



# **Periodontal Disease and Your Health**

*(what every patient should know)*

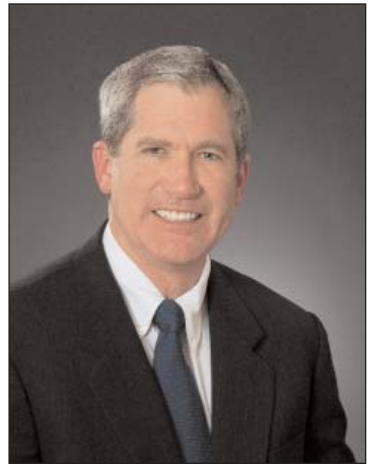
**By Barry W. Heaton, DDS**

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## About the Author

Dr. Barry Heaton was born and raised in the Houston area. He received his dental degree with honors in 1980 from the University of Texas Dental Branch in Houston. He completed the specialty program in Periodontics again with honors in 1985 at the University of Texas Dental Branch. Since then, Dr. Heaton has been providing periodontal and dental implant services for over 22 years. In 1986, Dr. Heaton was one of the first periodontists in Houston to perform dental implant procedures and has remained at the forefront as innovations are made in the field.

Maintaining his education and staying abreast of news, trends and techniques emerging in periodontics and dental implants is a priority for Dr. Heaton. While learning about the advancements taking place in periodontics and dental implants is important to him, Dr. Heaton also teaches others about current issues affecting dentistry. He lectures regularly at study clubs and dental meetings on such topics as the linkage between Periodontal Disease and Cardiovascular Disease, Diabetes, and pre-term low birth weight (PTLB). He also frequently lectures on bone regeneration, cosmetic periodontal plastic surgery and dental implants. Dr. Heaton also shares his knowledge with other dental professionals through journal publications and with his own newsletter publication.

Dr. Barry W. Heaton is Diplomate of the American Board of Periodontology and is a Fellow of the International Congress of Oral Implantologists. Actively involved in all levels of dentistry, Dr. Heaton enjoys membership in numerous professional organizations: The International Team of Implantologists-ITI, American Academy of Oral Medicine, American Academy of Implant Dentistry, Academy of Osseointegration, American College of Oral Implantology, Greater Houston District Dental Society, Texas Dental Association, American Dental Association, and American Academy of Periodontology.

## FOREWARD

Dear Patient,

One of the primary goals we have as periodontists is to educate our patients. You can never have too much knowledge and information about issues that may be affecting your health. This has never been more important than in the emerging data from research linking periodontal inflammation and disease to several serious systemic diseases and conditions.

This information is being published at tremendous speed by both physicians and periodontists. This results in commercial information brochures for patients being out of date by the time they are handed out. Another problem is the information is often written at such a basic level that very little can be learned. My patient information booklet will hopefully accomplish two things:

- 1) Provide the very latest information on the periodontal inflammation (disease)-systemic disease (condition) linkage. This information will come only from studies that are statistically sound and published in peer-reviewed journals.
- 2) I will keep much of the scientific jargon out, but this booklet will be full of useful and in-depth information.

This booklet will discuss the following:

- 1) Periodontal disease and inflammation
- 2) Cardiovascular disease and stroke
- 3) Diabetes
- 4) Pre-term low birth weight

If you feel any of this information would be pertinent to a family member, friend, or acquaintance, call and we will gladly send them a copy.

If you have any questions, call us and we will try to answer it. My staff is very knowledgeable and can help you.

Sincerely,

Barry W. Heaton, D.D.S.

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# Periodontal Disease and Periodontal Inflammation

In order to understand how periodontal inflammation and disease is a risk factor for systemic diseases it is important to look at the process of inflammation in the mouth.

Many patients are surprised to learn that the human mouth contains up to 500 species or types of bacteria. In many patients the total number of oral bacteria can easily outnumber the number of cells that make up their body. Fortunately only twelve types of these bacteria are disease-producing or pathogenic. Some of the bacteria are so pathogenic that when injected into a test animal the animal dies within twenty-four hours.

The disease-producing bacteria cannot thrive unless they are in a protected environment. When your dentist or dental hygienist probes between your teeth and gums they are looking for periodontal pockets. These pockets are where the pathogenic bacteria will grow unimpeded. In Figure 1 you will get an appreciation of how the tooth-bone-gum attachment is supposed to look on one side and how it looks with a periodontal pocket on the other side.

