



**ARKANSAS DEPARTMENT OF HEALTH**

# **Oral Health and the Diabetic Patient**

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# Disclosure

No financial backing or endorsements to report

If a dentist make his money off people with unhealthy teeth, why should I trust a toothbrush and toothpaste that 4 out of 5 dentists recommend?

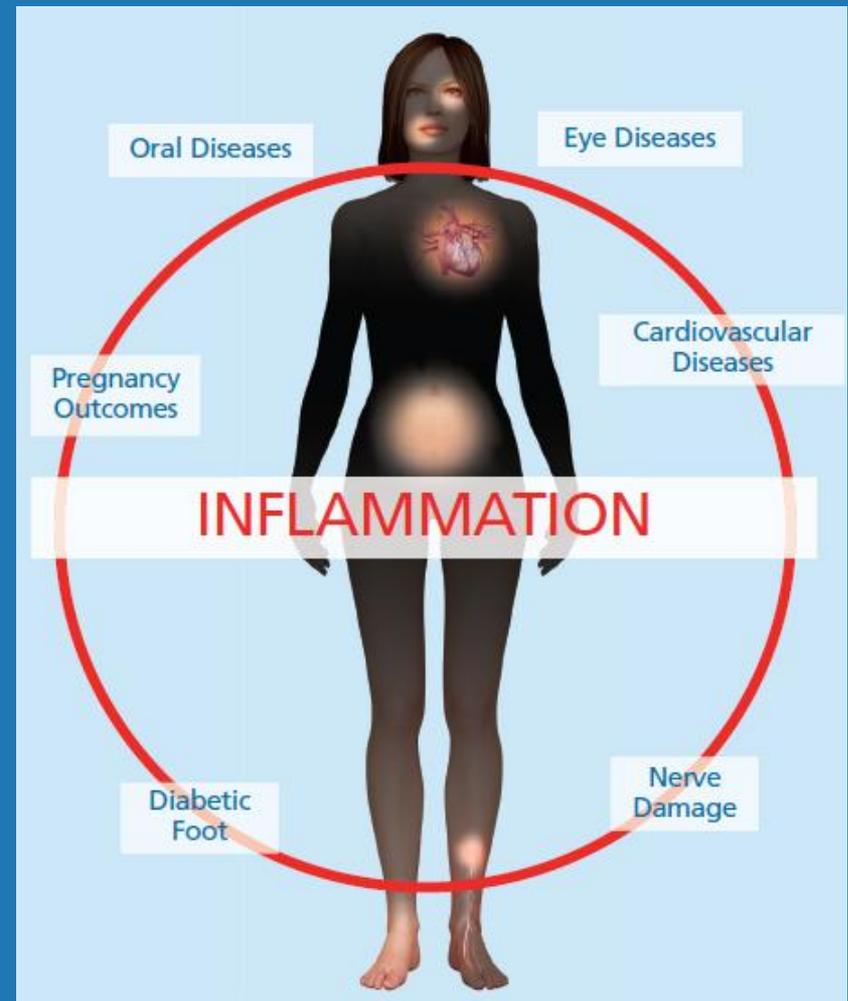


# Objectives

- Gain an understanding of what constitutes periodontal disease.
- Identify the role that inflammation plays in periodontal disease and diabetes.
- Define the bidirectional association between periodontal disease and diabetes.
- Appreciate the benefits of good oral health in the management of the diabetic patient.

# “Classic” complications of DM

- Microangiopathy
- Nephropathy
- Neuropathy
- Macro vascular disease
- Delayed wound healing
- *Periodontal disease*



# What is periodontal disease?

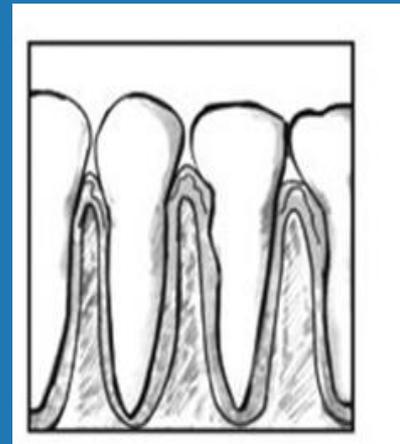
- A chronic anaerobic gram-negative bacterial infection
  - triggers various immunity responses
  - increased inflammatory mediators
    - Prostaglandin E
    - Interleukin-1 & -6
    - Tumor necrosis factor-alpha (TNF)
    - C-reactive protein (CRP)

# Periodontal Disease

- Gingivitis
  - Reversible condition
  - Red, inflamed gingiva
  - Proper cleaning, better home care

