

ECHO IDAHO

Oral Health in Primary Care

Linking Oral and Systemic Health Across the Lifespan

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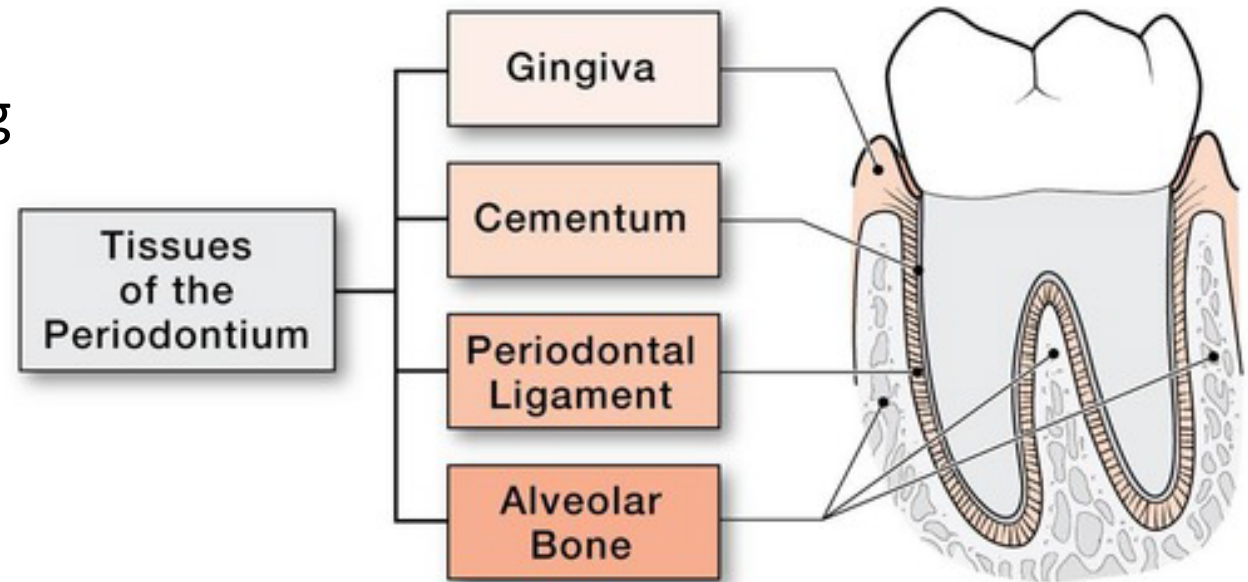


Learning Objectives

- Understand the impacts of periodontitis and other oral conditions on other body systems
- Reinforce perspective that oral conditions have a circle of influence extending beyond the oral cavity

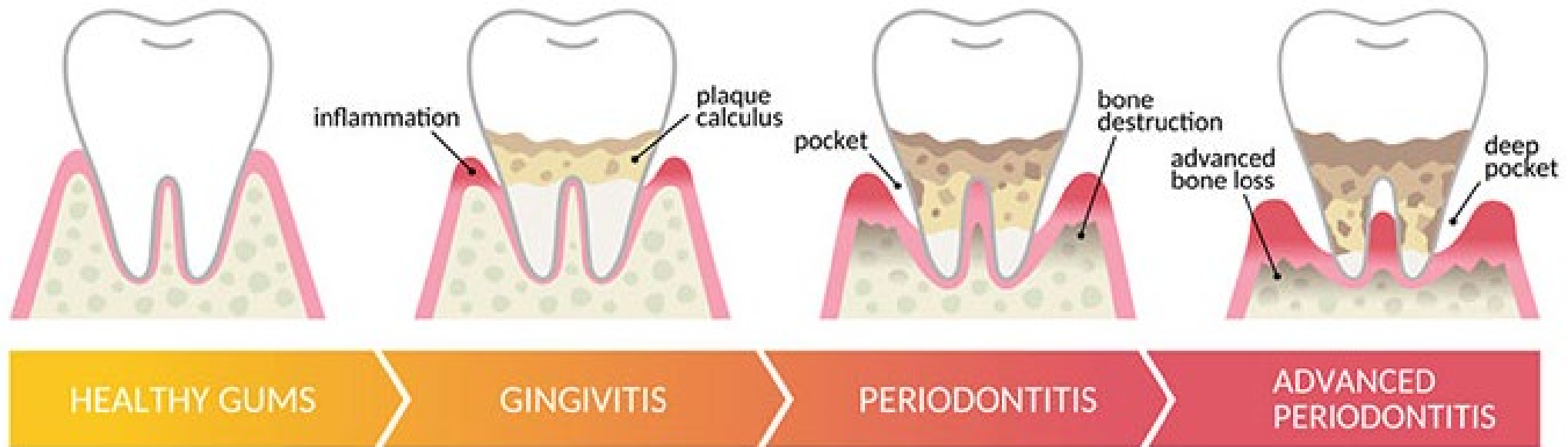
What does a periodontist do?

