

The Essential Role of Oral Healthcare Providers in the War on Diabetes



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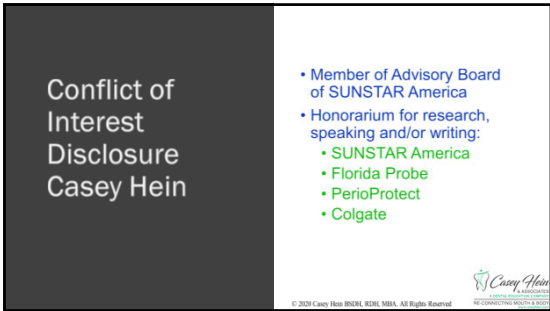


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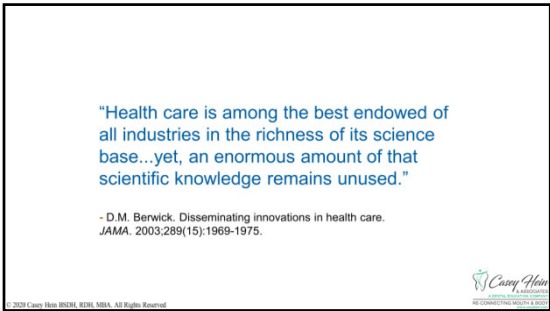
The Essential Role of Oral Healthcare Providers in the War on Diabetes; December 16, 2020



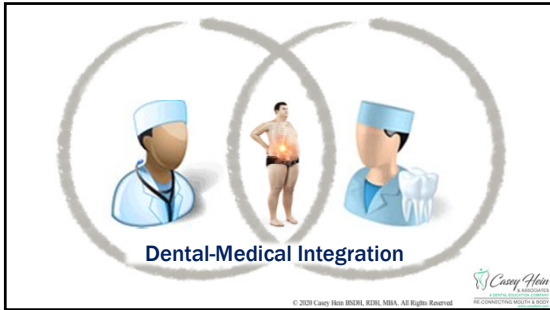
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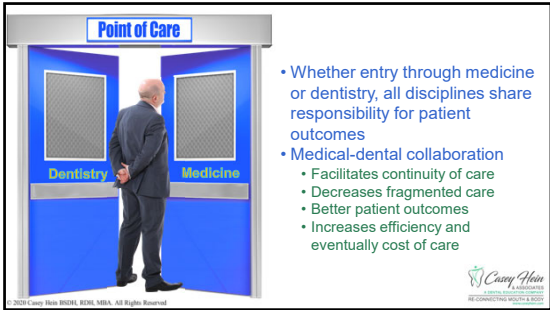
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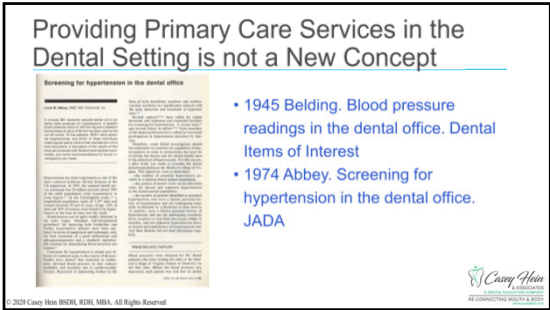
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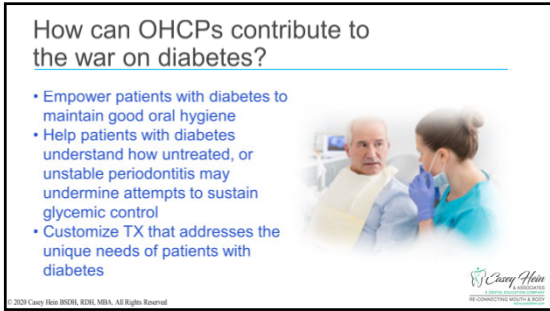
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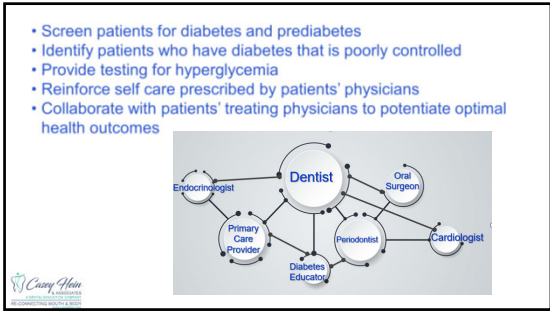
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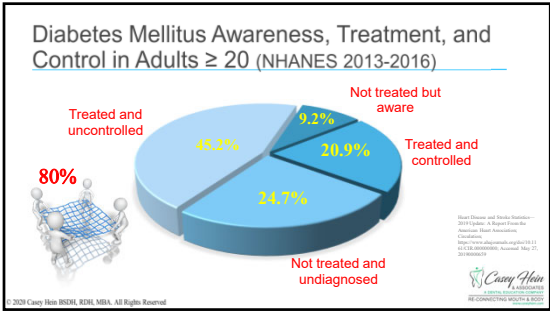
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8