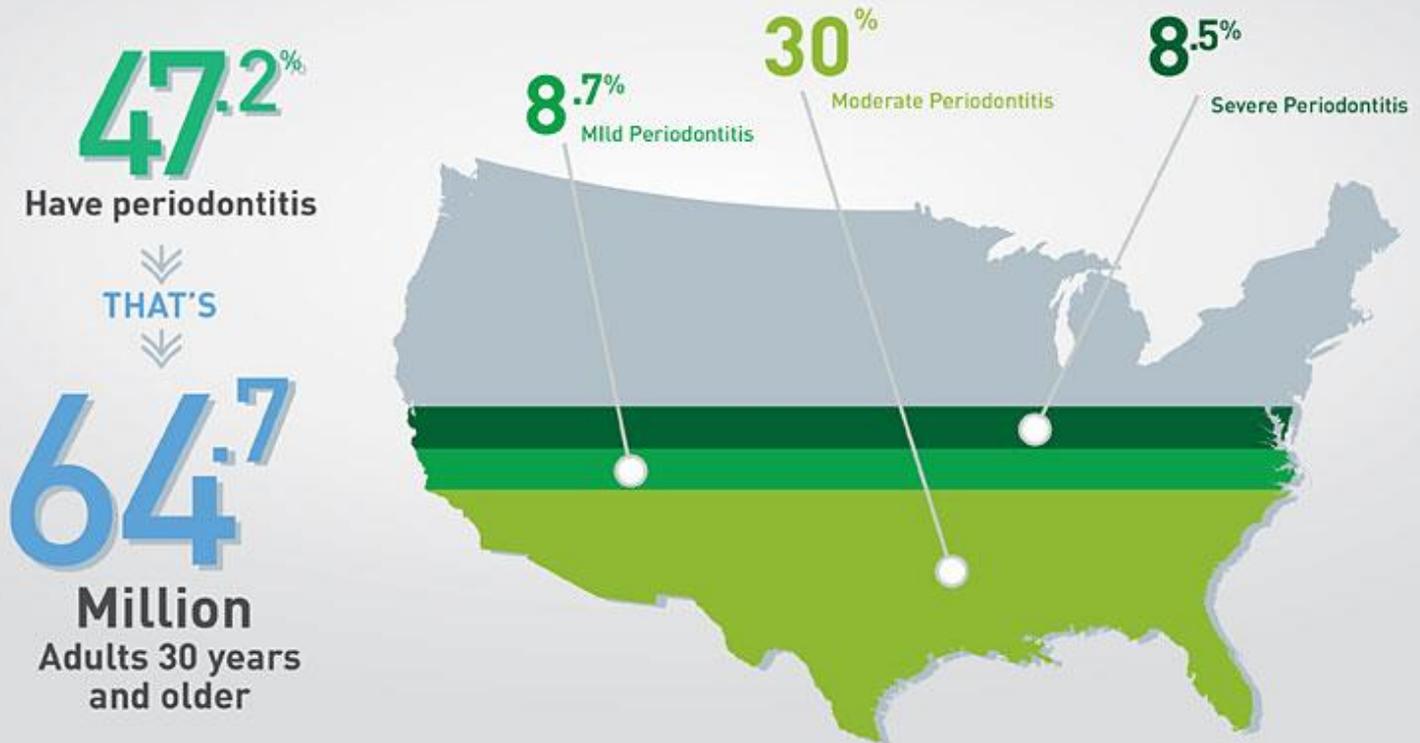


- Periodontitis
  - Irreversible condition
  - Resultant loss of bone
  - Poor stability of teeth