- Manage treatment of gum disease
 - Surgical debridement, bone grafting
- Gum grafting
- Crown lengthening
- Frenectomies & gingivectomies
- Extractions, implant placement, and implant site preparation
- Soft tissue biopsies



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What is gum disease & periodontitis?



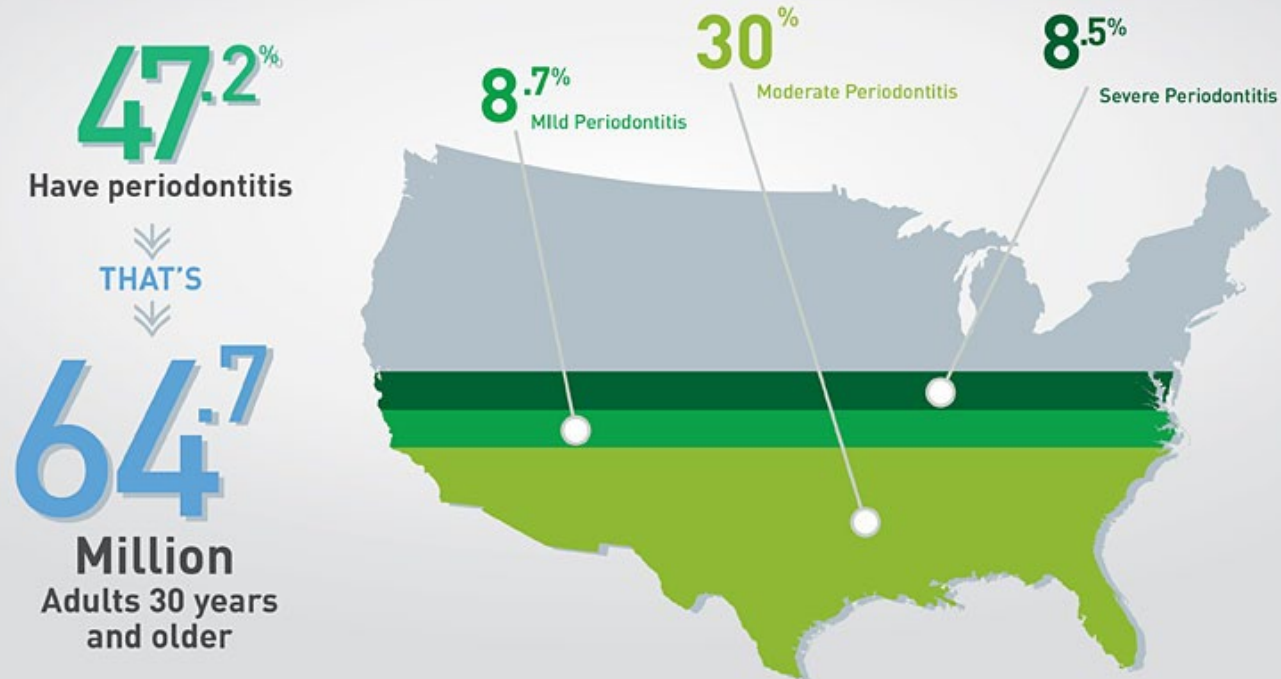
What is gum disease & periodontitis?

- Signs include calculus & plaque build-up, inflamed gingiva, tooth mobility, frequent and easy bleeding of gums on manipulation, suppuration at gingival margins, halitosis.
- Asymptomatic until advanced stages of disease



*THE AMERICAN ACADEMY OF PERIODONTOLOGY WARNS OF A SIGNIFICANT PUBLIC HEALTH PROBLEM

HALF OF AMERICAN ADULTS SUFFER FROM GUM DISEASE



*SOURCE: P.I. Eke, B.A. Dye, L. Wei, G.O. Thornton-Evans, and R.J. Genco. Prevalence of Periodontitis in Adults in the United States: 2009 and 2010. J DENT RES 0022034512457373, first published on August 30, 2012 as doi:10.1177/0022034512457373

- 47% of US dentate adults have periodontitis (Approx. 65 million adults)
- 38% of adults \geq 30yrs
- 64% of adults \geq 65yrs
- Primary risk factors:
 - Poor oral hygiene
 - Smoking
 - Diabetes
 - Genetics
 - Ethnicity

