. Web.
- Parameswaran, A. "Sturdevant's Art and Science of Operative Dentistry." *Journal of Conservative Dentistry* 16.5 (2013): 480. Web.
- Neville, Brad W, Carl M Allen, and Douglas D Damm. *Oral and Maxillofacial Pathology*. Fourth ed. 2016. Web.
- Sisco L, Broder HL. Oral health-related quality of life: what, why, how, and future implications. *J Dent Res*. 2011;90(11):1264-1270. doi:10.1177/0022034511399918

References (con't)

- Kamer, Angela R, Ronald G Craig, Elizabeth Pirraglia, Ananda P Dasanayake, Robert G Norman, Robert J Boylan, Andrea Nehorayoff, Lidia Glodzik, Miroslaw Brys, and Mony J De Leon. "TNF-a and Antibodies to Periodontal Bacteria Discriminate between Alzheimer's Disease Patients and Normal Subjects." *Journal of Neuroimmunology* 216.1 (2009): 92-97. Web.
- Kamer, Angela R, Ronald G Craig, Ananda P Dasanayake, Miroslaw Brys, Lidia Glodzik-Sobanska, and Mony J De Leon. "Inflammation and Alzheimer's Disease: Possible Role of Periodontal Diseases." *Alzheimer's & Dementia* 4.4 (2008): 242-50. Web.
- Gil-Montoya, José A, Ines Sanchez-Lara, Cristobal Carnero-Pardo, Francisco Fornieles, Juan Montes, Rosa Vilchez, J. S Burgos, M. A Gonzalez-Moles, Rocío Barrios, and Manuel Bravo. "Is Periodontitis a Risk Factor for Cognitive Impairment and Dementia? A Case-Control Study." *Journal of Periodontology* (1970) 86.2 (2015): 244-53. Web.
- Hanson, Glen R, Shawn McMillan, Kali Mower, Carter T Bruett, Lleyly Duarte, Sri Koduri, Lilliam Pinzon, Matt Warthen, Ken Smith, Huong Meeks, and Bryan Trump. "Comprehensive Oral Care Improves Treatment Outcomes in Male and Female Patients with High-severity and Chronic Substance Use Disorders." *The Journal of the American Dental Association* (1939) 150.7 (2019): 591-601. Web.

References (con't)

- "Data on Alzheimer Disease Discussed by Researchers at Fort Belvoir Community Hospital (Clinical and Bacterial Markers of Periodontitis and Their Association with Incident All-Cause and Alzheimer's Disease Dementia in a Large National Survey)." *Mental Health Weekly Digest* (2020): 73. Web.