

# Open WIDE! The Oral – Systemic Connection

Long Term Care Providers Annual Meeting November 10, 2021



**Guy Deyton DDS FACD, Director  
Office of Dental Health  
Missouri Department of Health and Senior Services**



## Open WIDE! The Oral – Systemic Connection

**This Lecture is Dedicated to:**



**Dr. Walter E. Deyton**





Open Wide! The Oral – Systemic Connection

## “Don’t Bury the Lede.”

Tom Hanks as Washington Post Editor Ben Bradlee in “*The Post*”

1. Oral and systemic health and disease are closely interconnected.
2. Oral infections make other disease processes worse.
3. Systemic disease very often has cardinal oral signs occurring early in the disease process which is very helpful in diagnosis. (ex: Covid-19)



Open Wide! The Oral – Systemic Connection

## Agenda

1. Introduce Myself and ODH.
2. Share several compelling reasons LTCP should regularly incorporate an oral screening. We’ll review selected scientific literature on the relationship of oral infections with commonly occurring co-morbid diseases.
3. Show photos of normal and abnormal to prepare you to look.
4. Outline simple protocols to help LTC residents avoid oral infections
5. Briefly review ODH projects to improve access and oral health.



Open WIDE! The Oral – Systemic Connection



# Who the heck is guy.deyton@health.mo.gov?



**John Wesley  
Deyton MD**



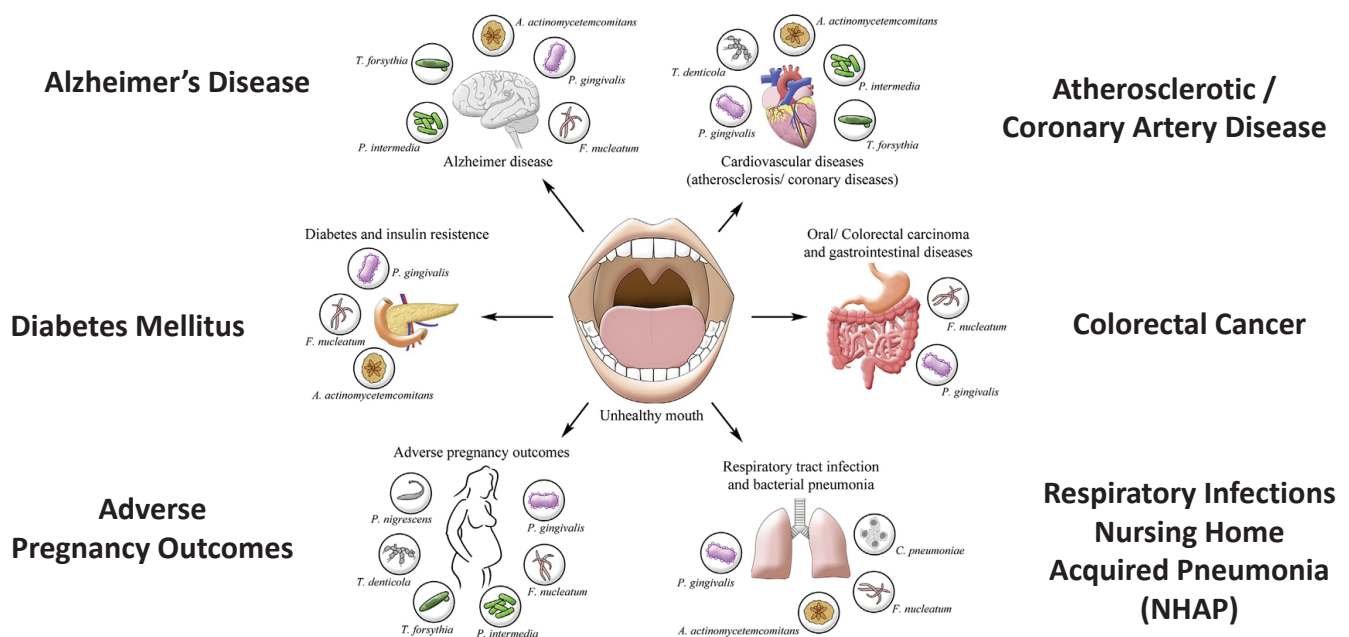
**Family**



**Practice &  
Leadership**



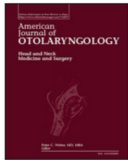
## A PICTORAL REPRESENTATION OF THE ORAL-SYSTEMIC CONNECTION



Source: Bui F, et al.. Association between periodontal pathogens and systemic disease. Biomed J. 2019 Feb;42(1):27-35



## Reason #1: Covid-19 Oral Lesions - Their Incidence and Use in Screening.



American Journal of Otolaryngology.  
May-June, 2021

Oral Lesions in Covid-19 Patients



Oral Surgery, Oral Medicine, Oral Pathology, &  
Oral Radiology, Vol 31, Feb, 2021

Oral Lesions in Sar-CoV-2 Infection

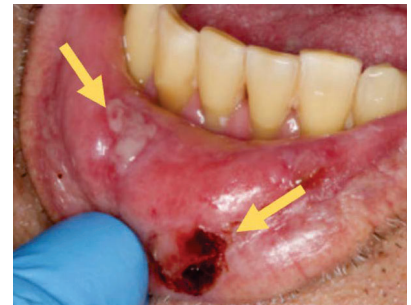
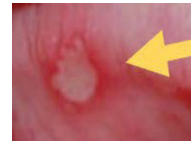
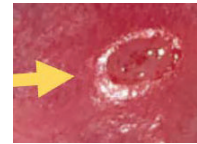
“In this study we found oral lesions in fifty-eight of seventy-four (78%) Covid 19 patients.” (ACE-2)

How does 78% incidence of oral lesions compare to other Covid cardinal signs?

Signs and Symptoms*	HcWs (n=171), No. (%)
Cough	88 (51)
Fever	70 (41)
Myalgia	65 (38)
Headache	52 (30)
Nasal congestion/runny nose	48 (28)
Severe fatigue	44 (26)
Sore throat	42 (25)
Loss of smell	28 (16)
Loss of taste	26 (15)
Chills	24 (14)
Difficulty breathing	18 (11)
Chest tightness/pain	13 (8)
Diarrhea	12 (7)
Loss of appetite	9 (5)
Vomiting	2 (1)

Malenfat, J. et al. Frequency of Coronavirus Symptoms in Healthcare Workers. *J Infect Ctl & Hosp Epidem* 2020 May; 1-2

## 2 Types of Covid-19 Oral Lesions



Office of Dental Health  Missouri Department of Health & Senior Services



Open Wide! The Oral – Systemic Connection

## Why should LTCP's say: “Open Wide”?

Because oral and systemic health & disease are closely interconnected and oral infections make other disease processes worse (sometimes significantly worse) .