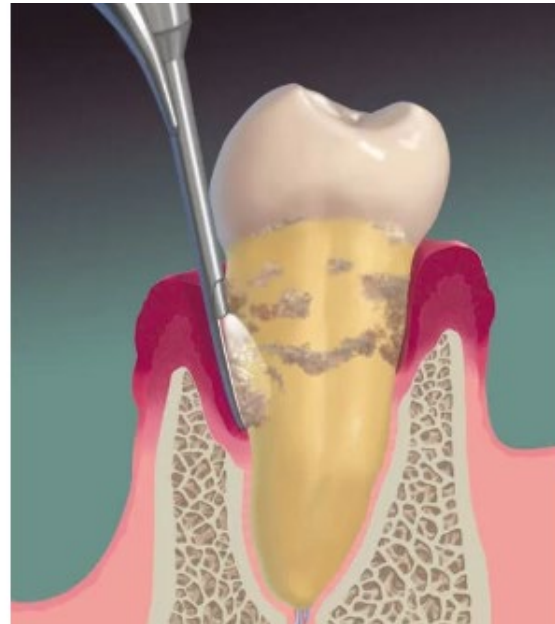
Treatment of Periodontal disease

- Goal: Remove the calcified bacteria on the root surface
 - Antibiotics have limited benefit. Need physical debridement.
 - 2 Common treatment modalities: Non-surgical vs surgical



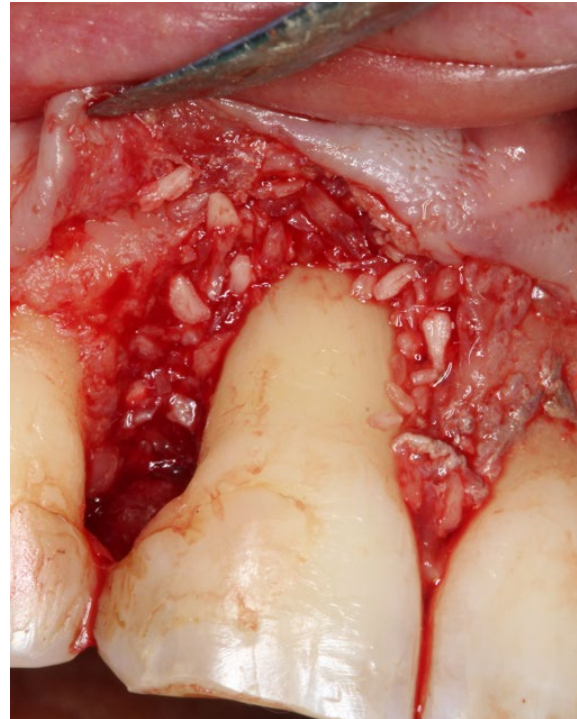
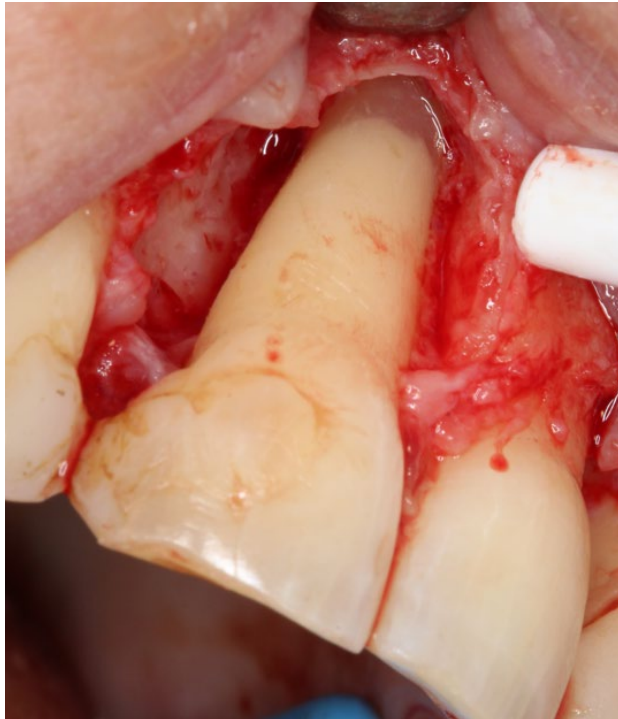
Treatment of Periodontal disease

- Non-surgical therapy (Scaling and Root Planing)
 - Typically completed by a hygienist
 - Good for patients who have limited dental care in the past
 - The cheapest route to treatment
 - Limited in ability access deep pockets



Treatment of Periodontal disease

- Surgical therapy
 - Typically completed by a periodontist
 - Surgically displace gingiva for direct access to root surface and surrounding bone
 - Provides opportunity for regeneration of periodontium
 - A more expensive approach to treatment, but most predictable



New Pt form

Please check any of the following which you have had or have at present:

- Low Blood Pressure
- High Blood Pressure
- Heart Attack/Stroke
- Artificial Heart Valve
- Heart Disease/Angina
- Cardiac Pacemaker
- Bleeding Disorders
- Heart Murmur w/Regurgitation
- Rheumatic Fever

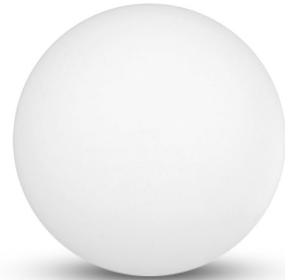
- Circulatory Problems
- Arthritis
- Asthma
- Epilepsy/Convulsions
- Diabetes/Kidney Disease
- Thyroid Problems
- Sinus Issues
- Tuberculosis
- Anemia

