

Oral-Systemic Health

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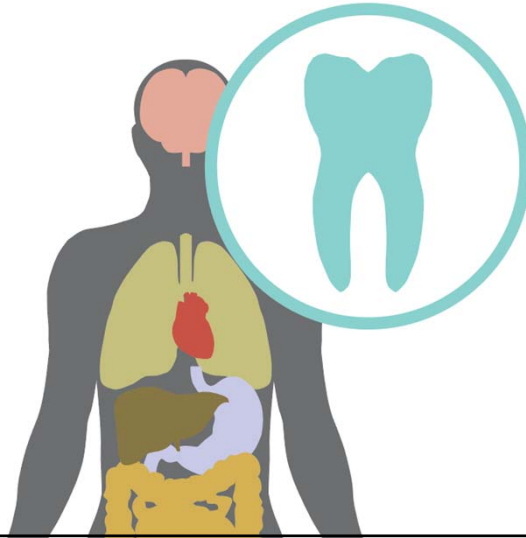
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Introduction

- The mouth is anatomically connected to the body
- Effect of general health on the oral cavity
- Effect of the oral cavity on general health
- Financial implications (health care dollars)

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The Mouth Is Attached to the Body



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How Do These Oral Problems Affect Your Health?



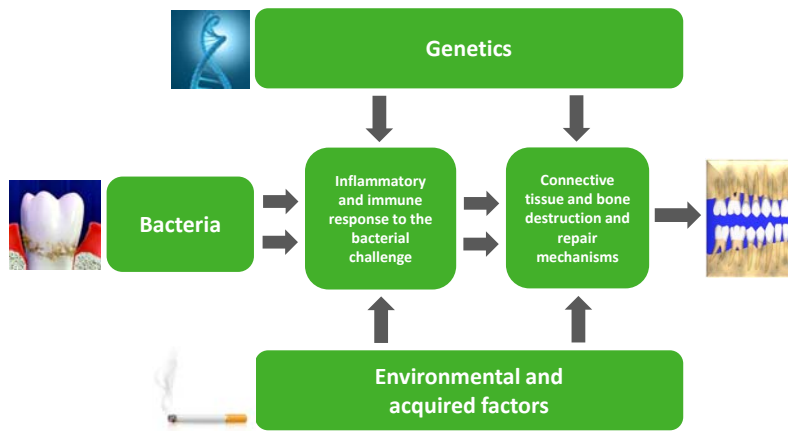
Periodontitis (gum disease)



Caries (cavities)

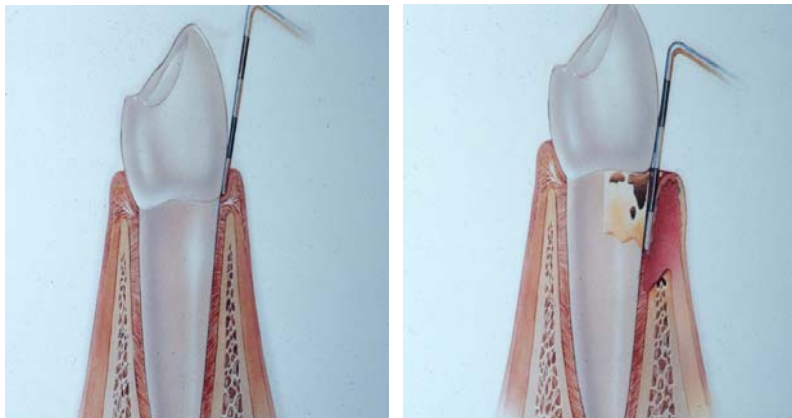
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Periodontitis Is a Multifactorial Complex Disease



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Periodontitis (Gum Disease, Pyorrhea)

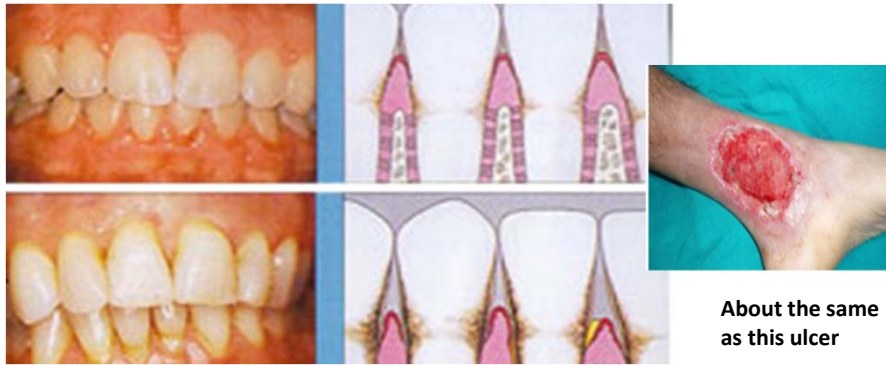


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Surface Area of Ulcerated Tissue