Office of Dental Health  Missouri Department of Health & Senior Services

So you can appreciate the breadth of research, I'm going to circle the source of the scientific journals.



Open Wide! The Oral – Systemic Connection

Since 2000 there have been over 700 articles published in peer-reviewed scientific journals describing the co-morbid relationship of virulent oral infections with

- Atherosclerotic/Cardiovascular Heart Disease
- Adverse Pregnancy Outcomes
- Diabetes
- Stroke
- Rheumatoid Arthritis
- Kidney Disease
- Cancer
- Alzheimer's Disease

So you can appreciate the breadth of research, I'm going to circle the source of the scientific journals.



Open Wide! The Oral – Systemic Connection

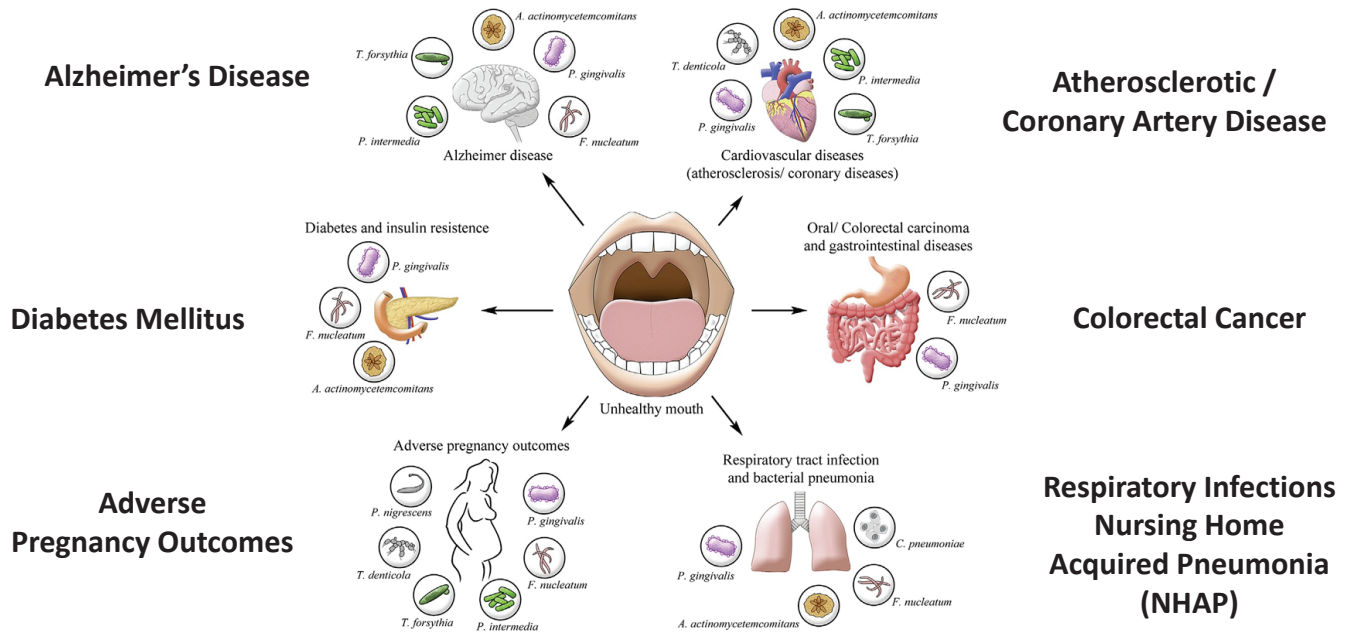
Since 2000 there have been over 700 articles published in peer-reviewed scientific journals describing the co-morbid relationship of virulent oral infections with

- • Atherosclerotic/Cardiovascular Heart Disease
- Adverse Pregnancy Outcomes
- • Diabetes
- • Stroke
- Rheumatoid Arthritis
- Kidney Disease
- Cancer
- Alzheimer's Disease ←



## A PICTORAL REPRESENTATION OF THE ORAL-SYSTEMIC CONNECTION

Based On 700+ Articles in Peer Reviewed Scientific Journals



Source: Bui F., et al.. Association between periodontal pathogens and systemic disease. Biomed J. 2019 Feb;42(1):27-35



Open Wide! The Oral – Systemic Connection

## Key Take – Aways from Articles on Oral-Systemic Connection

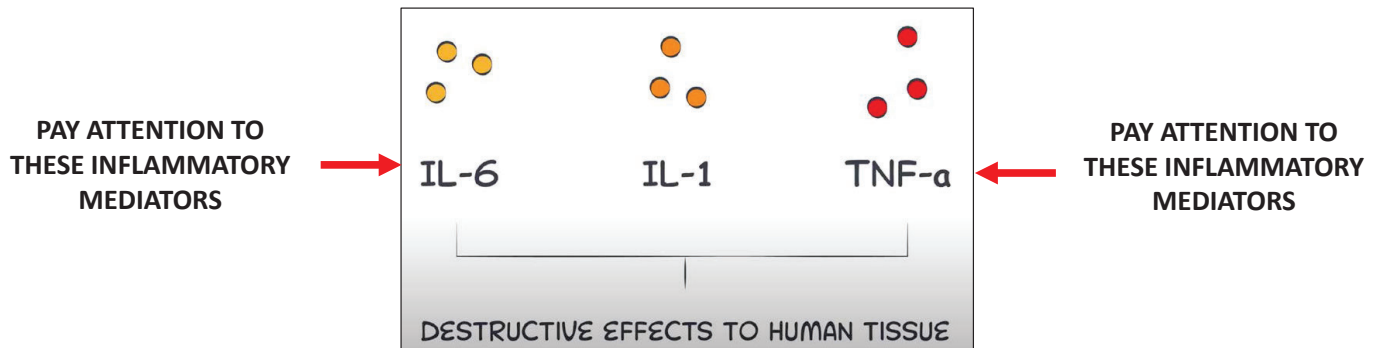
1. Oral infections make many other disease processes worse (sometimes significantly worse) .
2. 2 Etiological (disease development) Paths:
  - Noxious oral pathogens spread readily via blood stream and infect downstream organs.
  - Oral pathogens incite an inflammatory cascade which then spreads and damages other target organs. (ie: Covid Cytokine Storm)