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

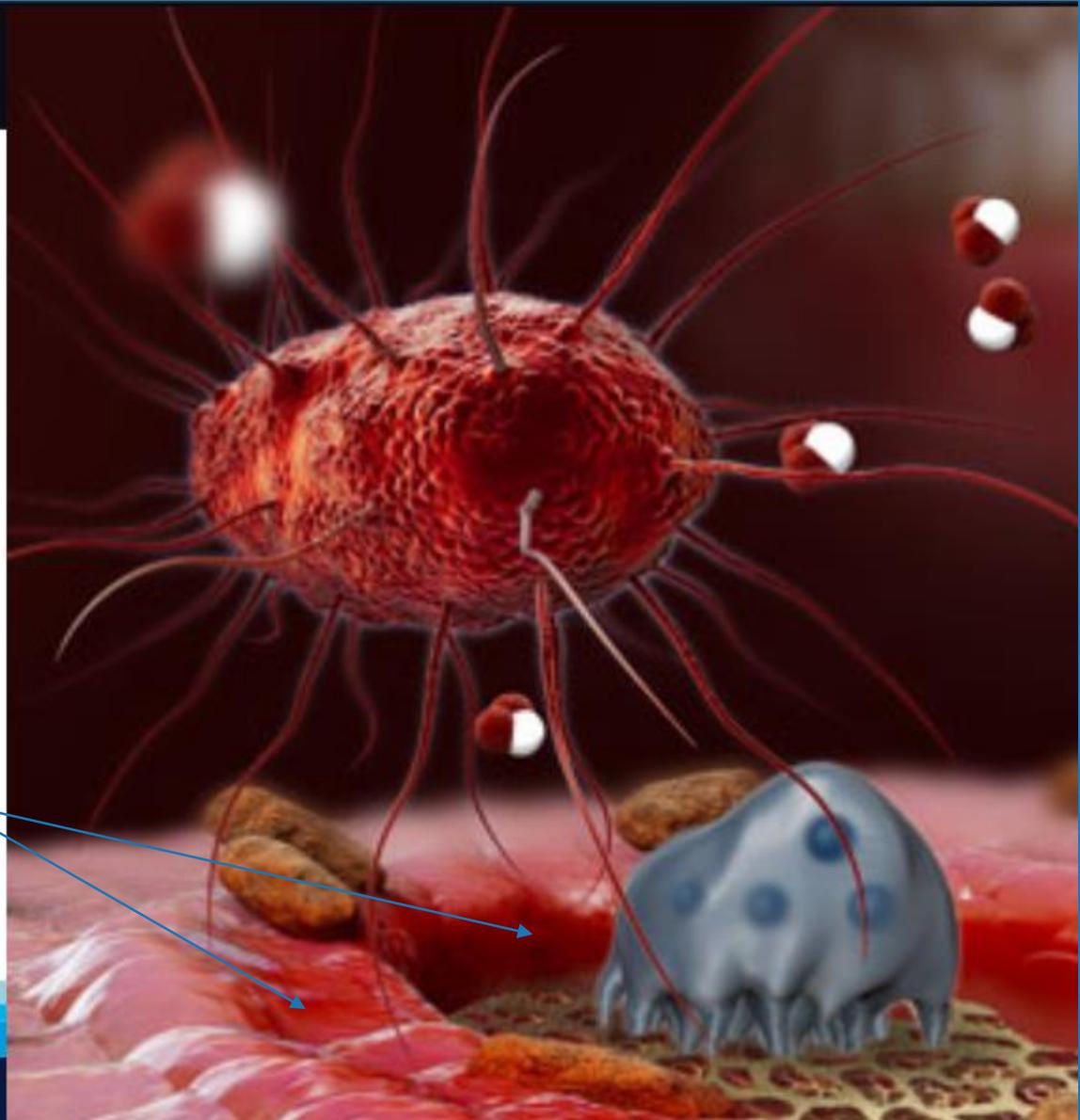
# HALF OF AMERICAN ADULTS SUFFER FROM GUM DISEASE



\*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

*Porphyromonas gingivalis (Pg)*

Micro-ulcerations



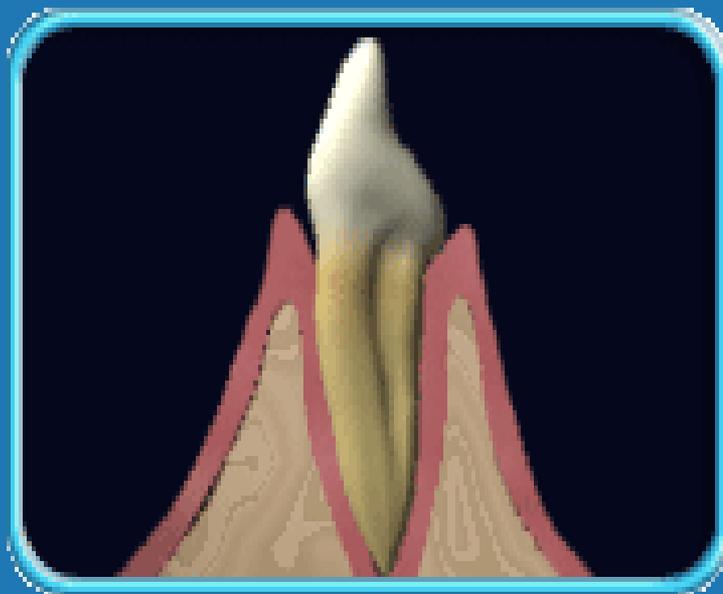
*George Hajishengallis*

# Healthy Gingival Tissue



- A healthy coral pink color of gingival tissue
- Firm attachment of the tissue along the teeth