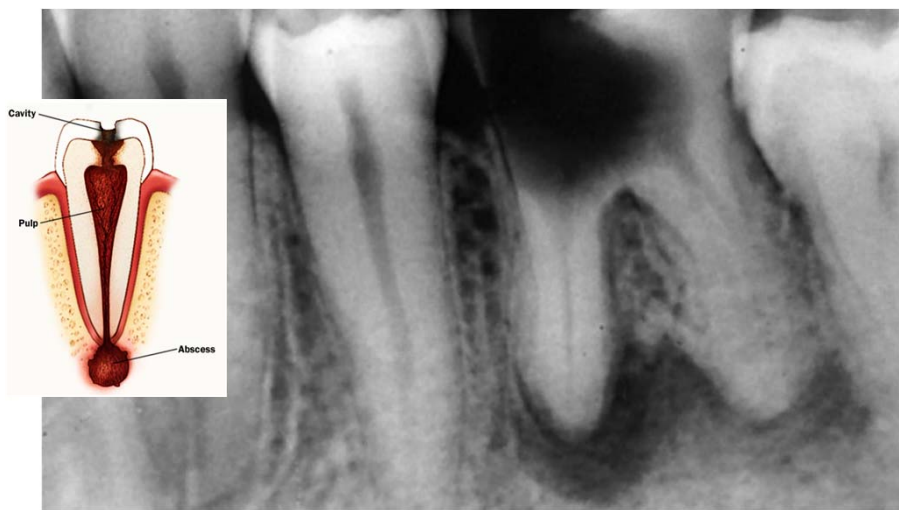
Moderate periodontitis

5–7 mm = 3,810 sq. mm or 6 sq. inches



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Cavities Lead to Abscess



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Terminology

- Association (connection or combination)
 - Driving a car and going to a dentist
- Correlation (two or more attributes vary together)
 - Amount of clothes worn and the temperature
- Cause and effect (one results in the other)
 - Tuberculosis and Mycobacterium tuberculosis
 - Koch's Postulates 1876

Putting Things Into Perspective

- Lack of **evidence** does not mean lack of **affect**
- **Science** based vs. **evidence** based

Periodontal-Systemic Relationships

- **Pregnancy**—Preterm birth and low birth weight
- **Heart attack**—Related by increased inflammatory mediators
- **Stroke**—Associated with oral bacteria
- **Rheumatoid arthritis**—Citrullinating enzymes
- **Diabetes**—Chronic inflammation increases insulin needs
- **The medical and pharmacy costs of oral disease**

<http://www.autismspeaks.org/sites/default/files/documents/dentalguide.pdf>



Pregnancy

- Low birth weight (<2,500 grams)
 - Studies show significant associations
- Preterm birth (delivery between 23 and 37 weeks)
- Improvements in periodontal health do not reduce overall rates of low birth weight and preterm birth (*Sanz 2013*)



Cardiovascular

- First looked at in 1989
- Relationship appears to be associative, independent of other factors
- Oral bacteria found in atheromas (blood vessel lesions)
- Hs-C reactive protein
- Similar conclusions for stroke but different mechanisms (antibody responses to oral bacteria)



Rheumatoid Arthritis (RA)

- Chronic inflammatory disease
- Patients with RA have higher incidence of gum disease (correlation)
- Citrullinated proteins
- Some evidence that treating gum disease improves RA
- Association with common risk factors and pathogenesis

Diabetes

- Type 1 and 2
- Appears diabetes is the primary driver of inflammation, not the other way around
- Complications with wound healing



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What Are the Financial Implications of Dental Disease?

- Increased hospitalizations
- Increased pharmacy costs
- Increased costs of care



Improving Oral Health Yields Lower Medical Costs



Out-of-Hospital Cardiac Arrests in U.S.

2011—**326,200**

2012—**382,800**

2013—**359,400**

2014—**424,000**

2015—**326,200**

(Additional 200,000
for in-hospital)

Source: American Heart Association



University of Michigan/Delta Dental

- 2,000 member group—gum disease/diabetes
- Medical and pharmaceutical costs
 - Two cleanings per year—19 percent reduction
 - Two or more cleanings per year—28 percent reduction



Is There Scientific Evidence That Gum Disease Increases Medical Costs?