- Joint Replacement
- Hepatitis/Jaundice
- AIDS or HIV Infection
- Stomach Troubles/Ulcers
- Respiratory Problems/Emphysema
- Cancer/Radiation/Chemotherapy
- Osteoporosis/Osteopenia
- Cold Sores
- Other PERIODONTAL DISEASE

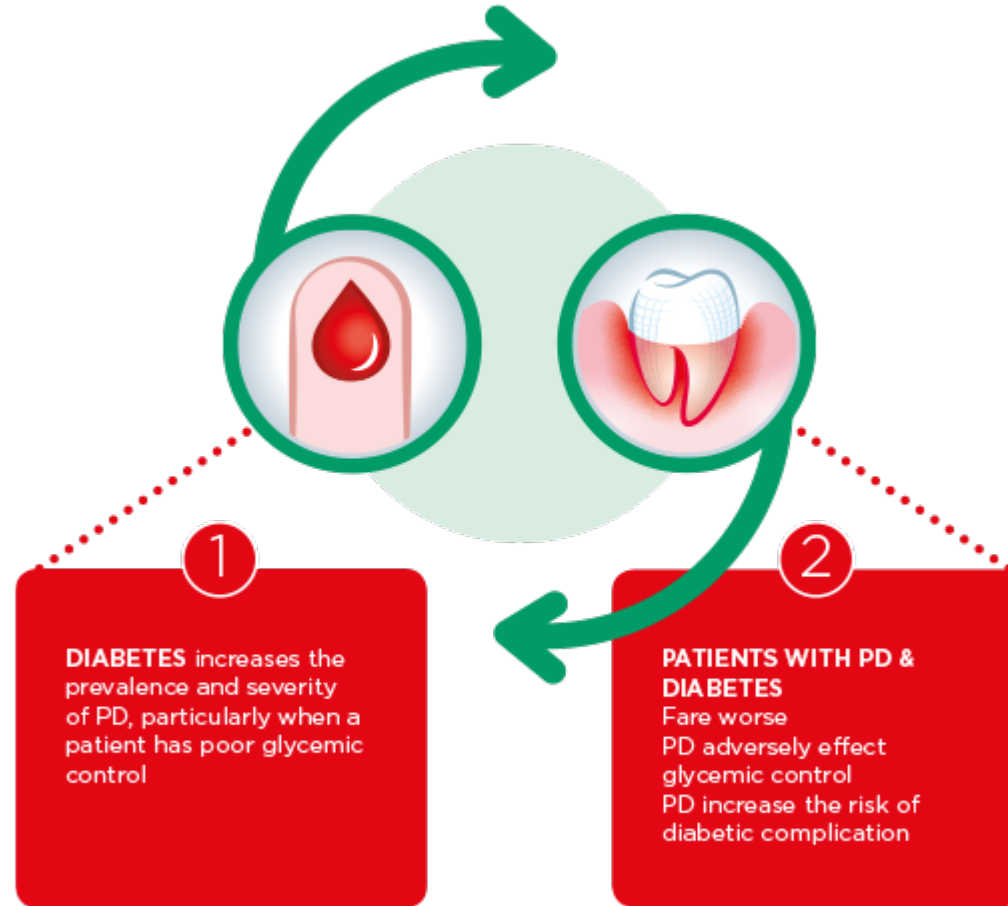
- Why do so many people automatically separate oral conditions from systemic conditions?
- What links come to your mind as health care providers?

Where on your body is it okay to bleed if you touch the skin?

- Surface area of periodontium = $75 \text{ cm}^2 = 11.6 \text{ in}^2$
- Established gingivitis (4-5mm PD's)
= wound surface area of $10\text{-}20 \text{ cm}^2 = 1.5\text{-}3.1 \text{ in}^2$
- Periodontitis (50% BL w/ gen mdr to severe PD's)
= wound surface area of $30\text{-}40 \text{ cm}^2 = 4.6\text{-}6.2 \text{ in}^2$

