



PATIENT INFORMATION SHEET

Diabetes Mellitus

Diabetes mellitus (diabetes) is a common chronic disease of abnormal carbohydrate, fat, and protein metabolism that affects an estimated 20 million people in the United States, of whom about one third are undiagnosed. There are two major forms recognized, type-1 and type-2. Both are characterized by inappropriately high blood sugar levels (hyperglycemia). In type-1 diabetes the patient can not produce the hormone insulin, while in type-2 diabetes the patient produces insulin, but it is not used properly. An estimated 90% of diabetic patients suffer from type-2 disease. The causes of diabetes are multiple and both genetic and environmental factors contribute to its development. The genetic predisposition for type-2 diabetes is very strong and numerous environmental factors such as diet, lack of exercise, and being overweight are known to also increase one's risk for diabetes. Diabetes is a dangerous disease which affects the entire body and diabetic patients are at increased risk for heart disease, hypertension, stroke, kidney failure, blindness, neuropathy, and infection when compared to nondiabetic patients. Diabetic patients also have impaired healing when compared to healthy individuals. This is in part due to the dysfunction of certain white blood cells that fight infection.

The most common test used to diagnose diabetes is the fasting blood glucose. This test measures the glucose levels at a specific moment in time (normal is 80-110 mg/dl). In managing diabetes, the goal is to normalize blood glucose levels. It is generally accepted that by maintaining normalized blood glucose levels, one may delay or even prevent some of the complications associated with diabetes. Measures to manage diabetes include behavioral modification (proper diet, exercise) and drug therapies (oral hypoglycemics, insulin replacement). The choice of therapy prescribed takes into consideration the type and severity of the disease present and patient compliance. The physician may request the patient keep a log of their daily blood glucose measurements, in an effort to better assess therapeutic success. Another commonly obtained test is the hemoglobin A1c (HbA1c), which is a surrogate marker used to assess blood glucose levels over an extended period (2-3 months). This test provides the physician with a good picture of the patient's glucose levels over time.

Oral Changes Associated with Diabetes Mellitus

Poorly controlled diabetic patients are at risk for numerous oral complications such as periodontal disease, salivary gland dysfunction, infection, neuropathy, and poor healing. None of these complications are unique to diabetes. However, their presence may serve as an early clue to the possible presence of diabetes, prompting your dentist to perform or request further testing.

Periodontal Disease: Periodontal disease is a commonly observed dental problem for patients with diabetes. It is similar to the periodontal disease encountered among nondiabetic patients. However, as a consequence of the impaired immunity and healing associated with diabetes, it may be more severe and progress more rapidly (see Right). The potential for these changes points to the need for periodic professional evaluation and treatment.





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Salivary Gland Dysfunction. Several changes to the salivary glands may occur in association with diabetes. The most commonly observed concern is dry mouth (see [PATIENT INFORMATION SHEET – Dry Mouth](#)), but other findings may include gland enlargement, and an increased risk for developing salivary duct stones and gland infection.

Infections: Poorly controlled diabetes can lead to a variety of tissue infections. The most commonly encountered is a yeast infection (*Candida*) and the presence of dry mouth further increases one's risk (see [PATIENT INFORMATION SHEET - Oral Yeast Infections](#)). Typically, affected areas appear redder than the surrounding tissue and commonly affected sites include the tongue, palate, cheeks, gums, or corners of the mouth (see Right). There is conflicting data regarding cavity risk in the diabetic patient, but those who have dry mouth are clearly at increased risk for developing cavities.



Special Considerations for Patients with Diabetes in Need of Dental Care

You should see your dentist on a regular basis. Diabetic patients under good medical control are generally eligible and able to tolerate any and all types of dental care. One of the common complications your dentist wants to avoid having to manage is hypoglycemia (low blood sugar) (see Box). You should always:

- Eat your normal meal prior to your appointment.
- Take all your medications on schedule.
- Bring your glucometer with you to your dental appointment.
- Follow any post-operative instructions your dentist gives you and take any prescriptions as directed.
- Inform your dentist and reschedule your appointment if you are not feeling well, and check with your physician as necessary.