### Open Wide! The Oral – Systemic Connection

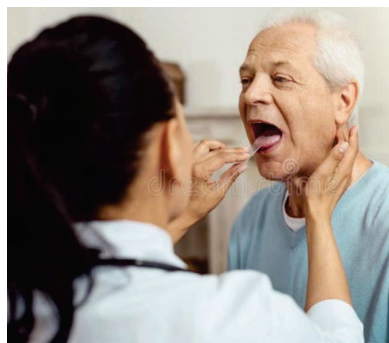
Oral pathogens incite an inflammatory cascade which then spreads and damages other target organs. (ie: Covid Cytokine Storm)



Slide from 'Cytokine Storm in Covid 19 Patients' - Beckman Coulter Covid 19 Video Series



### Open Wide! The Oral – Systemic Connection



**Reason #2: Periodontal Infection Adversely Affect Atherosclerotic Heart Disease & Visa-Versa**



Open Wide! The Oral – Systemic Connection

## Periodontal Infection and Atherosclerotic Vascular Disease

**Patients with periodontal disease have a 2-3 times higher risk of developing coronary heart disease and experiencing a cardiovascular event like heart attack or stroke.**

- Bahekar, A. et al. The prevalence and incidence of coronary heart disease is significantly increased in periodontitis: a meta-analysis. Am Heart J 2007; 154: 830-7
- Aarabi et al. Interaction between periodontal disease and atherosclerotic vascular disease--Fact or fiction? Atherosclerosis. 2015 Aug;241(2):555-60.
- Velsko, IM, et al. Active invasion of oral and aortic tissues by Porphyromonas gingivalis causally links periodontitis and atherosclerosis. PLoS One 2014; 9: e97811.
- Figuero, E, et al. Detection of periodontal bacteria in atheromatous plaque by nested polymerase chain reaction. J. Periodontology 2011; 82: 1469 e 77.



Open Wide! The Oral – Systemic Connection

## Periodontal Infection and Atherosclerotic Vascular Disease

**2 Pathways have been suggested to explain the PD - AHD relationship:**

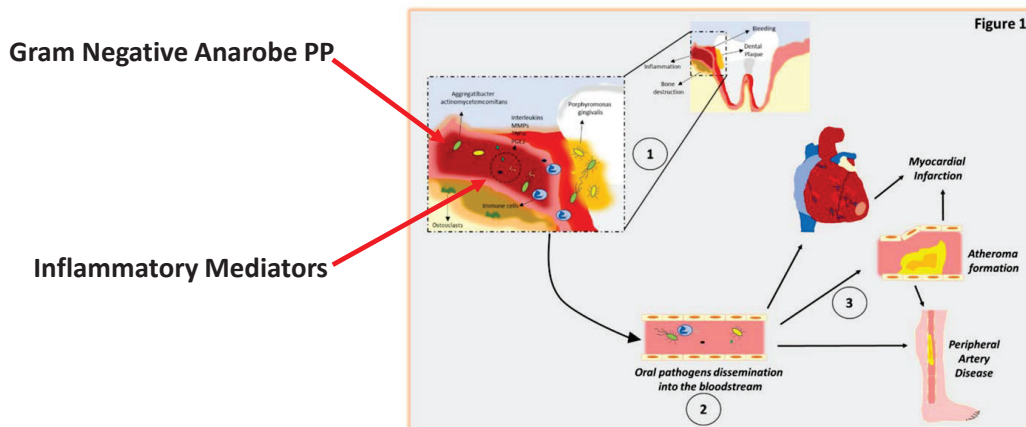
- Blood-borne spread of virulent periodontal pathogens (PP):  
virulent gram-negative pathogens: Fusobacterium, P. Gingivalis, A. actinomycetemcomitans (AA) embed in and have been harvested from atherosclerotic plaque. (PP) cause an inflammatory response in artery linings adversely affecting endothelial function.
- Blood-borne spread of inflammatory mediators is bi-directional:  
atherosclerotic artery disease and periodontal disease adversely influence each other via systemic spread of inflammatory mediators such as Interleukins (IL 1-b & IL-6) and Tumor Necrosis Factor Alpha. (TNF- $\alpha$ )





Open Wide! The Oral – Systemic Connection

# Periodontal Infection and Atherosclerotic Heart Disease



Source: Liccardo, D. et al. Periodontal disease: a risk factor for diabetes and cardiovascular disease. *Int J Molecular Science* 2019, 20(6):1414.

Office of  
**Dental Health**

Missouri  
**DHSS**  
Department of Health  
and Senior Services

Missouri Department of  
**Health & Senior Services**



Open Wide! The Oral – Systemic Connection

# Periodontal Infection and Atherosclerotic Heart Disease

- 22% of Seniors (<65) have Atherosclerotic Heart Disease (AHD). (CDC)
- Seniors (<65) have twice the incidence of strokes vs under 65. (CDC)
- Heart Disease was the leading cause of death in the US (Pre-Covid). (CDC)
- Periodontal disease is considered a contributing/complicating factor to AHD.
- Mandatory clearance from an oral healthcare provider is now required for all non-emergent coronary / cardiovascular surgery patients.
- Tx: Periodontal debridement and maintenance q 3 mo for AHD patients.

Office of  
**Dental Health**

Missouri  
**DHSS**  
Department of Health  
and Senior Services

Missouri Department of  
**Health & Senior Services**



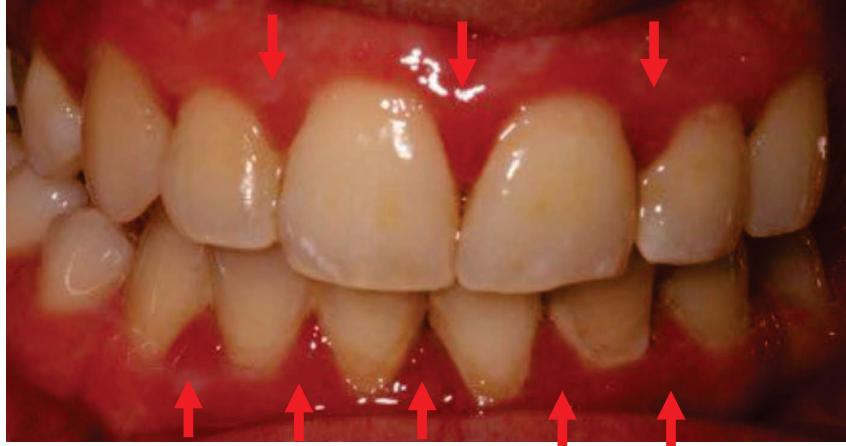
Open Wide! The Oral – Systemic Connection