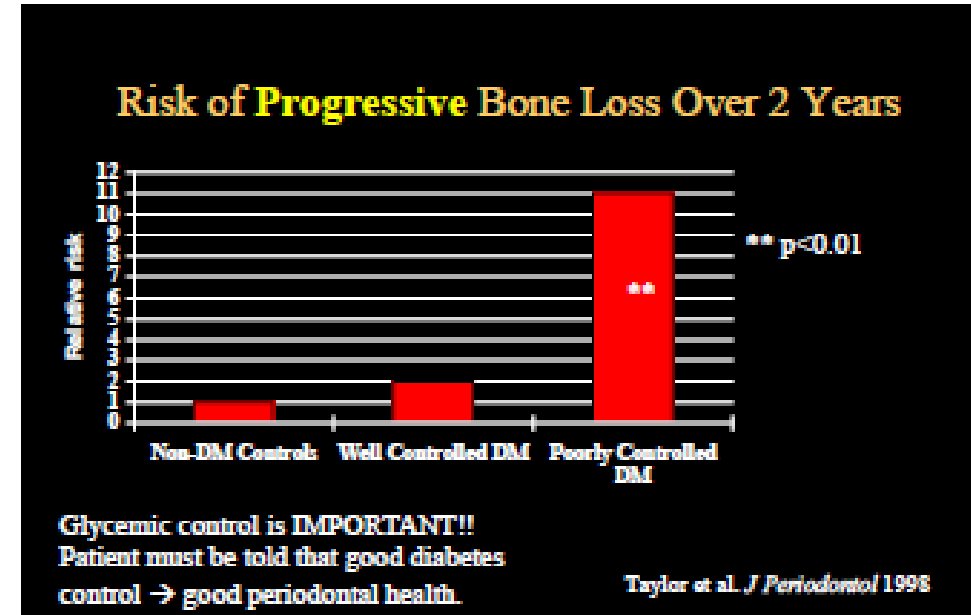


Diabetes Mellitus



Diabetes have higher risk of periodontitis?

- Study of diabetic children found odds ratio of developing periodontitis was 20.3 (Lalla et al. 2006)
- Poorly controlled diabetic patients were 2.9x more likely to have severe periodontitis (Tsai et al. 2002)
- Poorly controlled diabetic patients had a relative risk of nearly 11 compared to non-diabetic controls (Taylor et al. 1998)



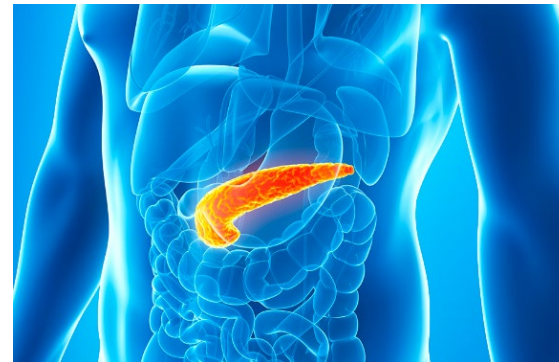
Periodontitis higher risk of Diabetes?

- Correlation has been found that patients with increasing severity of periodontitis have a higher average HbA1c
 - Periodontally healthy = mean HbA1c 5.7%
 - Mild periodontitis = mean HbA1c 6.1%
 - Severe periodontitis = mean HbA1c 6.3% (Teeuw, 2017)



How?

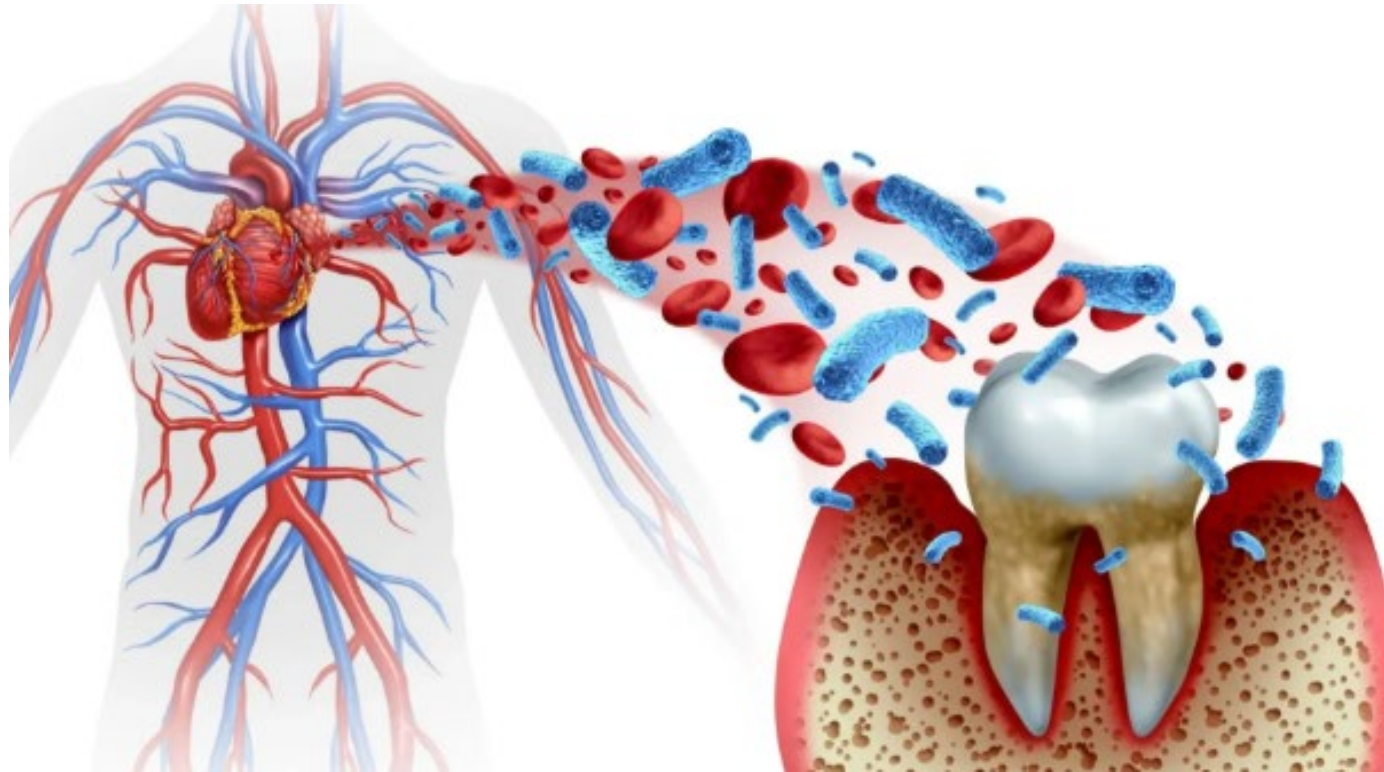
- Periodontitis increases systemic inflammation which lowers insulin sensitivity
- Diabetes increases accumulation of advanced glycoend products in end organs, which the periodontium is considered
 - Decreases blood flow and collagen turn-around which amplifies periodontal destruction
- Alters RANKL/OPG ratio which increases bone destruction around teeth
- So, could treating periodontitis positively impact pts with diabetes?