9

Diabetes Catchment in Dentistry




Undiagnosed diabetes Treated but uncontrolled diabetes Aware of diabetes but not treated

• Assumption: Average general dental practice consisting of 2,000 patients; 1,400 adults at 80%: 1,120 at risk patients

• Does not include young children and adolescents

10

Spiraling Interrelationship between Periodontal Infection & Hyperglycemia



Periodontal disease
↑ hyperglycemia

Chronic hyperglycemia
↑ periodontal destruction

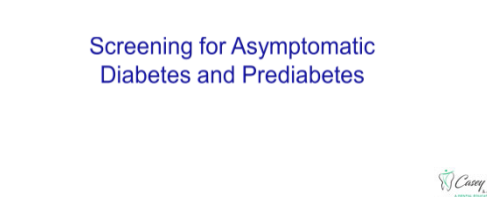
Ongoing source of systemic challenge from Gram-negative anaerobic bacteria, bacterial products and locally produced inflammatory mediators, TNF- α , IL-6, IL-1, effect glucose and lipid metabolism

Sustained hyperglycemia prevents breakdown of bacteria in periodontal pockets

Manousheh M. et al. Comparison of neutrophil chemotactic response in diabetic patients with mild and severe periodontal disease. J Periodontol 1987

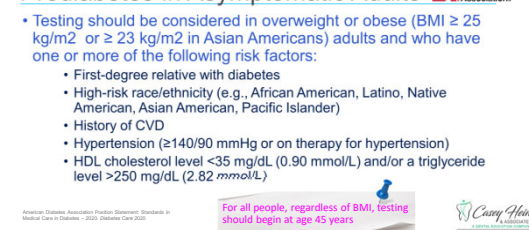
11

Screening for Asymptomatic Diabetes and Prediabetes



12

Criteria for Testing for Type 2 Diabetes or Prediabetes in Asymptomatic Adults




• Testing should be considered in overweight or obese (BMI ≥ 25 kg/m² or ≥ 23 kg/m² in Asian Americans) adults and who have one or more of the following risk factors:

- First-degree relative with diabetes
- High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
- History of CVD
- Hypertension ($\geq 140/90$ mmHg or on therapy for hypertension)
- HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)

For all people, regardless of BMI, testing should begin at age 45 years

13

Women with Polycystic Ovary Syndrome (PCOS)



• Women with Polycystic Ovary Syndrome (PCOS)

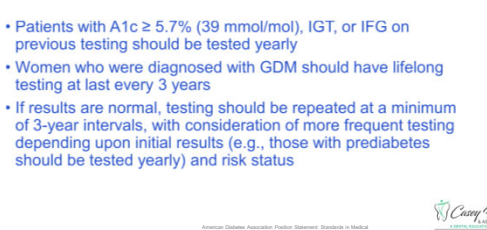
• Physical inactivity

• Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)

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14

Patients with A1c $\geq 5.7\%$ (39 mmol/mol), IGT, or IFG on previous testing should be tested yearly



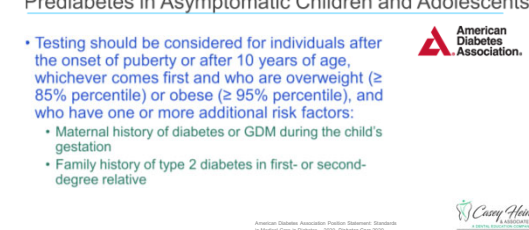
• Patients with A1c $\geq 5.7\%$ (39 mmol/mol), IGT, or IFG on previous testing should be tested yearly