## What Do You Do? – “Open Wide”

### Signs

Deep Red  
inflamed  
gums around  
teeth

Gums Bleed  
Easily



Early Gum Infection

Office of  
Dental Health

Missouri  
DHSS  
Department of Health  
and Senior Services

Missouri Department of  
Health & Senior Services

### Risks

Progressive  
Infection may  
cause Tooth Loss

Infection may  
become systemic  
and may initiate  
or complicate  
other diseases



Open Wide! The Oral – Systemic Connection

## What Do You Look For?

### Signs

- Localized Swelling
- ‘Pustule’
- Fever (+/-)
- Pain (+/-)



Gum / Tooth Abscess

Office of  
Dental Health

Missouri  
DHSS  
Department of Health  
and Senior Services

Missouri Department of  
Health & Senior Services

### Risks

- Aggressive destruction of bone and tissue
- Facial Cellulitis
- Retrograde Encephalitis
- Systemic infection
- Do **NOT** facilitate drainage with pressure



Open Wide! The Oral – Systemic Connection

# What Does a Healthy Mouth Look Like?

## What Should You Watch For?



Open Wide! The Oral – Systemic Connection

# What Does a Healthy Mouth Look Like?

## Gums

Homogenous  
Color

No Bleeding  
or Ulcers

Smooth,  
Scalloped  
Border



Normal Teeth & Gums

## Teeth

Uniform White  
Color

Normal  
Size

No Holes,  
Fractures



Open Wide! The Oral – Systemic Connection

## What Does a Healthy Mouth Look Like?

**No Spots or  
Discoloration**

**No Ulcers**

**No Bumps,  
Divots, or Deep  
Fissures**



**Normal Tongue**

**Pink Homogenous  
Color**

**Smooth, Non-  
Scalloped  
Lateral Border**



Open Wide! The Oral – Systemic Connection

## What Does an Un- Healthy Mouth Look Like?

### Signs

**Deep curved  
indentations  
on lateral  
border of  
tongue**



**Scalloped Tongue**

### Etiology & Risks

- Most common cause: obstructive sleep apnea
- Tongue subconsciously positioned forward to maintain airway & presses vs inside surface of teeth.
- Refer for sleep study.





Open Wide! The Oral – Systemic Connection

## What Does an Un-Healthy Mouth Look Like?

### Signs

Deep Red  
inflamed  
gums around  
teeth

Gums Bleed  
Easily



Early Gum Infection

Office of  
Dental Health

Missouri  
DHSS  
Department of Health  
and Senior Services

Missouri Department of  
Health & Senior Services

### Risks

Progressive  
Infection may  
cause Tooth Loss

Infection may  
become systemic  
and may initiate  
or complicate  
other diseases



Open Wide! The Oral – Systemic Connection

## What Does an Un- Healthy Mouth Look Like?

### Signs

Deep Red  
around teeth

Tissue Ulcerates  
& Sloughs  
Between Teeth

Gums Painful



ANUG Gum Infection

Office of  
Dental Health

Missouri  
DHSS  
Department of Health  
and Senior Services

Missouri Department of  
Health & Senior Services

### Risks

Aggressive  
infection may  
become systemic  
and may initiate  
or complicate  
other diseases





Open Wide! The Oral – Systemic Connection

## What Does an Un-Healthy Mouth Look Like?

### Signs

'Long' Teeth

Red, Loose,  
Withdrawn  
Gums

Plaque/Tartar

Black Gum  
Triangles



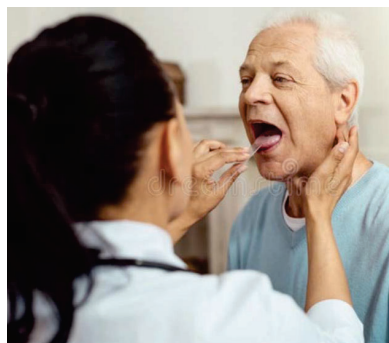
Late Stage Gum Infection

### Risks

Risk of systemic infection  
complication of  
co-morbid  
diseases is  
proportional to  
severity/virulence  
of oral infections.



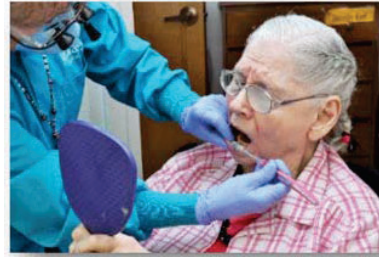
Open Wide! The Oral – Systemic Connection



**Reason #3: Oral Infections May be the Leading Cause of  
Nursing Home Related Pneumonia**

## Proposed Project: Interventional Care for LTCF Residents

### Oral Health Surveillance for Residents in Long Term Care Facilities



There are approximately 56,000 older adults that reside in 1183 licensed long-term care facilities in Missouri. (8/21)

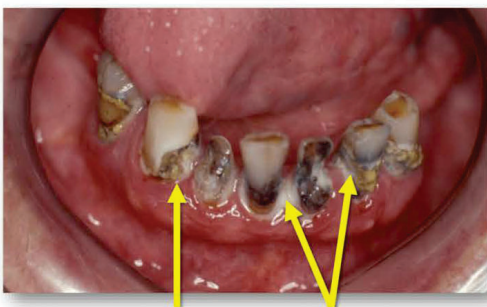
When we examine them, this is what we often see:



Open Wide! The Oral – Systemic Connection

### Oral Health Interventional Care for Residents in Long Term Care Facilities

#### Photos of Actual Long-Term Care Residents



Decay, Broken Teeth, & Biofilm



Plaque, Tartar, & Biofilm May Be Aspirated



Gum Abscesses May Cause Systemic Infection

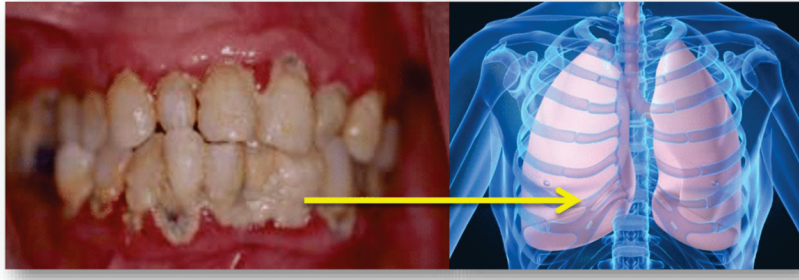




## Open Wide! The Oral – Systemic Connection

### Oral Health Interventional Care for Residents in Long Term Care Facilities

**Accumulated plaque, tartar, & biofilm can be inhaled and cause aspirational pneumonia,** a leading cause of death in nursing home residents.



