

## Diabetes and Periodontal Health

Over 21 million Americans have diabetes, including over 6 million who are undiagnosed. The prevalence and incidence is increasing annually. Young and old diabetic patients are 3x more susceptible to gingivitis and periodontitis.

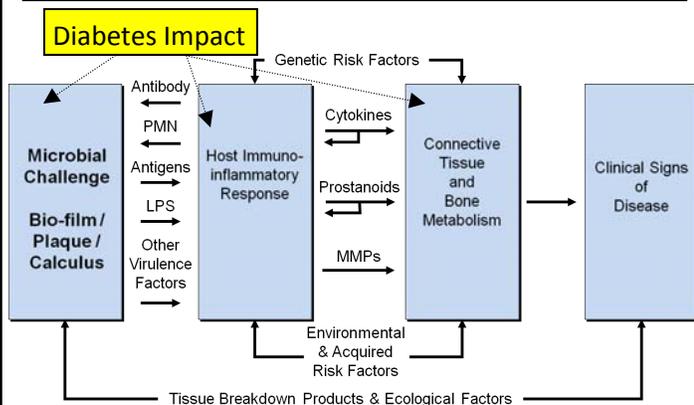
Bacterial biofilms that develop in the sulcus (in health) and/or pocket (in disease) elicit an inflammatory response and produce inflammatory cytokines that can reach the systemic circulation in significant quantities. These cytokines can lead to insulin sensitivity and, consequently, unhealthy blood and gingival crevicular sugar levels. These cytokines can have a destructive effect on the pancreas, including insulin producing cells, which can induce Type 2 diabetes, even in otherwise healthy individuals with no other risk factors for diabetes.

**Why then are people with diabetes more susceptible to gingivitis / periodontal disease and vice versa?**

High blood and gingival crevicular fluid sugar levels negatively affect the immune system, vascular wound healing, and can contribute to increased gingival pocket inflammation. Neutrophil, monocyte, and macrophage function is impaired, thereby decreasing the body's immune defense against a microbial challenge. Normal tissue turnover, via connective tissue and bone metabolism, is negatively impacted and can severely affect wound healing. Bacteria in the sulcus / pocket provoke a constant inflammatory reaction that causes tissue damage. Anything that alters that wound healing response can result in bone loss and reduced periodontal attachment.

In essence, diabetes alters the body's ability to fight periodontal infection, which contributes to increased inflammation that can worsen gingivitis/periodontitis. In turn, gingivitis / periodontitis can worsen diabetes control by increasing inflammatory cytokines and insulin sensitivity. Consequently, the goal of treatment is to control both issues .

### Host Pathway to Periodontal Disease



Kornman, 1997.

**Insulin sensitivity: increased blood sugar levels which increase susceptibility**

**Diabetes**

**Gingivitis /  
Periodontal Disease**

**Inflammation: cytokines enters bloodstream causing insulin sensitivity**

## As dental practitioners, what can we do to recognize and to treat patients with diabetes?

Review and discuss the medical history. For diabetic patients, ask about their HbA1C test results. HbA1C% is a blood test that represents the mean plasma glucose levels over 3 months. Patients should have a HbA1C% of 5.0—6.0 or a mean glucose level of 100-135. When the HbA1C % increases by 1, the mean plasma glucose level goes up by 35. The conversion scale is provided below. For HbA1C % > 8, physician management is necessary.

During your exam, controlled diabetics are “healthy” patients. Blood sugar levels are in check and the oral tissues are healthy. Uncontrolled diabetics can have significant systemic and oral health issues:

**Systemic issues** include 1) neuropathy, 2) delayed wound healing, 3) ocular degeneration, 4) kidney implications, and 5) vascular and blood circulation problems.

**Oral health issues** include 1) generalized bleeding on probing, 2) frequent and multiple periodontal abscesses, 3) red and swollen tissues, 4) bone loss, and 5) a sweet breath odor.

Common signs of undiagnosed diabetes includes significant recent weight changes, polydypsia (excessive thirst), polyphagia (excessive eating), and polyuria (frequent urination).

**If a patient has oral or systemic manifestations of diabetes but did not mark “diabetes” on the medical history, then a medical consult/referral is warranted.**

<b>Hemoglobin A1C (HbA1C)</b>		
<b>HbA1C % = Mean Plasma Glucose</b>		
<u>5.0</u> - 100	<u>6.0</u> - 135	<u>7.0</u> - 170
<u>8.0</u> - 205	<u>9.0</u> - 240	<u>10.0</u> - 275
<u>11.0</u> - 310	<u>12.0</u> - 345	<u>13.0</u> - 380

\*American Diabetes Association

## How should I treat a diabetic patient with gingivitis / periodontal disease?

Consistent assessment of gingival health is necessary. Plaque index monitoring and oral hygiene reinforcement are critical to helping the patient with home oral health care.

For patients with gingivitis, cleanings every 6 months should suffice; however, increasing the interval to every 4 months may be necessary (hopefully short term) until gingival health is established. As mentioned previously, gingivitis can influence glycemic blood sugar levels.

For patients with periodontal disease, scaling and root planing (SRP) with systemic adjunctive antibiotics is the initial therapeutic modality. Inflammation control is critical through biofilm disruption via plaque and calculus removal. Systemic antibiotics attack any residual biofilm and assist in wound healing by negating certain inflammatory cytokines and collagenases. Depending on several factors including age, amount of bone loss, and systemic health, referral to our office would be recommended.

### Summary

The impact of diabetes can be seen in both elderly and young patients, and there are several “clues” orally that may help you identify a diabetes patient. In fact, you may see signs of diabetes orally before the patient is even diagnosed as having diabetes. Diabetes, both controlled and uncontrolled, can increase the risk of gingivitis and periodontitis. Consequently, addressing the systemic aspect of diabetes, in consultation with their physician, and treating the oral issues are necessary to establish both oral and systemic health.

***If you have any questions or comments, please call or email [drvank@trvperio.com](mailto:drvank@trvperio.com). We appreciate any feedback and will be happy to discuss in further detail any thoughts or questions you may have.***

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