• Women who were diagnosed with GDM should have lifelong testing at least every 3 years

• If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending upon initial results (e.g., those with prediabetes should be tested yearly) and risk status

15

Risk-Based Screening for Type 2 Diabetes and Prediabetes in Asymptomatic Children and Adolescents

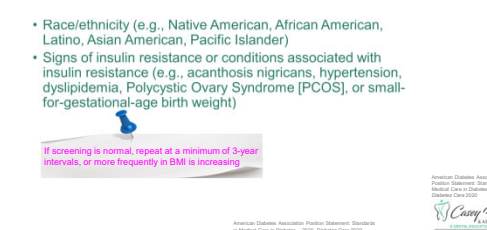


• Testing should be considered for individuals after the onset of puberty or after 10 years of age, whichever comes first and who are overweight ($\geq 85\%$ percentile) or obese ($\geq 95\%$ percentile), and who have one or more additional risk factors:

- Maternal history of diabetes or GDM during the child's gestation
- Family history of type 2 diabetes in first- or second-degree relative

16

Race/ethnicity (e.g., Native American, African American, Latino, Asian American, Pacific Islander)



• Race/ethnicity (e.g., Native American, African American, Latino, Asian American, Pacific Islander)

• Signs of insulin resistance or conditions associated with insulin resistance (e.g., acanthosis nigricans, hypertension, dyslipidemia, Polycystic Ovary Syndrome [PCOS], or small-for-gestational-age birth weight)

If screening is normal, repeat at a minimum of 3-year intervals, or more frequently in BMI is increasing

17

Diagnostic Criteria for Diabetes and Prediabetes

	FPG	OGTT	HbA1c (%)
Diabetes	≥ 126 mg/dL (7.0 mmol/dL)	≥ 200 mg/dL (11.1 mmol/dL)	$\geq 6.5\%$ (48 mmol/mol)
Prediabetes	100-125 mg/dL (5.6-6.9 mmol/L) IFG	140-199 mg/dL (7.8-11.0 mmol/L) IGT	5.7-6.4% (39-47 mmol/mol)

To test for prediabetes and type 2 diabetes, fasting plasma glucose, 2-h plasma glucose during 75-g oral glucose tolerance test, and A1C are equally appropriate

In the absence of unequivocal hyperglycemia, diagnosis requires two abnormal test results from the same sample or in two separate test samples.

18

The Essential Role of Oral Healthcare Providers in the War on Diabetes; December 16, 2020

For Patients Who have been Diagnosed with Diabetes

FOR PATIENTS WHO HAVE BEEN DIAGNOSED WITH DIABETES

- What is the name and phone number of your treating physician? Name: _____ Phone: _____
- When was your diabetes first diagnosed? (1) Type 1 (2) Type 2 (3) Gestational Diabetes (4) Other _____
- When was the last time you saw your physician for your diabetes? _____
- How often do you see your treating physician for your diabetes? _____
- Are you working with a diabetes educator? _____
- How is your diabetes being treated? (1) Diet & exercise (2) Medication _____
- Do you take insulin? _____
- If yes, how do you inject it? (1) Oral (2) Insulin Pump _____
- How often do you check your blood sugar? (1) Once daily (2) Once every 2-3 days (3) Once every 4-7 days (4) Once every 1-2 weeks _____
- Do you keep a record of your glucose test results? _____
- Have you ever experienced any hypoglycemic symptoms (dizziness, agitation, anxiety, sweating, shakiness, nausea, heart racing, and drowsiness)? _____
- Have you had any recent changes in your oral health (bleeding, bad breath, bad taste, or sores in your mouth)? _____
- Have you had any changes in your oral health (bleeding, bad breath, bad taste, or sores in your mouth)? _____
- When was the last time you saw your dentist? _____
- Do you have any difficulty swallowing or difficulty eating? _____
- What was the date of your most recent lab work? _____
- Do we have your permission to ask your physician to send us copies of the results of your lab work? _____

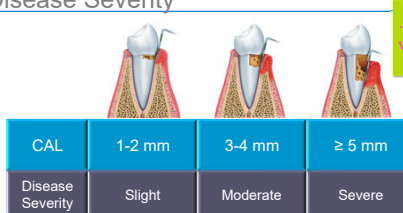
This patient questionnaire can be found in the product section of www.caseyhein.com

19

A New Metric: Rate of Periodontal Disease Progression

20

1999 Classification of Periodontal Disease Severity

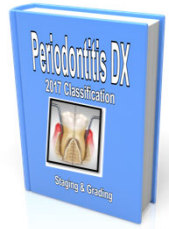


CAL	1-2 mm	3-4 mm	≥ 5 mm
Disease Severity	Slight	Moderate	Severe


and that was it!

