Hygienetown Research:

How do your hygiene colleagues feel about risk assessment? Read the results below of our online poll, conducted from August 7, 2012 to September 7, 2012, to find out. And don’t forget to participate in the poll on Hygienetown.com each month—the more opinions you can provide us, the more statistics we can supply you.

Blood pressure is checked on:

- 43% Some of the patients
- 33% All patients
- 8% None of the patients

Do you check the pH of saliva?
- 9% Yes
- 91% No

Does your practice order blood tests for patients?
- 5% Yes
- 95% No

Do you measure flow rate and buffering of saliva?
- 6% Yes
- 94% No

Does your practice offer genetic testing to determine periodontitis risk?
- 8% Yes
- 92% No

Does your practice use a CAMBRA form to track caries risk?
- 15% Yes
- 85% No

Does your practice offer nutritional counseling?
- 56% Yes
- 44% No

Do you use bacterial testing in your practice?

- 74% No
- 26% Yes
Erectile Dysfunction Linked to Periodontitis

Several pathophysiological factors are common to both periodontitis and erectile dysfunction: systemic inflammation, oxidative stress and endothelial dysfunction. One study of 305 men showed chronic periodontitis more prevalent among men with erectile dysfunction while another study of 70 men found no direct correlation. Periodontal inflammation was recently shown in an animal model to impact penile endothelial cells.

Researchers at Taipei Medical University in Taipei, Taiwan analyzed the data from Taiwan’s National Health Insurance Research Database of 22.6 million of Taiwan’s 22.96 million residents. Data was collected from all medical claims for both in-patient and out-patient visits. A subset of 32,856 men with erectile dysfunction was compared to a group of 164,280 randomly selected controls with no diagnosis of erectile dysfunction. Periodontal examination and treatment is part of the insurance plan, providing the diagnosis of chronic periodontitis. For this study, a diagnosis of chronic periodontitis must have occurred twice to be considered.

Those with erectile dysfunction were 3.35 times more likely to have a previous diagnosis of periodontitis compared to the controls after adjusting for income, age, geographic location, hypertension, diabetes, hyperlipidemia, coronary heart disease, obesity and alcohol use or abuse. The association was strongest among those under 30 years of age at 4.54 times. In those over 69 years of age the odds ratio was 4.84. Neither patients nor clinicians feel comfortable discussing sexual dysfunction, but with this strong correlation between periodontitis and erectile dysfunction, the conversations might prove to be beneficial.

Clinical Implications: Sexual dysfunction might become a topic for clinicians to discuss with patients as they discuss the link between erectile dysfunction and periodontitis.


Alcohol Consumption Linked to Periodontitis

Alcohol abuse is a global problem that can impact social, economic and health aspects of life. Alcohol consumption has been associated with periodontitis, and in some cases those who consumed alcoholic beverages also had poor oral hygiene.

Researchers at the Federal University of Minas Gerais and the University of Taubate in Brazil collaborated on a study evaluating the influence of alcohol on periodontal health. From a group of just over 1,000 patients waiting to be treated at three clinics in Brazil, a total of 542 subjects were accepted into the study. The group of both men and women ages 35 to 55 years received a complete periodontal examination and were divided into four groups based on alcohol consumption. Alcohol consumption was reported to be 69 percent of the sample, with 11 percent considered alcohol dependent. The percentage of each group that had periodontal disease is listed below:

1. No or occasional use – 17 percent
2. Moderate use – 24 percent
3. Intense use – 30 percent
4. Alcohol dependence – 53 percent

For this study, periodontal disease was defined as having four or more teeth with one or more sites probing 4mm or more or 3mm of clinical attachment loss. Smoking was also taken into consideration in the final evaluation. The risk of periodontal disease was increased in those who consumed alcohol and smoked: 3.43 to 7.91 times for smokers and 1.22 to 3.01 times for non-smokers.

Clinical Implications: Clinicians know intuitively that alcohol use/abuse has contributed to periodontal disease and these findings confirm those observations.

Recognizing Undiagnosed Diabetes in Dental Patients

According to the Centers for Disease Control and Prevention, one-quarter of those affected with Type 2 diabetes are undiagnosed. These people are unaware of their condition. Early detection and intervention can prevent diabetes in cases of pre-diabetes or sub-diabetic hyperglycemia. Screening for diabetes should be extended from the medical community to dental professionals since periodontal measurements can be indicators of the disease.

Researchers at Columbia University in New York, recruited patients with at least one of four self-reported risk factors for diabetes. Periodontal examinations were provided for more than 500 subjects over the age of 30. They were also tested for HbA1c levels using a finger stick blood test with chair-side analysis. Smoking history was also included as this is the number-one risk factor for periodontitis. Five days later, subjects were invited back for a fasting plasma glucose test (FPG). Those with scores of over 100mg/dL on this test were advised to see a physician.

