**Oral Health and Diabetes**

**Changes in the Oral Cavity**

Diabetes can lead to changes in the oral cavity.([Alisjahbana et al., 2007](#_ENREF_2)) Of particular concern to dentists and dental hygienists are the effects of diabetes on the health of the gingiva (gums) and periodontal tissues Poor glycemic control is associated with gingivitis and more severe periodontal diseases. Oral signs and symptoms of diabetes can also include a neurosensory disorder known as burning mouth syndrome, taste disorders, abnormal wound healing, and fungal infections (candidiasis). Individuals with diabetes may notice a fruity (acetone) breath, frequent xerostomia (dry mouth), or a change in saliva thickness. Dry mouth can also lead to a marked increase in dental decay. Oral findings in people with diabetes are associated with other systemic findings such as excessive loss of fluids through frequent urination, altered response to infection, altered connective tissue metabolism, neurosensory dysfunction, microvascular changes, medications causing dry mouth, and possible increased glucose concentration in saliva. Smoking often makes these problems worse.([Clair, Meigs, & Rigotti, 2013](#_ENREF_4)) Unfortunately, caring for the mouth is often overlooked when trying to control other problems associated with diabetes. Good oral hygiene combined with good glycemic control can prevent many of these problems.

**Periodontal Disease**

People with diabetes are two to three times more likely than persons without diabetes to have destructive periodontal disease, such as periodontitis([Agban, Elley, Kenealy, & Robinson, 2008](#_ENREF_1)). Periodontal disease is a bacterially induced, chronic inflammatory disease that destroys the connective tissue and bone supporting the teeth and can lead to tooth loss. Periodontal disease is more prevalent, progresses more rapidly, and is often more severe in individuals with both type 1 and type 2 diabetes.([Mafauzy, 2006](#_ENREF_7)) Recent research suggests a two-way connection between diabetes and periodontal disease. Not only are people with diabetes more susceptible to periodontal disease, but the presence of periodontal disease may also make glycemic control more difficult. Proper care of the mouth that includes treatment of peridontal disease may help people with diabetes achieve better glycemic control.([Agban et al., 2008](#_ENREF_1); [Kayykcyolu et al., 2007](#_ENREF_5); [Leitao et al., 2008](#_ENREF_6))

Some studies have suggested a relationship between insulin resistance and inflammatory mediators. The inflamed periodontal tissue, which can be equivalent to an area as large as an adult palm, is highly vascular and may become ulcerated. This infection may introduce inflammatory mediators, as well as bacterial lipopolysaccharides and other toxins, into the systemic circulation. Some of the inflammatory mediators produced in periodontitis also stimulate the liver to produce acute-phase proteins, such as C-reactive protein (CRP), serum amyloid A, and fibrinogen. These proteins can be elevated in the peripheral blood of patients with periodontitis and are associated with harmful effects on organs. Thus, periodontal inflammation potentially contributes to a systemic, chronic inflammatory state that also is a component of other inflammation-related diseases, including diabetes mellitus, cardiovascular diseases, and others. Treatment of periodontal disease decreases periodontal inflammation, and evidence is accumulating to support periodontal treatment contributing to improvement of glycemic control.([Bhattacharya et al., 2007](#_ENREF_3))

**Recognize Oral Signs that may be Symptomatic for Diabetes:**

* Xerostomia
	+ Dry mouth may also cause an increase in dental decay
* Periodontal (gum) disease
	+ Red, swollen or bleeding gums
	+ Gums pulling away from teeth
	+ Abscesses (pus) between gums
	+ Loose teeth or change in bite or tooth position
* Candidal infection (thrush)
* Persistent bad breath or bad taste, or fruity, acetone odor

**Signs and symptoms of severe periodontal disease** can include red, swollen, tender and bleeding gums; gums that have pulled away from the teeth; pus between the gums when they are compressed; persistent bad breath or bad taste in the mouth; permanent teeth that are loose or moving apart; any change in the way the teeth fit together when the patient bites; and any change in the fit of removable partial dentures. Most people with diabetes do not experience pain with periodontal disease, and many have periodontal disease and be asymptomatic. This highlights the importance of regular professional check-ups and care. Periodontal probing performed by a dentist or dental hygienist is a primary diagnostic assessment tool and can be used to measure response to treatment.

# From: Pharmacy, Podiatry, Optometry, and Dental Professionals’ Work Group, National Diabetes Education Program. Working together to manage diabetes: a guide for pharmacists, podiatrists, optometrists, and dental professionals. Bethesda (MD): Department of Health and Human Services (US); 2007 (cited 2011 Aug 1). Available from: [http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=26#page12](http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=26%23page12)

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