21

Diagnostic Framework



- Staging:**
 - Severity
 - Complexity of management
 - Extent & distribution
- Grading:**
 - Rate of progression
 - Future risk
 - Potential health impact

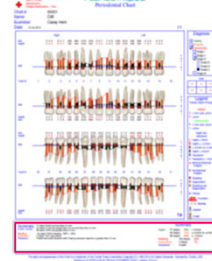


22

Meet Tony



23



- 142 sites (83%) BOP
- 77 sites (46%) PD < 4 mm
- 23 sites (14%) PD ≥ 4 < 5
- 68 sites (40%) PD ≥ 5 mm
- CAL ≥ 5 mm on 26 teeth
- CAL at site of greatest loss = 11 mm

24



Chief Complaint

- Age 50
- BMI = 30
- Type 2 diabetes
- Stage 1 hypertension
- HbA1c = 8.8 (14.1 mmol/mol)

"Not a big deal"




25

Diabetes and the 2017 Classification System for Periodontitis


Clinical Presentation	Diagnosis
> 30% teeth with bone loss	Generalized Periodontitis
CAL at site of greatest loss = 11 mm	
Radiographic bone loss > 33%	Stage III
Tooth loss due to periodontitis = ≤ 4	
% Bone Loss/Age = .64 (RBL of 40% /Age 62)	Grade C (Rapid Rate of Disease Progression)
Grade Modifiers: HbA1c: 8.8%; BMI 30 (obese); stage 1 hypertension	
BOP at 4 mm PD Sites = 83%	Unstable

26



OLD WAY

TX based on one-size-fits-all, cookie-cutter approach (Less critical thinking required)




NEW WAY

TX customized according to oral and systemic health (More critical thinking required)

Periodontal DX, TX and long-term stabilization of the reduced periodontium must focus on dynamic changes in the rate of disease progression which is very often a function of systemic health

27

Periodontal Disease Risk Assessment



- Smoking
- Poorly-controlled diabetes
- Osteoporosis
- Immunodeficiency
- Rheumatoid arthritis
- Obesity
- Certain medications
- Genetics (large portion of the variance in clinical severity of periodontitis)

2008 American Academy of Periodontology Statement on Risk Assessment*


60% Non-plaque related risk factors

20% risk from plaque

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28

Systemic Diseases that may be Influenced by Periodontal TX



- Diabetes
- Coronary artery disease
- Cerebrovascular disease
- Respiratory diseases
- Rheumatoid arthritis
- Dialysis
- Metabolic Syndrome
- Adverse pregnancy outcomes
- Others?

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29

Assessing Stability in a Reduced Periodontium

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30

A New Therapeutic Target: Periodontal Disease Remission/Control, with Reduced Periodontium




- Remission:
 - Symptoms become less severe but not fully resolved
 - Significant decrease in inflammation
 - Improvement in other clinical parameters
 - Modifying and predisposing factors not fully controlled
 - Stabilization of disease progression

Low disease activity may be an acceptable alternative therapeutic target in long-standing disease

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31

Assessment of the Status/Stability

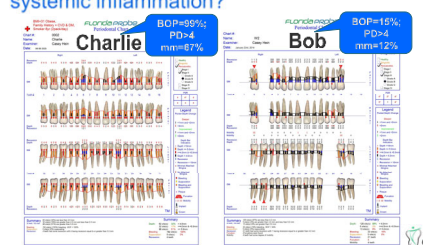


	Periodontal disease stability	Periodontal disease remission/control
Bleeding upon probing	No/Minimal	Significantly reduced
Modifying factors	Controlled	Not fully controlled
Predisposing factors	Controlled	Not fully controlled

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32

Who has the greatest risk for amplified systemic inflammation?