Can treating periodontitis influence HbA1c?

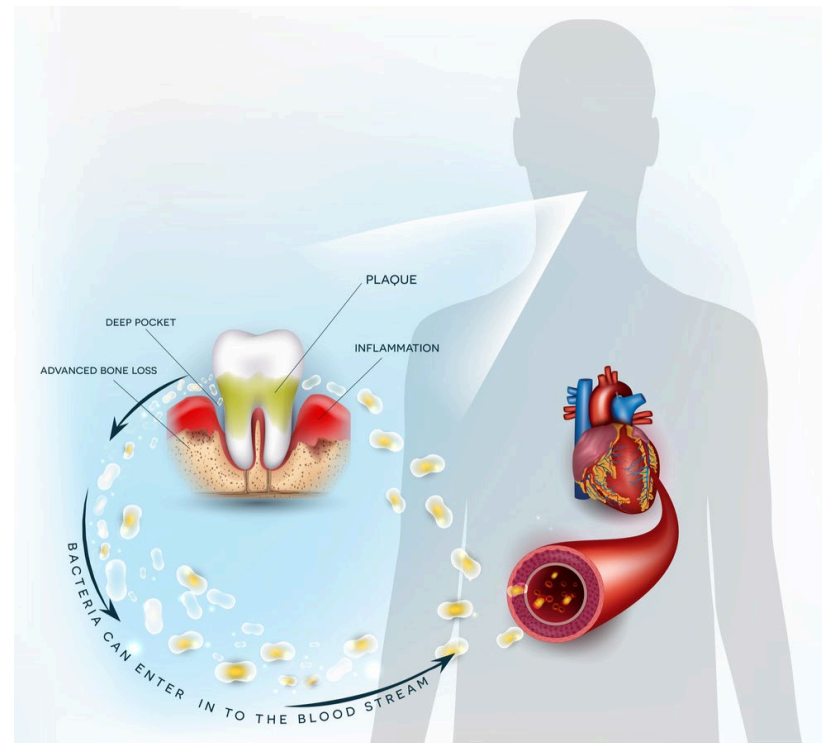
- Treatment of periodontitis showed significant decrease in pro-inflammatory cytokines (CRP, TNF-a, IL-6, Fibrinogen (Teeuw, 2014))
- Case studies:
 - Periodontal therapy (deep cleaning and extraction of hopeless teeth) resulted in reduction of HbA1c by 10% (Grossi et al. 1997), and 17% (Stewart et al. 2001)
- Meta-analyses:
 - Deep cleanings showed reduction in HbA1c of 0.65% (Sgolastra et al. 2013)
 - Deep cleanings showed reduction of HbA1c of 0.36% (Engebretson & Kocher, 2013)
 - Cochrane Review (2022) concluded treating periodontitis can influence HbA1c to a similar degree as adding a secondary diabetic medication for a patient (Simpson, 2022)