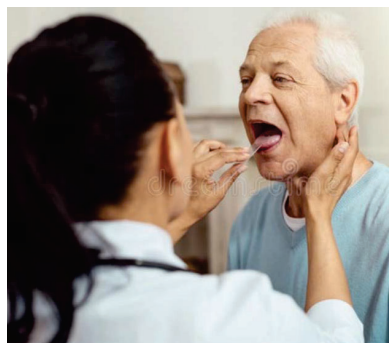
Germes from Plaque, Tartar, & Biofilm Can Be Aspirated and Get into the Lungs

Quagliariello V et al. Modifiable risk factors for nursing home acquired pneumonia. Clin Infect Dis 2005; 40: 1-6  
Sjogren P et al. A systematic review of preventive effect of oral hygiene on pneumonia and respiratory infections in elderly  
J Am Geriatr Soc. 2008 Nov;56(11):2124-30.

It is estimated that inhaled oral infections in Long-term care residents is **responsible for more that 50% of the aspirational pneumonia cases** in that population.



## Open Wide! The Oral – Systemic Connection



### Reason #4: Periodontal/Oral Infection Adversely Affect Diabetes and Visa-Versa



Open Wide! The Oral – Systemic Connection

## Periodontal / Oral Infection and Diabetes

**There is a strong bidirectional association between diabetes and periodontal disease. Periodontal inflammation makes glycemic control very difficult. Diabetes increases the risk for periodontitis.**

- Quintero, A.J.; Chaparro, A.; Quirynen, M.; Ramirez, V.; Prieto, D.; Morales, H.; Prada, P.; Hernández, M.; Sanz, A. Effect of two periodontal treatment modalities in patients with uncontrolled type 2 diabetes mellitus: A randomized clinical trial. *J. Clin. Periodontol.* 2018, 45, 1098–1106
- Teeuw, W. Gerdes, V. Loos, B. Effect of periodontal treatment on glycemic control of diabetic patients: a systematic review and meta analysis. *Diabetes Care* 2010; (33) 33-42.
- Artese H, et al. Periodontal therapy and systemic inflammation in type 2 diabetes mellitus: a meta-analysis. *PLoS One* 2015;10(5):e0128344.
- Xavier, A. Ede, O. Correa, D. Periodontal status in children and adolescents with type 1 diabetes mellitus. *Arg Bras Endocrinol Metabol* 2009; (53) 348.



Open Wide! The Oral – Systemic Connection

## Periodontal Disease (PD) and Diabetes (DM)

**2 Pathways have been suggested to explain the PD - AHD relationship:**

- **Blood-borne spread of virulent periodontal pathogens (PP):**  
virulent gram-negative pathogens: *Fusobacterium*, *P. Gingivalis*, *A. actinomycetemcomitans* (AA) embed in and have been harvested from atherosclerotic plaque. (PP) cause an inflammatory response in artery linings adversely affecting endothelial function.
- **Blood-borne spread of inflammatory mediators is bi-directional:**  
atherosclerotic artery disease and periodontal disease adversely influence each other via systemic spread of inflammatory mediators such as Interleukins (IL 1-b & IL-6) and Tumor Necrosis Factor Alpha. (TNF- $\alpha$ )





Open Wide! The Oral – Systemic Connection

## Periodontal Disease (PD) and Diabetes (DM)

- Approximately 26.8% or 14.3 million Senior Citizens (<65) in the US population have some form of diabetes. (American Diabetes Assn - [www.diabetes.org](http://www.diabetes.org))
- Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia due to a defect in insulin production by pancreatic b cells (type 1 diabetes), a decrease in insulin sensitivity (type 2 diabetes), or a combination of both.
- Periodontal disease is now considered a contributing/complicating factor to both Type 1 and Type 2 Diabetes.



Open Wide! The Oral – Systemic Connection

## Periodontal Disease (PD) and Diabetes (DM)

- Diabetics are approximately 22% more likely to have PD than non-diabetics (De Miguel-Infante et al. Periodontal disease in Adults with diabetes. Int J Clin Practice. 2018, Nov 16)
- It is virtually impossible for Type 1 diabetics to maintain glycemic control if they have unresolved periodontal disease. Diabetic patients with severe periodontitis are 6 times more likely to have poor glycemic control than patients with healthy periodontium. (Costa, F et al. Progression of Periodontitis & tooth loss associated with glycemic control. J Perio. 2013, May: 595-605)







Open Wide! The Oral – Systemic Connection

## Periodontal Disease (PD) and Diabetes (DM)

- Treatment for PD reduces serum levels of inflammatory mediators known to exacerbate DM. (Artise et al. PLoS One. 2015;10(5))
- Treatment for PD improves HbA1C levels. (Quintero et al. Effect of two treatment modalities in patients with uncontrolled type 2 diabetes. J. Clin Periodontol. 2011, 38, 894-901.)



Open Wide! The Oral – Systemic Connection

## Periodontal Disease (PD) and Diabetes (DM)

- Diabetics are approximately 24% more likely to have PD than non-diabetics
- It is virtually impossible for Type 1 diabetics to maintain glycemic control if they have unresolved periodontal disease. Diabetic patients with severe periodontitis are 6 times more likely to have poor glycemic control than patients with healthy periodontium. (Costa, F et al.)
- Treatment for PD reduces serum levels of inflammatory mediators known to exacerbate DM. (Artise et al)
- Treatment for PD improves HbA1C levels. (Quintero et al. Effect of two treatment modalities in patients with uncontrolled type 2 diabetes. J. Clin Periodontol. 2011, 38, 894-901.)





Open Wide! The Oral – Systemic Connection

## Reason #5: Periodontal Infection Adversely Affect Rheumatoid Arthritis

There is a strong association between periodontal infections and the development of RA in patients who are susceptible.



Kaur S, Bright R, Proudman SM, Bartold PM. Does periodontal treatment influence clinical and biochemical measures for rheumatoid arthritis? A systematic review and meta-analysis. *Seminars in Arthritis and Rheumatism*. 2014; 44(2): 113-122.



