The Mouth-Body Connection

Part 1: Bacteria & Blood Sugar

Drs. Todd & Amy Kinney, DDS

From childhood on, you've heard plenty about the importance of good dental care, but you may not know that your oral health (or lack of it) could be directly impacting your overall health. The old saying, *"Don't brush and floss all of your teeth—just the ones you want to keep!"* may actually help you live a longer, healthier life.

Medical research is bringing into light the incontrovertible truth: oral health is related to systemic health. This is not a new concept to the holistic health professions, as they have always understood there to be a direct association between the mouth and body. Holistic comes from the Greek word *holos*, meaning all, whole, entire, or total. Holistic is defined in the Merriam-Webster Medical Dictionary as *"relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts."*

Unfortunately, this health link is generally not universally reflected in the practice of dentistry and medicine in the U.S. today. Integrative health practitioners are now more than ever recognizing oral health as an integral part of preventive cardiology, diabetic care, and a major part of the prevention of systemic inflammatory disease. Oral health—just like nutrition, physical activity, and stress management—plays a large part in the prevention and management of nearly all chronic health conditions.

ORAL INFLAMMATION & BAD BUGS

By and large, oral bacteria and oxidative stress (overproduction of ***free radicals***—unstable molecules that attack and kill tissue cells) are at the root of the oral health-systemic health link. The mouth, particularly the gums that surround our teeth, is the portal of entry of most of the pathogenic bacteria that affect our health.

> "The mouth is seen as a window into the body, and we know that a healthy body starts with a healthy mouth."

Residing in our mouths by the billions are bacteria that form plaque, complex colonies of microorganisms called ***biofilms*** that stick to the teeth at or near the gum line. These bacteria infect the gums, causing acute inflammation and bleeding—a localized condition called ***gingivitis***—allowing the bacteria easy access into the bloodstream and to the rest of the body. If brushing and flossing is neglected, gingivitis can progress into a full-blown chronic inflammatory infection, called ***periodontitis***—the number-one reason for bone loss and tooth loss in adults.

Chronic oral inflammation and oxidative stress are the common underlying factors in many other diseases, including heart disease, arthritis and auto-immune disease. Periodontal disease is associated with cardiovascular disease, diabetes, kidney disease, Alzheimer's, pre-term and low weight births, various cancers, and stroke, as well as increasing the risk of other bacterial and viral infections.

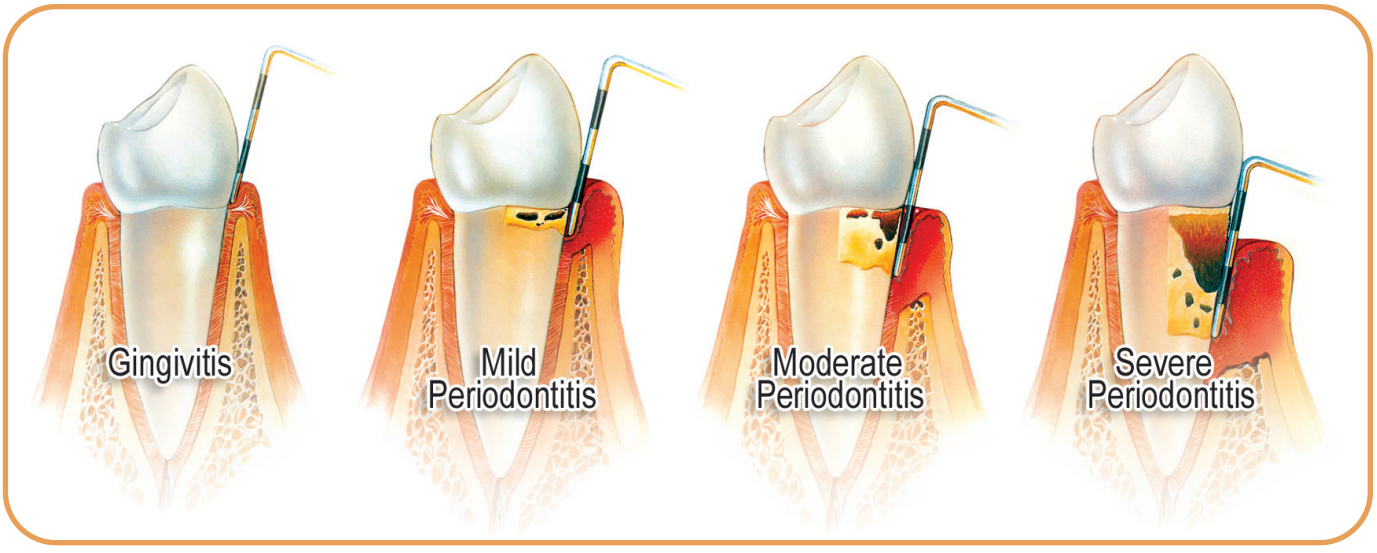
Although bacterial infection is a major trigger for inflammation, other factors such as poor diet, alcohol and nicotine use, chemical toxins, and metals used in dental materials, such as nickel and mercury-amalgam, can also elevate oxidative stress levels and "stoke the fire" of chronic inflammation.

GUM DISEASE & DIABETES

Perhaps the strongest oral-systemic connection is between diabetes and periodontal disease. It is estimated that nearly 85% of the U.S. adult population is afflicted with periodontal disease, which is the most common inflammatory disease in humans.