Two clinical parameters correctly identified 73 percent of previously unrecognized hyperglycemia cases: 1) four or more missing teeth and 2) 26 percent of teeth with probing depths measuring 5mm or deeper. When the chair-side HbA1c results were added, correct identification of pre-diabetic cases increased to 92 percent.

Clinical Implications: Dental professionals have an opportunity with two dental variables and one blood test to identify undiagnosed diabetes and refer to a medical professional.

Gingival Bleeding Used for Diabetes Testing During Dental Visit

The traditional finger-stick test is used to collect a drop of blood that is then placed on a collection card, sealed in a foil pouch and mailed to the laboratory where it is tested for hemoglobin A1C (HbA1c). In the dental office, oral blood is suggested for this testing to avoid the finger stick.

Periodontal patients at New York University College of Dentistry participated in the study. The 120 study subjects ranged in age from 23 to 87 years and included 50 males and 70 females. In addition to clinical, medical history and socioeconomic information, blood samples were collected from both finger stick and gingival crevicular blood. Bleeding upon probing sites were isolated with cotton rolls to prevent saliva contamination during blood collection. Samples were allowed to air dry for 15 minutes and then sealed in foil envelopes for mailing to the laboratory.

Based on the finger stick tests, 17 percent of the subjects were found to be in the diabetes range with an additional 55 percent in the pre-diabetes range. Not all subjects had bleeding upon probing, so only 102 were tested based on crevicular blood. Within that group, 27 were found to be contaminated with other substances. Final analysis included 75 patients with both finger stick and crevicular blood sample tests. The correlation between the two tests for diabetes and pre-diabetes was 0.842.

Clinical Implications: In a dental office, crevicular blood samples are an option for collecting samples for HbA1c testing.


Severity of Periodontitis Influences Carotid Artheromas

Periodontitis is an infectious, inflammatory disease that may influence risk for atherosclerotic changes in blood vessel walls. Several factors are involved in the progression of cardiovascular disease: age, smoking, hypertension, cholesterol levels, sedentary lifestyle, family history and male sex. Periodontal disease is considered one of the risks for cardiovascular disease.

Researchers at the University Dental Clinic in Murcia, Spain compared periodontal disease levels and several indicators of cardiovascular disease. One group of 30 adults were systemically healthy and had periodontitis. The second group of 30 adults was both systemically and periodontally healthy. Ultrasound examination of the right carotid artery was done to measure the internal thickness of the vessel wall. Other standard measurements were collected: blood pressure, cholesterol levels, blood glucose, BMI, smoking, lifestyle and periodontal status.

Internal carotid wall thickness was similar for both groups. Plaque accumulation on the vessel wall was evident for 57 percent of those with periodontitis compared to 20 percent of those who were periodontally healthy. Those with the most severe periodontal disease were more likely to have measurable plaques on vessel walls. Age is also a risk factor for both periodontitis and heart disease and in this study was the most predictive factor for atherosclerotic changes.

Clinical Implications: This study doesn’t show that periodontitis causes atheroma formation in the carotid artery, but periodontitis should be considered one of several risk factors for cardiovascular disease.

Periodontal Pathogens and Arthritis

Rheumatoid arthritis (RA) is a chronic inflammatory disease with disease progression similar to chronic periodontitis (CP). The etiology of RA is still unknown, but it has been suggested that an infectious agent in a susceptible host could trigger the RA inflammatory process. Several agents being considered are mycoplasma, Epstein-Barr virus, cytomegalovirus, rubeola virus and periodontal bacteria.

Researchers at San Luis Potosi University in Mexico evaluated a group of 19 subjects with both CP and refractory RA to see if periodontal pathogens or DNA from these bacteria could be found in serum and synovial fluid. Sub-gingival plaque samples were taken after blood and synovial fluid samples, to avoid any bacteremia. Plaque samples were taken from the upper right first molar, the lower right central incisor and the lower left premolar.

The two most common bacteria found in all three areas were P. intermedia and P. gingivalis. DNA from periodontal pathogens was found in all samples of serum and synovial fluid.

Samples from the serum and synovial fluid were cultured to see if bacteria could be grown, but none did. It was concluded that the free DNA form was transported through the bloodstream from the periodontal pockets to the knee joint, where it has been shown in mice to trigger an inflammatory response with release of cytokines and bone destruction.

Clinical Implications: This preliminary study shows the potential for periodontal pathogens to travel from the mouth to joints where inflammation is triggered. Not all people with RA also experience CP but more research will determine if periodontal bacteria do in fact trigger RA.