Open Wide! The Oral – Systemic Connection

## Periodontal Infection and Rheumatoid Arthritis

Rheumatoid arthritis is a chronic inflammatory disorder that is activated in susceptible hosts is by autoantibodies. Research shows a periodontal pathogen AA, (aggregatibacter actinomycetemcomitans) can trigger the formation of autoantibodies to initiate or accelerate RA episodes.



Kaur S, Bright R, Proudman SM, Bartold PM. Does periodontal treatment influence clinical and biochemical measures for rheumatoid arthritis? A systematic review and meta-analysis. *Seminars in Arthritis and Rheumatism*. 2014; 44(2): 113-122.



Open Wide! The Oral – Systemic Connection

## Periodontal Infection and Rheumatoid Arthritis

Treatment of periodontal disease in patients with RA has led to reductions in some markers of disease activity in RA patients (ESR, TNF- $\alpha$  titers, and disease activity scores).



Abbasi, J. To Prevent Rheumatoid Arthritis, Look Past the Joints to the Gums. *JAMA*. 2017; 317(12): 1201-1202.

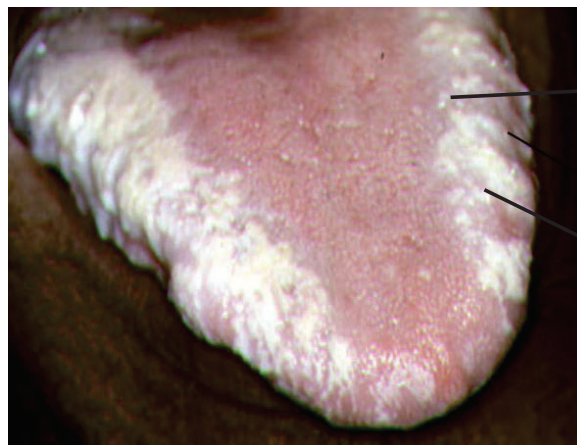


Open Wide! The Oral – Systemic Connection

## Reason #6: Compromised Immune System

### Multiple Etiologies:

- ↓ Immune System
- Dysbiotic Balance (Yeast)
- Epstein Barr
- Tx: Fluconazole / Nystatin oral suspension; follow with anti-viral (Famvir). Resolve in 3 wks or refer.



### 'Hairy' Leukoplakia

White Non-Painful Coating on Tongue, Cheeks, inside lips

Usually Raised, Irregular Surface

(Cade, J. Burgess, J. Hairy Leukoplakia: Pathophysiology, Presentation, & Treatment. Medscape, June 11,2021)

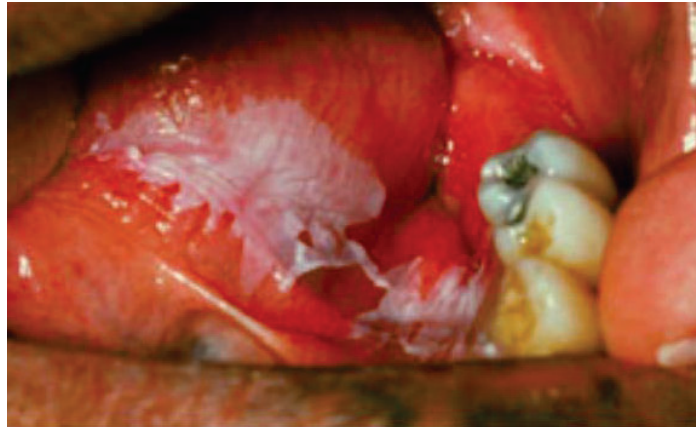


Open Wide! The Oral – Systemic Connection

## Reason #7: Oral Cancer

### Etiology:

- Chronic Insult
- EtOH
- Tobacco



### Appearance / Symptoms:

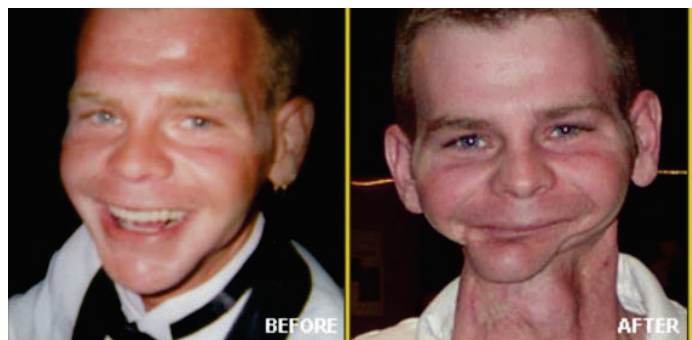
- Red or White
- Usually Asymptomatic

Probable Squamous Cell Carcinoma in Patient with hx of ↑ EtOH Intake



Open Wide! The Oral – Systemic Connection

## Reason #7 Motivation



### Chewing Tobacco and Oral Cancer

Gruen Von Behrens: Dx Oral Ca. age 17, Died Age 38. Anti-Smokeless Tobacco Activist





Open Wide! The Oral – Systemic Connection



## Reason #8: Oral Signs May Be the Easiest Way to Screen for Obstructive Sleep Apnea

Office of Dental Health  Missouri Department of Health & Senior Services



Open Wide! The Oral – Systemic Connection

## Sleep Apnea in Seniors Over 65

### Incidence

It is estimated that 56% of Seniors (<65) may suffer from obstructive sleep apnea. (N=1052)

(Bradley, T. et al. Recognition and Diagnosis of Obstructive Sleep Apnea in Older Americans. J Am Geriatric Soc. (66) 7, Jul, 2018;1296-1302)



### Risks:

OSA is a risk factor for:

- Resistant Hypertension
- Cardiac Arrhythmias
- Heart Failure
- Heart Attacks
- Cognitive Disorders

(Tietjens, J. et al. Obstructive sleep apnea and cardiovascular disease. J Am Heart Assn. (8) 1, Jan, 2018; 1296-1302)

Office of Dental Health  Missouri Department of Health & Senior Services





Open Wide! The Oral – Systemic Connection

## Sleep Apnea and Cognitive Dysfunction in Seniors Over 65

Fractionated sleep in N3 stage causes short term memory loss, but improves w/tx.