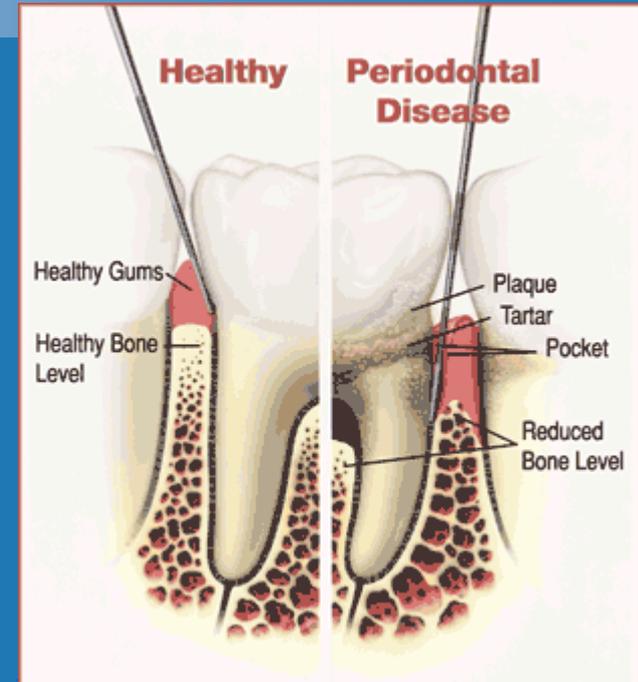
- ❖ Periodontal diseases are serious bacterial infections that destroy the attachment fibers and supporting bone that hold the teeth in the mouth.



- ❖ When this attachment is destroyed, the gum tissue separates from the tooth forming pockets that fill with plaque and harbor bacteria.

# Detection of Disease

- The chronic cases are easy to detect with a simple oral exam
- The mild to moderate cases require a more in-depth evaluation.
- Periodontal probing measures the sulcus depth around each tooth
- Healthy areas measure 3mm or less without bleeding



# Gingivitis

- **Plaque-Induced**
  - *Bacterial infection*
    - no other local contributing factors
    - with local contributing factors
      - Anatomic tooth factors
      - dental restorations
      - root fractures
      - cervical root resorption



# Mild-Moderate Periodontal Disease

- Gingiva appears red, swollen, and inflamed
- Interdental papilla is puffy and bleeds easily when probed
- Generalized plaque accumulation present