Aetna/Columbia

- Diabetes = \$0.27 pmpm
- Coronary artery disease = \$0.37 pmpm
- Stroke = \$0.44 pmpm

Albert DA, et al. An examination of periodontal treatment and pmpm medical costs in an insured population. BMC Health Services Research, 2006.



Is There Scientific Evidence That Gum Disease Increases Medical Costs?

Cigna/Penn

- Stroke = \$10,000/year less
- Diabetes = \$1,418/year less



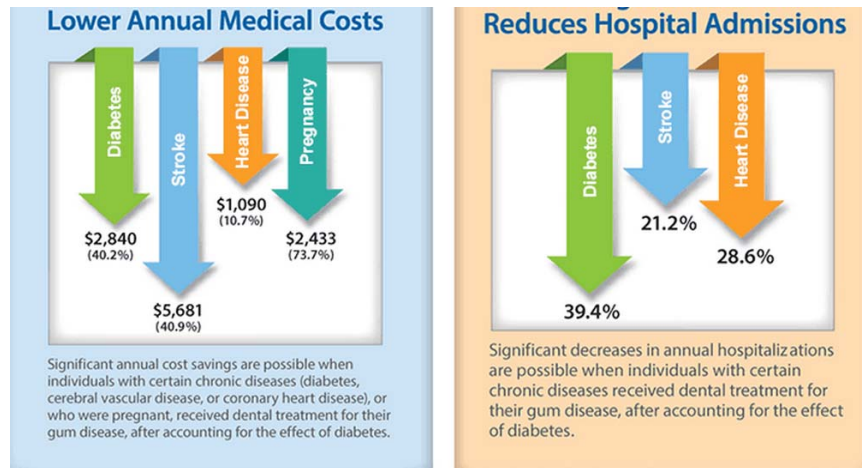
Is There Scientific Evidence That Gum Disease Increases Medical Costs?

- University of Michigan/BCBS
 - Overall medical and pharmacy costs lowered by **10 percent** in treatment group
 - **19 percent** reduction in diabetes-related medical costs



Can Treatment of Gum Disease Reduce Medical Costs?

Jeffcoat et al AADR 2014



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Can Control of Gum Disease Lower A1c?

- Simpson TC, Needleman I, Wild SH, Moles DR, Mills EJ. Treatment of periodontal disease for glycemic control in people with diabetes. *Cochrane Database Syst Rev* 2010;12:CD004714.
- Engbretson S, Kocher T. Evidence that periodontal treatment improves diabetes outcomes: A systematic review and meta-analysis. *J Periodontol* 2013;84(Suppl. 4):S153-S169.
- Sgolastra F, Severino M, Pietropaoli D, Gatto R, Monaco A. Effectiveness of periodontal treatment to improve metabolic control in patients with chronic periodontitis and type 2 diabetes: A meta-analysis of randomized clinical trials. *J Periodontol* 2013;84:958-973.
- Teeuw WJ, Gerdes VE, Loos BG. Effect of periodontal treatment on glycemic control of diabetic patients: A systematic review and meta-analysis. *Diabetes Care* 2010;33:421-427.
- Effect of Non-Surgical Periodontal Therapy on Glycemic Control in Patients with Type 2 Diabetes Mellitus Débora C. Rodrigues , Dr. Mário Taba Jr. , Arthur B. Novaes Jr. , Sérgio L.S. Souza and Márcio F.M. Grisi *Journal of Periodontology* Sep 2003, Vol. 74, No. 9, Pages 1361-1367

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Regular Dental Care Leads to Reduced Diabetes Specific Medical Care Utilization

- Mosen 2012
- [https://jada.ada.org/article/S0002-8177\(14\)60786-8/fulltext](https://jada.ada.org/article/S0002-8177(14)60786-8/fulltext)



What Is Delta Dental Doing About All of This?

- Wellness programs
- Expanded benefits for at-risk populations
- Waiver of benefit limitations
- Patient education
- Notify dental office of patients with expanded benefits that have not been seen



Summary

- The mouth is connected to the body
- There are some associations between oral disease and overall health
- There are some cause and effect relationships
- Control of chronic oral disease can yield lower health care costs
- Oral health should be a component of overall general health



What Can I Do to Save My Teeth?



- Brush and floss daily
- See your dentist regularly
- Mind your own business



Questions?