Intermittent hypoxia causes irreversible brain change

Legault, J. et al. Obstructive Sleep Apnea & Cognitive Decline. J Brain Sciences. (11) 2021;706)

Legault, J. et al. Obstructive Sleep Apnea & Cognitive Decline. J Brain Sciences. (11) 2021;706)



Open Wide! The Oral – Systemic Connection

## Why should LTCP's say: "Open Wide"?

1. Because oral and systemic health & disease are closely interconnected and oral infections make other disease processes worse (sometimes significantly worse) .
2. Systemic diseases very often has cardinal oral signs occurring early in the disease process and that's very useful in diagnosis. (ex: Covid-19)



Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

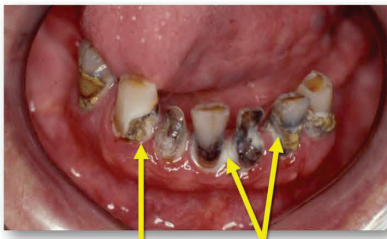


Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 1. Look! If it doesn't look right, refer!

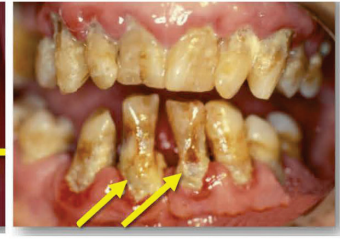
Photos of Actual Long-Term Care Residents



Decay, Broken Teeth, & Biofilm



Plaque, Tartar, & Biofilm May Be Aspirated



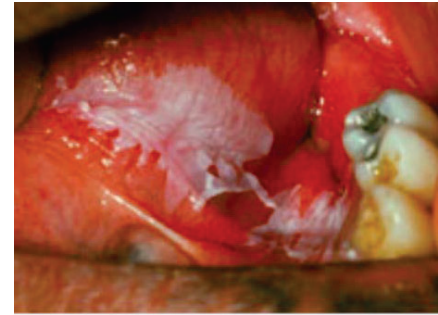
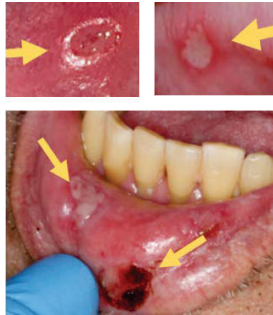
Gum Abscesses May Cause Systemic Infection



Open WIDE! The Oral – Systemic Connection

# How Can You Help Long Term Care Residents Avoid Oral Infections?

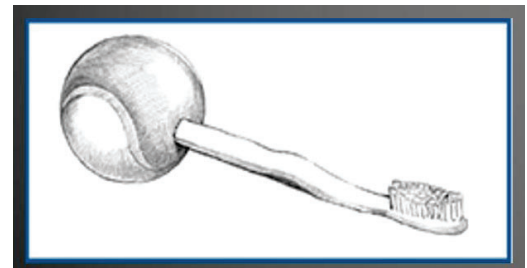
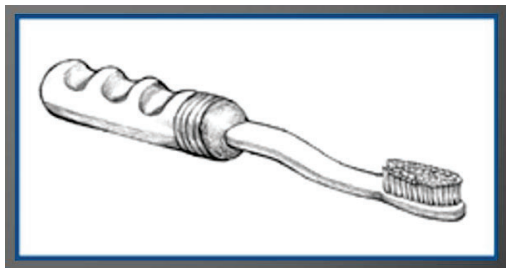
## 1. Look! If it doesn't look right, refer!



Open WIDE! The Oral – Systemic Connection

# How Can You Help Long Term Care Residents Avoid Oral Infections?

## 2. If you see food, plaque, & tartar: Make Oral Hygiene Easier! (A quick review of hygiene aides)





Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 3. 'De-crud' dentures and partials. Arrange nightly soaks.

If dentures look like this:



Don't put it in their mouth without cleaning!



Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 3. 'De-crud' dentures and partials. Arrange nightly clean/soaks.

PPE



Soak 1:10  
Dilution



Clean



Amazon - BEJARM Cleaning Brush Set

Efferdent Soak  
Repeat 3/Week



Buergers, R. et al. Efficacy of denture disinfection methods in controlling *Candida albicans* colonization in vitro. Acta Odontologica Scandinavica, 66:3, 174-180





Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 4. Arrange for Annual Screening Exams, even denture wearers.



- Oral Cancer: Seniors (>55) account for about 80% of 54,000 mouth/throat cancers dx each year and 8000 deaths. Avg age = 63.

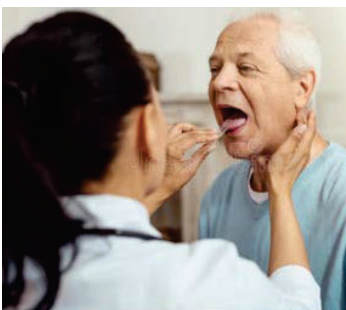
<https://www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/about/key-statistics.html>



Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 4. Arrange for Annual Screening Exams, even denture wearers.



- Gum disease. A high percentage of older adults have gum disease: 2 in 3 (68%) seniors (>65) have gum disease.

Eke PI, Dye BA, Wei L, et al. Update on prevalence of periodontitis in adults in the United States: NHANES 2009 to 2012. J of Periodontology. 2015;86(5):611-622.





Open WIDE! The Oral – Systemic Connection

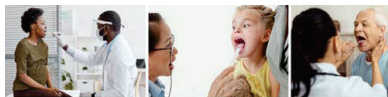
## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 4. Arrange for Annual Screening Exams, even denture wearers.



•Oral-Systemic Disease Connection: Oral infections make systemic disease worse.

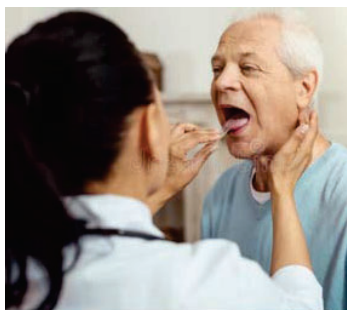
Bui F., et al.. Association between periodontal pathogens and systemic disease. Biomed J. 2019 Feb;42(1):27-35



Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 5. Treat Dry Mouth: It's the precursor to decay & infections..



#### 3 Leading Causes:

- Medications
- Aging
- Radiation of head & neck

<https://www.mayoclinic.org/diseases-conditions/dry-mouth/>



Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

### 5. Treat Dry Mouth: It's the precursor to decay & infections..



Saliva helps prevent tooth decay by:

- neutralizing acids,
- limiting bacterial growth, and
- encapsulating bacteria.

Frenkel ES, Ribbeck K. Salivary mucins in host defense and disease prevention. *J Oral Microbiol.* 2015 Dec 22;7:29759.