Cardiovascular disease



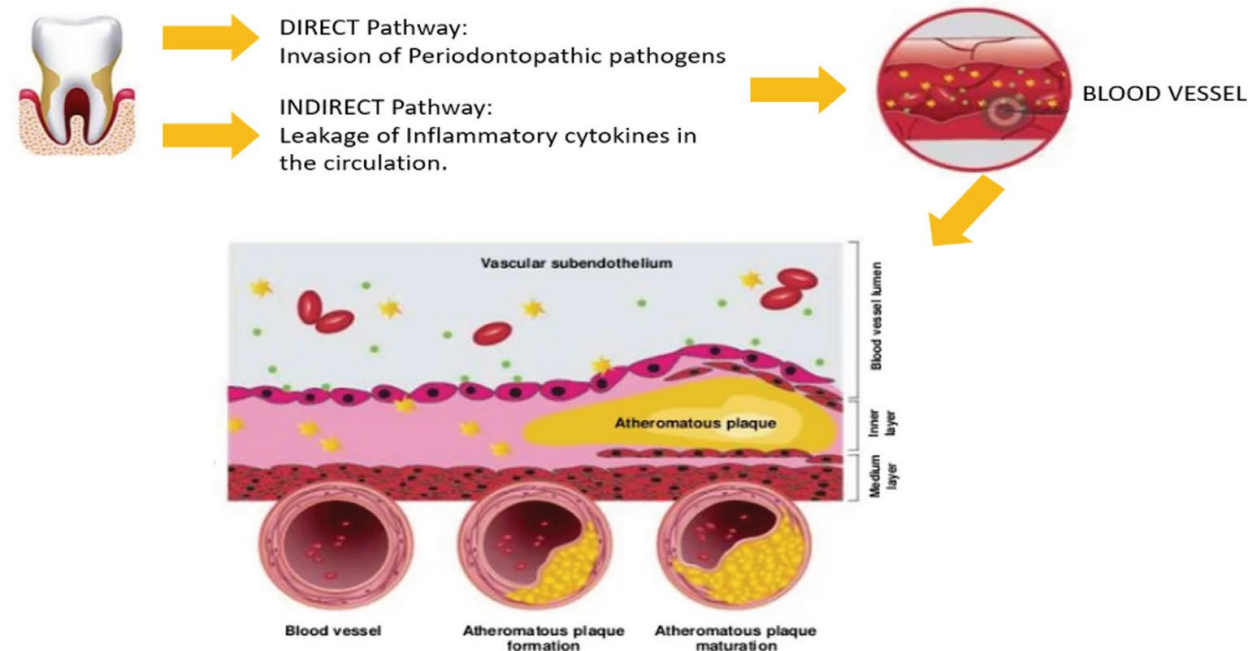
Cardiovascular disease

- 5 case-control studies: periodontitis has odds ratio of 2.22 for developing coronary heart disease (CHD)
- 5 prospective cohort studies: periodontitis had 1.14 higher risk of CHD
- Study of carotid stenosis surgical specimens found that 44% of atheromas had at least one periodontal pathogen



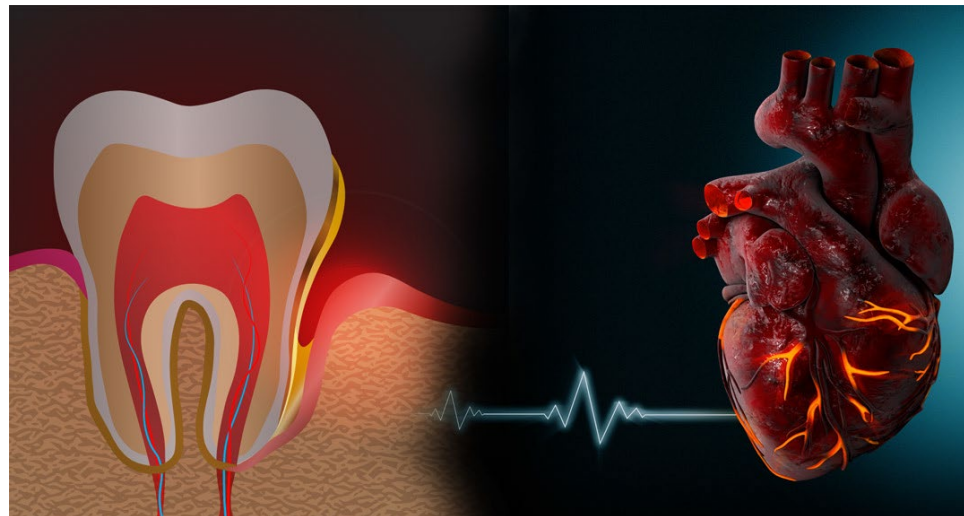
Cardiovascular disease

- How?
 - Increased systemic pro-inflammatory cytokines (Fibrinogen, CRP, IL-6) increases risk of cardiovascular disease
 - Stimulation of the gingiva in any way (eating, brushing, chewing gum, etc.) induces bacteremia and dissemination of endotoxins that can damage vascular endothelial and alter endothelial & platelet function
 - Endothelial-mediated vasodilation is inhibited in patients w/ periodontitis (Geerts et al. 2002)



Can treating Periodontitis lower risk of CVD?