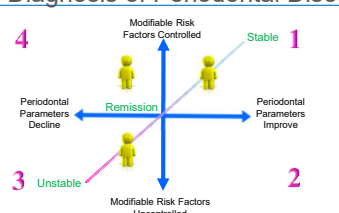
Charlie BOP=50%, PD>4 mm=67%

Bob BOP=10%, PD>4 mm=12%

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33

The Role of Continuous Risk Assessment in the Diagnosis of Periodontal Disease



4 Modifiable Risk Factors Controlled

1 Stable

2 Modifiable Risk Factors Uncontrolled

3 Unstable

Periodontal Parameters Decline

Periodontal Parameters Improve

Remission

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34

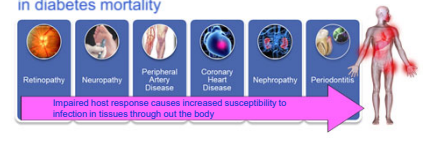
Point-of-Care Glycemic Control Testing

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35

Reductions in HbA1c Reduce Risk for Complications of Diabetes

- 1 %-age point ↓ in HbA1c = 35% less risk for microvascular complications of diabetes
- Average reduction of 0.20% in HbA1c ≈ 10% reduced risk in diabetes mortality



Retinopathy, Neuropathy, Peripheral Artery Disease, Coronary Heart Disease, Nephropathy, Periodontitis


Impaired host response causes increased susceptibility to infection in tissues throughout the body

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36

Measurement of Long Term Control of Glucose (Blood Sugar) – HbA1C

- Measure of the amount of glucose attached to red blood cells, correlated to average blood glucose level over patients' recent history (≈ 3 months)
- Fasting not required
- HbA1c ≤ 7% reduces microvascular and neuropathic complications of diabetes
- Only about 37% of patients achieve

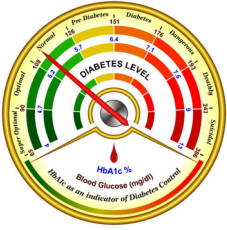


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37

Monitor HbA1c soon after DX of diabetes to reduce macrovascular disease

- Test HbA1c 2/year in patients who are meeting treatment goals (and who are stable)
- Test HbA1c 4/year for patients whose therapy has changed or who are not meeting glycemic goals




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38

CDT Code: D0411: HbA1c In-Office Point-of-Service Testing

- Effective January 1, 2018
- Analyzes percentage of glycosylated hemoglobin; snapshot of glycemic control (over about 3 months)

Excellent	Good	Poor
< 5.7	5.7 – 6.4	6.5 or higher




PTS Diagnostics
A1c Now
Alere Afinion

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39

CDT Code: D0412: Blood Glucose Level Test-in-Office using a Glucometer (POCT)

- Effective January 1, 2019
- Provides immediate findings of a patient's blood glucose level at time of sample collection
- Added to plans that cover D0411




Hypoglycemia	Likely Acceptable	Hyperglycemia
< 70 mg/dl	80 – 180 mg/dl	> 200 mg/dl

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40

Performing a Finger Stick Procedure

1. Select finger, massage
2. Clean and dry site
3. Using a lancet, puncture skin
 - 30-gauge lancet will suffice (for most people); 25 - 28 for thicker skin; 32 or 33 for very thin skin
4. Wipe away the first blood before collecting the sample without "milk the finger"
5. Place the sample into the analyzing device
6. Read the result; 5 minutes for PTS Diagnostics' A1c Now



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41

Patient Candidates for Point-of-Care Glucose Testing

- Gingivitis or periodontitis
- Obese or overweight
- Sedentary lifestyle
- Family HX of diabetes
- Poor response to treatment
- Delayed wound healing
- Symptoms of diabetes
- Immunocompromised
- High risk ethnic background (e.g., African American, Latino, Native American, Asian American, Pacific Islander)




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42

The Importance of Monitoring HbA1c in Patients who have Diabetes

- For patients with a history of well-controlled diabetes, increased blood sugar levels may signal increased risk for periodontal deterioration
 - Patients with no history of periodontal disease
 - Patients in periodontal maintenance
 - New patients
 - Patients with pre-diabetes




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43

HbA1c results may guide periodontal treatment plans customized to meet the needs of the patient with diabetes:

- TX with adjunctive therapies: hydrogen peroxide trays, site specific antimicrobials, host modulatory therapy (SDD)
- Periodontal surgery: potential for impaired healing
- Orthodontia
- Cosmetic dentistry or complex full mouth restoration
- Helps define re-care intervals




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44

What do we do with a Positive Test Result?