Hypoglycemia

Hypoglycemia or “insulin shock” is a common concern in DM management. It typically develops when a diabetic patient takes his or her normal dose of insulin without eating normally. As a result, the administered insulin can push the blood sugar to potentially dangerously low levels.

Initially the patient may experience, sweating, nervousness, hunger and weakness. If the hypoglycemic patient is not promptly given sugar (sugar, cola, cake icing), he or she may lose consciousness and even lapse into coma.

Whenever you see your dentist, always advise him or her of any changes regarding your medications or disease-related complications. You should expect your dentist to inquire about how you monitor your blood sugar and your current status (e.g. most recent HbA1c, medication profile). For most routine dental procedures (e.g. examinations, simple fillings, routine cleanings), no special alterations in the delivery of dental care are necessary. However, more involved procedures, such as extensive surgery or treatment of serious infection, may interfere with your normal diabetes management. For such cases, your dentist will work with your physician to ensure the most appropriate approach to care is undertaken. For example, if you need a surgical procedure that will temporarily interfere with your ability to eat, special modifications regarding your nutrition and medication dosing may be prescribed. Finally, if you notice any unusual



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changes in your mouth (e.g. swelling, pain, red areas) you should see your dentist as soon as possible. These changes may indicate the presence of an infection that may compromise your normal blood sugar control and lead to a worsening of your ability to fight infection. As a result, your infection could become more difficult to treat.

Questions and Answers about Diabetes and Your Mouth

Q: If I have diabetes, will I develop the oral complications that were mentioned?

A: It depends. There is a two-way relationship between your oral health and how well your blood sugar is controlled (glycemic control). Poor control of your blood sugar increases your risk of developing the multitude of complications associated with diabetes, including oral complications. Conversely, poor oral health interferes with proper glucose stabilization. Indeed, recent research has shown that diabetic patients who improve their oral health experience a modest improvement in their blood sugar levels. In essence, *“Healthy mouths mean healthy bodies.”*

Q: What are the complications of diabetes therapy that can impact my oral health?

A: One of the most worrisome urgent complications associated with diabetes management is the previously described hypoglycemia or insulin shock. In addition, many of the medications prescribed to treat diabetes and its complications, such as hypertension and heart disease, may induce adverse side effects affecting the mouth. Common side effects include dry mouth, taste aberrations, and mouth sores.

Q: I have type-2 diabetes. Are my dental problems different than those experienced by people with type-1 diabetes?

A: No. All patients with diabetes are at increased risk for the development of dental disease. What is different is that type-2 disease tends to progress more slowly than type-1 disease. Thus, most type-2 diabetes patients are diagnosed later in life, a time in which they are likely to already have existing dental problems. Remember, there is no dental disease unique to diabetes. Uncontrolled or poorly controlled diabetes simply compromises your body’s ability to control the existing disease.

Q: What about diabetes and pregnancy?

A: There are two scenarios to consider here, pregnant patients who have diabetes and pregnant patients who have gestational diabetes. Gestational diabetes describes hyperglycemia discovered during pregnancy. This hyperglycemia often corrects itself after pregnancy, but women who experience gestational diabetes are at higher for developing type-2 diabetes later in life when compared to women who experience no hyperglycemia during pregnancy. Regardless of the type of diabetes a pregnant patient has, her physician will closely monitor her disease and its response to therapy. Proper glucose control is important not only for the health of the mother, but also her developing child.



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From a dental perspective, pregnancy leads to hormonal changes that increase the mother's risk of developing gingivitis and gingival lesions called pregnancy tumors (see Right). Not surprisingly, poor glycemic control further adds to this risk. Therefore, it is imperative that if you become pregnant, you should promptly see your dentist. He or she will work with you to ensure that your dental self-care regimen is maximized to prevent or control your dental disease.



Additional Resources on Diabetes and Oral Health

National Institute of Dental and Craniofacial Research

www.nidcr.nih.gov

American Diabetes Association

www.diabetes.org

American Dental Association

www.dental.org

American Academy of Periodontology

www.perio.org

The Diabetes Monitor

www.diabetesmonitor.com

David Mendosa

www.mendosa.com

Diatrube

www.diatrube.us

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