- Treatment of periodontitis showed significant decrease in pro-inflammatory cytokines (CRP, TNF-a, IL-6, Fibrinogen (Teeuw, 2014)
- Treatment of periodontitis improved endothelial cell function as seen via brachial artery vasodilation (Tonetti, 2007)
- Interventional studies have show that treating periodontitis can also reduce systolic and diastolic BP by 12 mmHg and 10mmHg, respectively (Surma et al, 2021)



Pregnancy

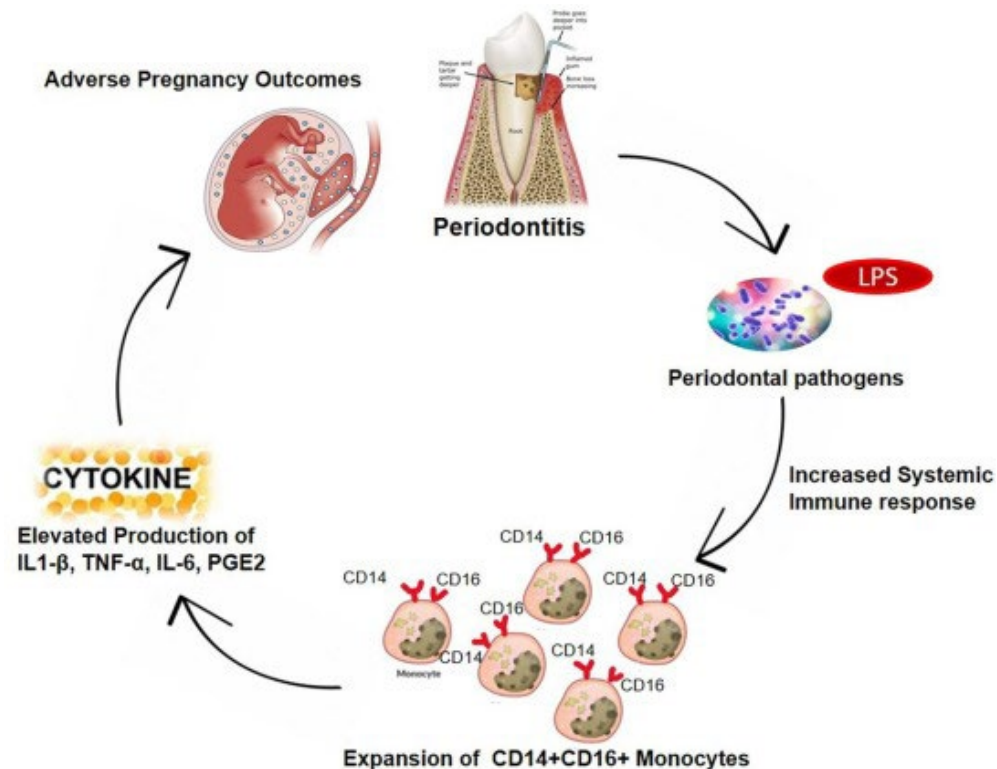


Pregnancy and Periodontal disease

- Pre-term infant = < 37 completed gestational weeks
- Low birth weight = less than 5lbs 8oz
- Periodontitis made a significant, independent contribution to spontaneous preterm birth after adjusting for other known risk factors up to a degree of 7.9x risk (Offenbacher, 2006)
- Women with antibodies to *P. gingivalis* (a periodontal pathogen) were 4x more likely to deliver low birth weight babies (Dasanayake, 2001)

Pregnancy and Periodontal disease

- How?
 - Gram negative anaerobes, endotoxins, and increase in inflammatory mediators such as prostaglandins (PGE2) can increase risk



Pregnancy and Periodontal disease



- Does treating periodontitis lower risk?
 - Periodontal therapy is safe during pregnancy, especially during 2nd trimester (Offenbacher et. al)
 - Women treated for periodontitis during pregnancy had a PTLBW rate of 1.8%
 - Women treated for periodontitis after pregnancy had a PTLBW rate of 10.1%
 - Overall odds ratio for PTLBW was 4.7 in women not treated for periodontitis (Lopez, 2002)

Speed Round

- Osteoporosis
 - Women with osteoporosis had 5% more clinical attachment loss around the periodontium (Penoni, 2017)
 - Longitudinal study of men and women showed individuals diagnosed with osteopenia developed deeper periodontal pocketing over 3 years (Yoshihara, 2004)
- Erectile Dysfunction
 - Study of patients showed patients with ED had a prevalence of periodontitis at 26.9% vs. 9.4% in patients without ED
- Alzheimer's disease
 - Periodontitis has an odds ratio of 1.67 in regards to developing Alzheimer's disease and cognitive decline (Kaliamoorthy, 2022)
- Other links include obesity, rheumatoid arthritis, GI disorders, cancer, etc.

Main take-aways

- It all comes back to systemic inflammation
 - Patients with periodontitis have stores of pathogenic bacteria driving up their systemic markers of inflammation
 - These pro-inflammatory agents circulate through the body and can affect most body systems
 - As health care providers, identification of signs of oral inflammation and recommendations for resolution are key, not only to preserve their dentition, but also to help mitigate systemic manifestations
 - Early treatment of periodontitis, and surgical therapy of advanced cases, is key in effective management of oral disease



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