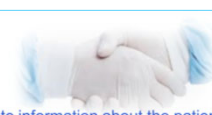
- Inform patient
- Recommend following through with physician for definitive DX
- Patient release of record
- Referrals must be documented and tracked
- How might results influence current and future TX plans?
- Does patient's dental insurance provide coverage for additional prophylaxis?



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45

Dental-Medical Collaboration for Diabetes Case Management

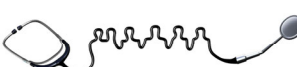


- Unable to attain complete/accurate information about the patient
- How can poorly-controlled diabetes (HbA1c > 8%) be co-managed?
- Patient has not had a medical evaluation within 2 years or presents with signs & symptoms of CVD or other complication of diabetes

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46

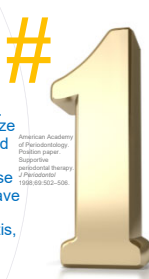
- Treatment may result in postoperative discomfort that may limit dietary intake
- Complicated and/or lengthy dental procedures are anticipated
- Frequent hypoglycemic episodes
- Need for prophylactic antibiotics
- Potential for poor wound healing associated with dental procedure



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47

Therapeutic Goals of Periodontal Maintenance Therapy (PMT)



Prevent or minimize the recurrence and progression of periodontal disease in patients who have been previously treated for gingivitis, periodontitis, and peri-implantitis

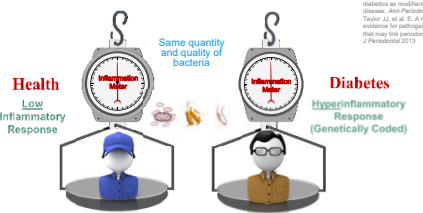
— Preserve the homeostasis of periodontal tissues achieved after initial periodontal treatment

— Create ecological conditions that make survival of periodontal pathogens unsustainable

American Academy of Periodontology
Position paper: Supportive periodontal therapy (PMT)
(08-09-502-506)

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48



Same quantity and quality of bacteria

Health Low Inflammatory Response

Diabetes Hyperinflammatory Response (Genetically Coded)


Not a Level Playing Field

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49

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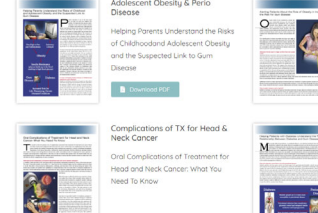
GUM BUTLER GUIDOR



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50

Download from www.caseyhein.com under "Library of Free Resources"



Adolescent Obesity & Period Disease
Helping Parents Understand the Risks of Childhood Adolescent Obesity and the Suspected Link to Gum Disease

Adult Obesity & Period Disease
Alerting Patients About the Role of Obesity in Increasing the Risk for Gum Disease

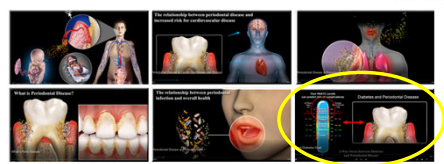
Diabetes & Period Disease
Helping Patients with Diabetes Understand the Two-Way Relationship Between Diabetes and Gum Disease

Complications of TX for Head & Neck Cancer
Oral Complications of Treatment for Head and Neck Cancer: What You Need to Know

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51

Mini-Messages for Passive Patient Education




Increase case acceptance by helping patients understand why it's so important to diagnose and treat periodontitis with animated Mini-Messages

Download the video animations to a tablet to share with patients in the operator or put the animations on the monitor in the reception area. You got this! Do it today!

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52

Starting Points



- Screen patients in your 'catchment'
- Incorporate periodontal-systemic risk assessment into everyday patient care
- Implement the 2017-18 classification system for diagnosing periodontitis paying specific attention to periodontal-systemic risk factors such as glycemic control
- Make it easy for patients with diabetes to maintain good oral hygiene


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53

- Ask your patients when they were last tested for HbA1c; correlate with oral health status
- Learn about point-of-care testing for hyper/hypo-glycemia
- Stay the course and let me know how you do.

www.caseyhein.com

THANK YOU!



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54