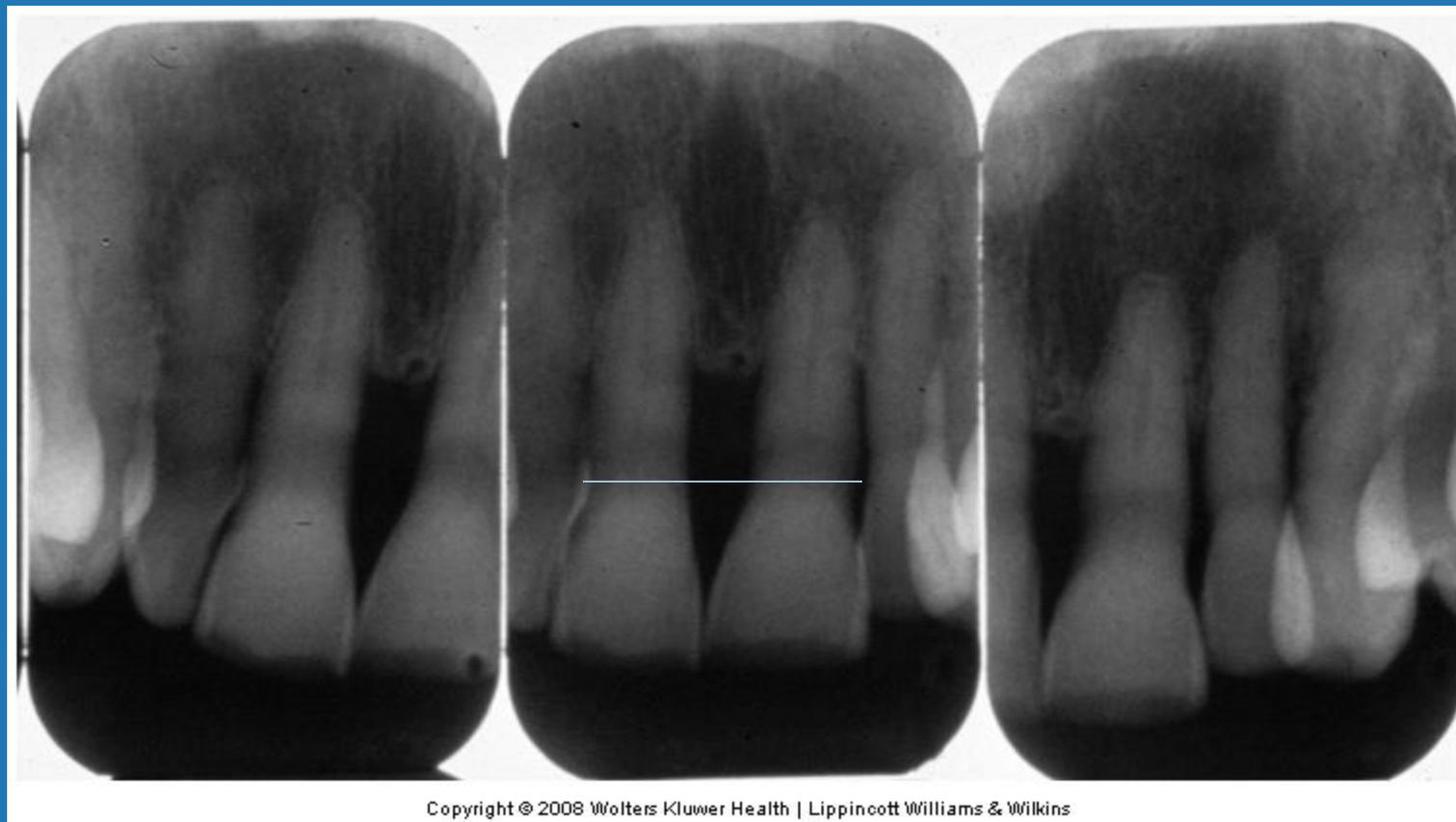


# Severe cases

- Irreversible loss of supporting alveolar bone
- Tooth mobility of varying degrees
- ***Putrid halitosis***



# Periodontitis - Bone Loss



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# Altered response

- Impaired action of immune cells
  - neutrophil adherence, chemotaxis, phagocytosis
  - inhibited bacterial killing within periodontal pocket
- Diabetic produces elevated levels of TNF- $\alpha$  in response to *P. gingivalis*
- Elevated inflammatory mediators in gingival crevicular fluid (GCF) related to glycemic control
  - Interleukin-1 beta (IL-1 $\beta$ ) twice as high when HbA1c >8%
  - Increased inflammation, attachment loss, bone loss

# Periodontal Disease & Diabetes Mellitus

## Adverse effects

- Diabetes  Periodontal Disease (PD)
  - Hyperglycemia isn't a diagnosis but it promotes PD
- Periodontitis  Diabetes
  - Inflammation promotes hyperglycemia, prediabetes, Type 2 diabetes

## Positive effects

- Periodontal treatment improves glycemic level
  - A mean decrease of 0.4 percentage points in HbA1c

- “Every percentage point drop in HbA1c level
  - reduces the risk of microvascular DM complications by **40%**
  - reduces the risk of dying from cardiovascular disease by **25%**

# Oral Health & Diabetes

- **85% of patients** with Type 2 diabetes reported they received *no information* on the association between diabetes and oral health
- Need to improve the collaborative working relationship between oral health providers (OHP) and primary care physicians (PCP)
  - ASK patients about their ‘dental home’
  - Stress the importance of good oral health

# How to treat periodontal disease

- Mechanical removal of pathogens
  - Scaling and root planning
  - Locally applied antimicrobials benefit pockets >5mm
- Increase effectiveness of home care
  - Antimicrobial/anti-inflammatory toothpaste containing *triclosan*
  - mouth rinses containing chlorhexidine (CHX)

# Nonsurgical Periodontal Therapy



# Do Your Part



**LOVE THE GUMS YOU'RE WITH**

## TIPS FOR A MODEL MOUTH

BRUSH. FLOSS. REPEAT.

- 1.** Brush your teeth twice a day. **No exceptions!**
- 2.** Floss daily. Brushing alone doesn't remove plaque below the gum lines, which houses more than 500 different species of bacteria. **It's simple – You only need to floss the teeth you want to keep.**
- 3.** **Maintain good oral health habits.** It's the only way to prevent symptoms like swollen gums, tooth loss and bad breath.
- 4.** **Visit Perio.org** for more tips to keep your gums healthy!



<http://loveyourgums.tumblr.com/post/163380038821/have-you-given-your-gums-the-love-they-need-today>



Taking candy from a baby is  
actually the responsible thing to  
do.

*Be true to your teeth  
or they will be false to you!*



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