When these bacteria have a protected area in the pocket they are able to increase in number. The body tries to fight the infection and actually does a good job considering how pathogenic these bacteria are. White blood cells migrate to the pocket area and fill the soft gum tissue around the pocket. These white blood cells pump out large quantities of substances called inflammatory mediators. These are very potent substances that indiscriminately cause destruction to the bone and gum attachment. Unfortunately, the bone and gum attachment destruction results in a deeper pocket which then allows a higher bacterial count in this protected environment.

## Healthy

Healthy Gums

Healthy Bone Level

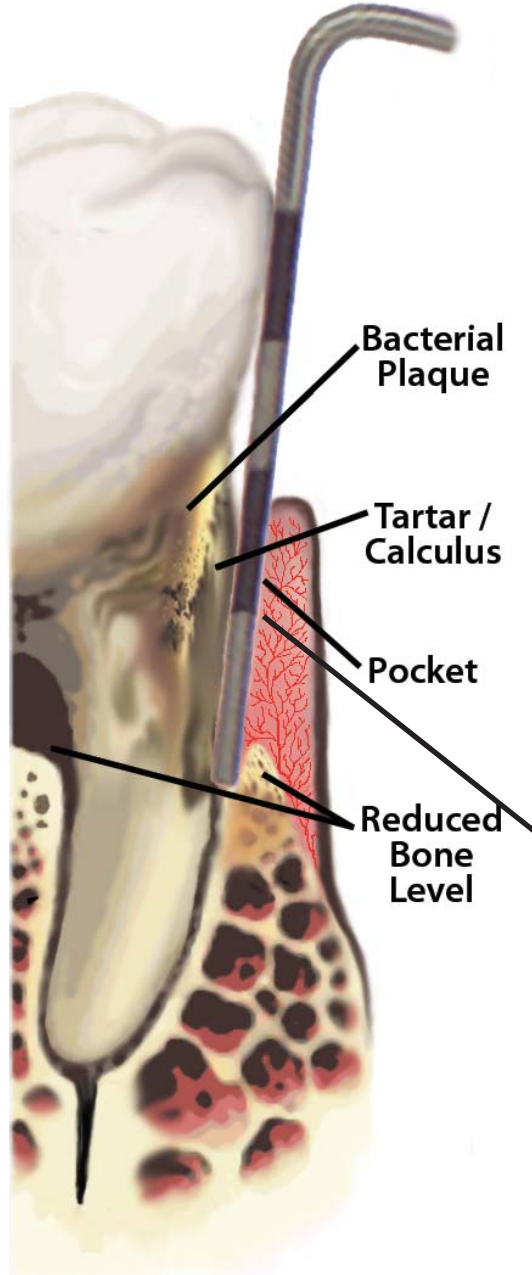
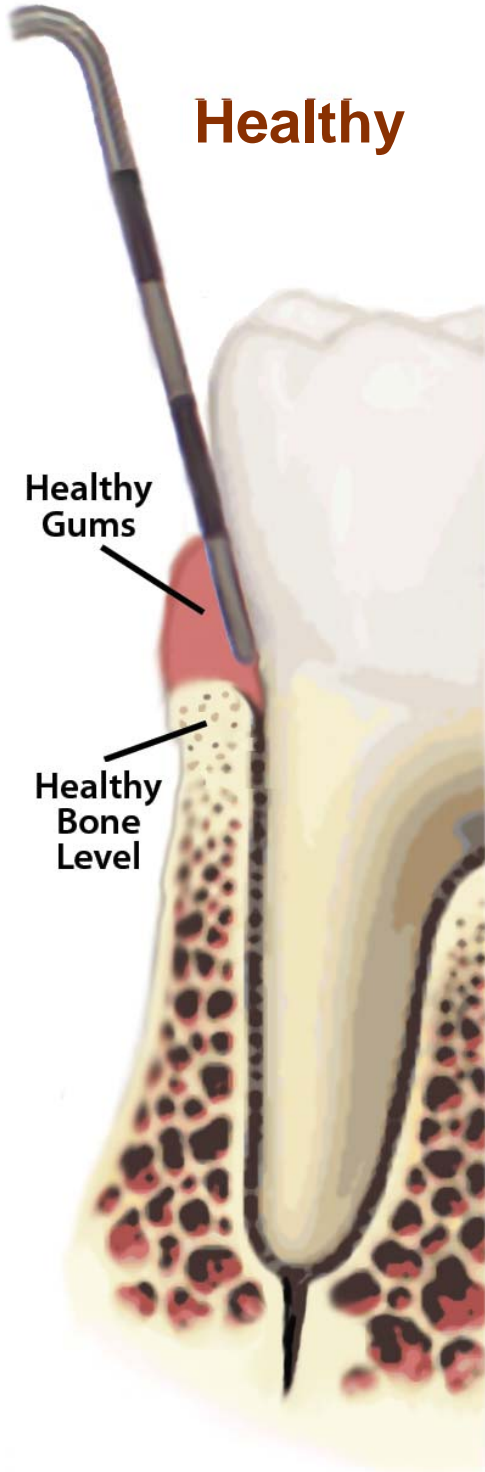
## Periodontal Disease