But it's so much more than just bleeding gums. Inflammatory substances (i.e., free radicals), largely triggered by oral bacterial toxins, appear to be the engine driving an ever-growing list of feared chronic illnesses with an inflammatory factor, especially heart disease and diabetes.

Diabetes is a group of chronic diseases characterized by ***hyperglycemia*** (high blood sugar) resulting from disorders in insulin production, action in the metabo-



lism of carbohydrates, fat and protein, or both.

Diabetes affects approximately 23.6 million people in the U.S., and it is estimated that about 5.7 million of these people are undiagnosed diabetics. The highest risk age group are those aged 60 and above, with 24% having diabetes.

Diabetes and periodontal disease are both chronic and controllable, but the most significant similarity is the adverse effect each has on the other. Diabetes is the number-one systemic risk factor for periodontal disease, and diabetics tend to develop periodontal disease at three to four times the rate of non-diabetics.

Gum disease worsens blood sugar control by increasing insulin resistance, which prevents the transport of glucose from the blood vessels into the cells for energy. The result is a sugar back-up in the bloodstream. In these conditions, the body's ability to kill bacteria and other pathogens and repair damaged tissue is severely impaired, increasing oxidative stress.

To summarize, insulin resistance elevates glucose levels; elevated glucose increases insulin output; and increased levels of insulin cause arterial damage. An estimated 79 million American people have this pre-diabetic condition, putting them at higher risk for developing Type II diabetes, heart disease, and periodontal disease in the future.

WHY GUM DISEASE CAN KILL

So why, might you ask, should dentists care about this relationship between gum disease and diabetes? It's a well known fact more people see their dentist regularly than their primary care physician, and complications of poorly controlled periodontal disease and diabetes are life changing and life threatening. Statistically, 3 out 4 patients seen in our dental office will have periodontal disease, and 1 out of 4 patients over the age of 60 will likely have diabetes.

In the U.S., diabetic retinopathy is the leading cause of blindness, resulting in over 10,000 new cases a year. Diabetic nephropathy is the primary cause of kidney failure in the U.S., and more than 80% of foot amputations are the result of injury from diabetic neuropathy.

However, the primary problem with elevated insulin levels and hyperglycemia is their effect on atherosclerosis, or hardening of the arteries, and heart disease. Oral bacteria responsible for periodontal disease have been identified in atherosclerotic plaque, which damages the cells lining the artery walls, of patients with coronary artery disease. These bacteria are associated with elevated levels of C-reactive proteins (CRP), a key inflammatory marker for heart disease.

Diabetics have two to four times the risk for heart disease and stroke than non-diabetics. It is estimated that nearly 65% of poorly controlled diabetics will die from a heart attack or stroke.

The good news is that appropriate periodontal treatment has been shown as effective in lowering HbA1c levels in diabetics as most medications, but without the side effects. In addition, reducing inflammation in diabetic patients

can significantly reduce overall annual health-care costs. Just two professional dental cleanings a year can reduce a person's risk for heart attack by 25%.

November is **American Diabetes Month**® and the American Diabetes Association recommends that all persons over the age of 45 be screened for diabetes. In our dental office, a simple finger-stick blood-screening test is available to measure CRP and HbA1c levels—the primary parameter physicians use to monitor blood sugar control for their diabetic patients.

OTHER SYSTEMIC LINKS

Complicating matters, both the risk and rate of progression of periodontal disease are also influenced by genetic, immunological, and environmental factors. For example, hormone-related oral inflammation is common in women who are pregnant, premenstrual, or taking oral contraceptives. Medications including antihistamines, antidepressants, cancer drugs, and steroids can make the gums more susceptible to infection.

As many as one third of Americans may also be genetically susceptible to oral infections. Genetics may make many of us up to six times more likely to develop periodontal disease. Inhaled oral bacteria can also cause pneumonia and respiratory disease, particularly in the elderly.

UNDER YOUR CONTROL

The connection between oral health and overall health cannot be overstated. All of us concerned about our general health should practice these simple steps:

1) *Eat a healthy, whole-foods, non-processed, and anti-inflammatory diet.*
2) *Brush and floss daily to remove plaque.*
3) *See your dentist and dental hygienist for regular gum disease examinations, even before you see the first signs of bleeding gums or tartar buildup.*

Remember, periodontal disease is entirely preventable and easily treated if detected early. Regardless of genetic predisposition or other factors, you can prevent gum disease and reduce associated health risks with an investment of just a few minutes every day. ■

Drs. Todd & Amy Kinney have provided integrative dental care in Bozeman since 1997. Their health-centered practice focuses on bio-compatible mercury-free dentistry, laser-assisted biological periodontal therapy, TMJ disorders, complex restorative and esthetic dentistry, and holistic preventive care.

Illustrations: TheGumDoctor.co.uk

Are you ready for a **healthy change?**

Experience the difference of **health-centered** dentistry today.

Over 15 years experience in General Dentistry

Holistic Dental Care
Dental Implants
TMJ, Headaches & Jaw Pain
Orthodontics & Clear Aligners
Oral Sedation
Mercury-Free Dentistry
Veneers & Crowns
Sleep Apnea & Snoring

TODD A. KINNEY, DDS
AMY C. MADDEN KINNEY, DDS

406-582-8500 • 3502 Laramie Drive • Bozeman • www.drskinney.com