Office of  
Dental Health



Missouri Department of  
Health & Senior Services



Open WIDE! The Oral – Systemic Connection

## How Can You Help Long Term Care Residents Avoid Oral Infections?

1. Look! If it doesn't look right, refer!
2. If you see food, plaque, & tartar: consider making oral hygiene easier! (A quick review of hygiene aides)
3. 'De-crud' dentures and partials. Arrange nightly soaks.
4. Annual screening exams 1 /year.
5. Treat dry mouth: precursor to decay & other infections.

Office of  
Dental Health



Missouri Department of  
Health & Senior Services



Open Wide! The Oral – Systemic Connection

## ODH Projects & Grant Proposals

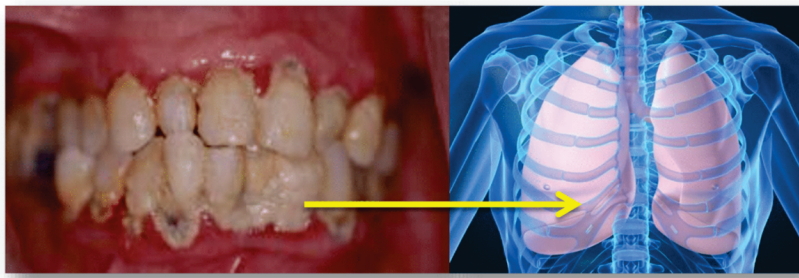
1. **Interventional Oral Health Care for LTCF Residents**
2. **Community Water Fluoridation**: reduces everyone's decay by 30% for a lifetime.
3. **WIC Preventative Services Program**: Reduces risk of decay and periodontal infections in WIC mothers & children.
4. **School Based Preventative Services Program**: Reduces decay in high-risk children.



Open Wide! The Oral – Systemic Connection

### Oral Health Interventional Care for Residents in Long Term Care Facilities

**Accumulated plaque, tartar, & biofilm can be inhaled and cause aspirational pneumonia**, a leading cause of death in nursing home residents.



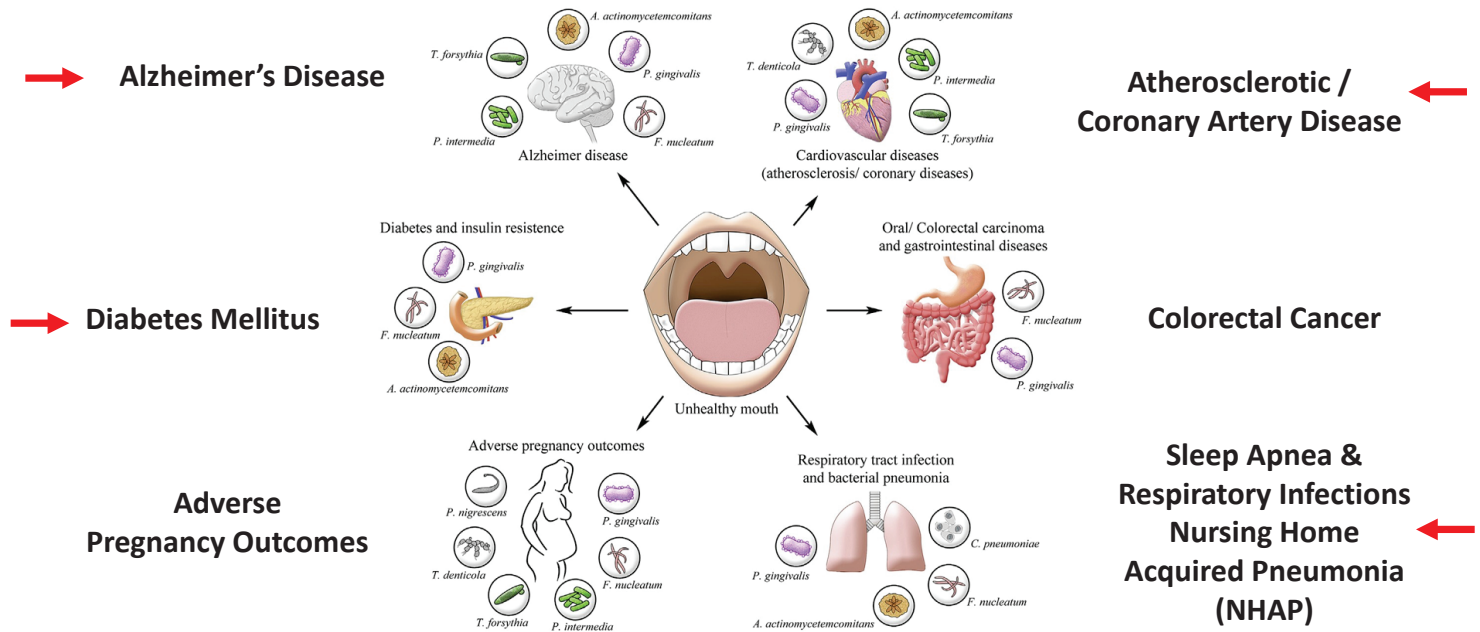
Germes from Plaque, Tartar, & Biofilm Can Be Aspirated and Get into the Lungs

Quagliariello V et al. Modifiable risk factors for nursing home acquired pneumonia. Clin Infect Dis 2005; 40: 1-6  
 Sjogren R et al. A systematic review of preventive effect of oral hygiene on pneumonia and respiratory infections in elderly  
 J Am Geriatr Soc. 2008 Nov;56(11):2124-30.

It is estimated that inhaled oral infections in Long-term care residents is **responsible for more that 50% of the aspirational pneumonia cases** in that population.



## A PICTORAL REPRESENTATION OF THE ORAL-SYSTEMIC CONNECTION



Source: Bui F, et al.. Association between periodontal pathogens and systemic disease. Biomed J. 2019 Feb;42(1):27-35



**We are always looking for ways to collaborate .**

**We are available for:**

**In-service workshops to help clinical staff become comfortable with oral surveillance**

**Consultation on setting up oral health exam rooms in LPHA facilities**

**Collaboration on grants to integrate oral health into LPHA service protocols**

**Thank You!**

**[guy.deyton@health.mo.gov](mailto:guy.deyton@health.mo.gov)**







Open WIDE! The Oral – Systemic Connection

**Again, from my family and many others:**

**Thank you for your dedication!**

**Thank you for your care!**

**Thank you for your support!**



**Walt Says:**

**Remember to Say ‘Open Wide & Stick Your Tongue Out’!**



**Dr. Walter E. Deyton**





Open WIDE! The Oral – Systemic Connection