

The Consequences of Oral Bacteria and Gum Disease Go Far Beyond the Mouth

OralDNA® Labs offers testing for the profile of oral bacteria that cause periodontal disease. These bacteria, especially at high levels, and in combination with an individual's genetic inflammatory response, result in bad breath, painful, bleeding gums, loss of bone and eventually tooth loss. But the consequences of these same bacteria, present for years and decades, add significantly to the risk of wide range of life-threatening diseases beyond the mouth. Below are some of those diseases and the measurable risk of those diseases becoming serious if these oral pathogens are not treated.

Cardiovascular disease: Aa Pg Tf Td Fn Pi There is consensus within the medical and dental professional organizations that periodontal bacteria contribute to the initiation, progression and prognosis of cardiovascular disease. From key meta-analysis studies, persons with untreated periodontal infections have up to a 20% increase in their risk of coronary vascular disease¹. The multiple of risk for stroke (1.74-2.85 fold) and peripheral vascular disease (1.41-2.27 fold) is equal or greater¹. More specifically, the risk of a first myocardial infarction is associated with periodontal disease (OR of 1.49) even after adjustment for a history of smoking, obesity, diabetes and selected socioeconomic factors². But equally important is the concern for specific bacteria that are a basis for this risk including A.a., P.g., T.f., T.d., F.n. and P.i.³⁻⁷. Specifically, Fn carries a series of virulence factors that can contribute to inflammation of the arterial wall⁸. Toward the interest to prevent heart and vascular disease, testing your patients for which types and what levels of these dangerous bacteria are present will provide them better care.

Metabolic health and Diabetes: Aa Pg Tf Td Fn Elevated levels of periodontal bacteria can directly cause hyperglycemia⁹. Long term, the inflammation associated with increased pathogen burden can affect the health of the pancreas, and specifically, there is the risk of the loss of beta cells that produce insulin and respond to elevated blood glucose¹⁰. Correspondingly, persons with elevated blood glucose are at risk for progressive periodontal infection and inflammation¹¹. So, by these opposing mechanisms, the relationship of periodontal disease and pre-diabetes and diabetes is viewed as a two-way street¹². Early detection of periodontal infection and proactive management to reduce bacterial loads can improve blood sugar control and lessen the complications of diabetes as well as the consequence of periodontitis¹³.

Health During Pregnancy: Aa Pg Tf Fn Ec Pi The oral microbiota changes when women become pregnant, and levels of periodontal pathogens increase¹⁴. During pregnancy, periodontal inflammation worsens, mostly due to increased levels of A.a., P.g., F.n. and P.i.¹⁵. Among these oral pathogens, there is a marked risk of infection of the maternal blood and the placenta, which leads to an increase in pre-term labor, lower birth weight and even the chance of fetal loss due specifically to the bacteria P.g. and F.n.^{16,17}. Further, the long-term risk for systemic disease in mothers with periodontitis is evident in the progression of atherosclerosis and the increased risk of venous thrombosis due to F.n., P.g., T.f. and A.a.^{16,18}. For these reasons, consider testing all women who are planning a pregnancy with the goal of reducing these bad bacteria.

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Development of Cancer and Risk of Progression: Ab Pg Fn Td Tf Advanced periodontal disease is associated with a 2.5 fold increase in smoking related cancers¹⁹. Breast cancer is common, and persons with elevated levels of the bacteria A.a. and P.g. have a greater chance of recurrence or failed response to treatment. In another prospective study, persons with periodontal P.g. showed a 59% increased risk of pancreatic cancer. There are also reports of oral A.a. and T.d. linked to pancreatic tumors²⁰. P.g., T.d. and T.f. are also linked to risk of esophageal cancers^{21,22}. Reducing your patient's risk of developing cancer by treating periodontal infection is another reason to visit your dentist and request a MyPerioPath[®] test. A role for the oral bacteria Fn in the progression of colorectal cancer is provocative. Several recent studies show that F.n. can be identified within the primary cancer cells from colonic tumors, and are carried to metastatic sites involving regional lymph nodes^{23,24}. This is a newly observed phenomenon that will affect how cancer treatment protocols will be developed in the future.

Joint and Musculoskeletal Health: Pg Fn Ec Rheumatoid arthritis is a chronic inflammatory condition. In a recent meta-analysis of 21 separate studies, there was a significantly increased risk of periodontitis in people with RA compared to healthy controls (relative risk: 1.13; 95% CI: 1.04, 1.23; p = 0.006; N = 153,277)²⁵. The most prevalent pathogens found were P.g. and F.n. Importantly, the infection and the antibodies against these bacteria are typically found before the onset of symptoms²⁶. The good news is that therapeutic reduction of bacterial load, as determined by molecular tests such as MyPerioPath[®], may reduce symptoms and improve the prognosis of the arthritis²⁷.

Dementia and Brain Health: Recent medical studies point to poor oral health, and high levels of the bacteria Pg Cr Cs in our gums with the increased risk to develop Alzheimer's and other types of dementia. Additionally, the direct effects of those oral bacteria to cause atherosclerosis in the vessels within the brain impart significant risk for stroke and vascular types of dementia.

Periodontal Bacteria Measured by the MyPerioPath[®] Test

| Red Complex Pathogens | Orange Complex Pathogens | Green complex Pathogens |
|---|---|---|
| Actinobacillus actinomycetemcomitans Aa | Eubacterium nodatum En | Eikenella corrodens Ec |
| Porphyromonas gingivalis Pg | Prevotella intermedia Pi | Capnocytophaga species Cs |
| Tanarella forsythia Tf | Peptostreptococcus micros Pm | |
| Treponema denticola Td | Fusobacterium nucleatum/periodontium Fn | |
| | Campylobacter rectus Cr | |

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