Bacterial Plaque

Tartar / Calculus

Pocket

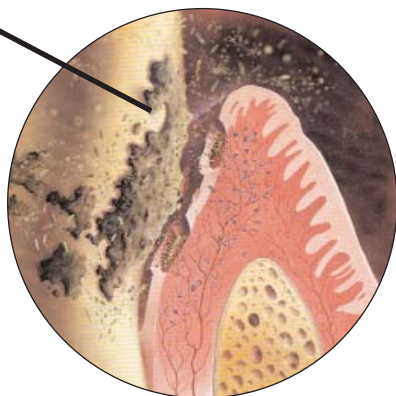
Reduced Bone Level



Two things will happen in this scenario. These disease-producing bacteria will get into the bloodstream and travel throughout the body. It has been shown repeatedly that the very act of chewing will drive these bacteria into the bloodstream. What many researchers now think is important are the inflammation-producing substances being produced by the white blood cells in the gum tissue. These substances get into the bloodstream and have a profound effect on different organs and other areas of the body.

I have been asked how such a small pocket area can have such a profound affect. It is important to realize that the actual size of the area in a patient's mouth with generalized pockets correspond to the size of the palm of your hand. An area of this magnitude if visibly infected would cause a great deal of alarm. Unfortunately, since the pockets are hiding out of view in the mouth many patients may not know they have a problem.

The latest information we have on the prevalence of periodontal disease and pockets is that 80% of all adults have at least one pocket area. In adults 55-64, 90% have at least one pocket area. Patients that have periodontal disease with multiple pockets throughout the mouth are 30% of the population.



# Cardiovascular Disease and Stroke

One of the major causes for death and disability are blockages in large arteries caused by the build-up of plaques.

Statistics show at least 70 million Americans have Cardiovascular Disease (CVD). Seven million people in America have had a heart attack or angina. Fifty percent of men and sixty-four percent of women who died of a heart attack had no prior evidence or diagnosis of heart disease. Eight to twelve percent of strokes caused by blocked arteries have resulted in death within thirty days.

Physicians initially thought that blockages happened by a simple build up of fat over the years in the vessel wall. It is now known that this was a gross oversimplification of the process.

Physicians now know that inflammatory cells and the inflammatory mediators play a prominent role. (Ross, R. Atherosclerosis-an inflammatory disease-New England Journal of Medicine 1999).

The sequence of events that leads to a blocked artery is the following:

- 1) High levels of cholesterol (low density lipoproteins-LDL) cause an inflammatory reaction in the vessel wall. This usually occurs where there is a sharp bend in the vessel or where the vessel splits into two.
- 2) White blood cells migrate in response to inflammation to the area. The periodontal inflammatory mediators being pumped into the bloodstream can stimulate these white blood cells to become hyperactive and begin producing the vessel blocking plaques. There are now many excellent studies that show a definite linkage. The following are only a few of the many. I've listed the author, title, publication, and year.

- 1) Pussinen P.J. et.al, Antibodies to periodontal pathogens are associated with coronary heart disease-Arterioscler ThrombVascular Biology 2003.
- 2) Desvarieux M et.al. Periodontal microbiota and carotid intima-media thickness, the oral infections and vascular disease study (Invest) Circulation 2005
- 3) Pussinen P.J. et.al, High serum antibody levels to P. gingivalis (a periodontal bacterium) predict myocardial infarction (heart attack). Eur J. of Cardiovas Prev. Rehab 2004.

Other studies are actually finding evidence of the periodontal bacteria in the plaque that's blocking the artery.

- 1) Fiehn NE, et.al, Periodontal bacterial DNA isolated from coronary artery plaques. J of Perio. 2005
- 2) Kozarov E.V. et.al, Periodontal bacteria cultured from coronary artery plaques Atheroscler Thromb Vascular Biology 2005

There are large studies now being started that are being funded by the National Institute of Health. The largest study calls for 4000 patients and will look at the effect of periodontal treatment on cardiovascular disease. These studies will take several years to complete.

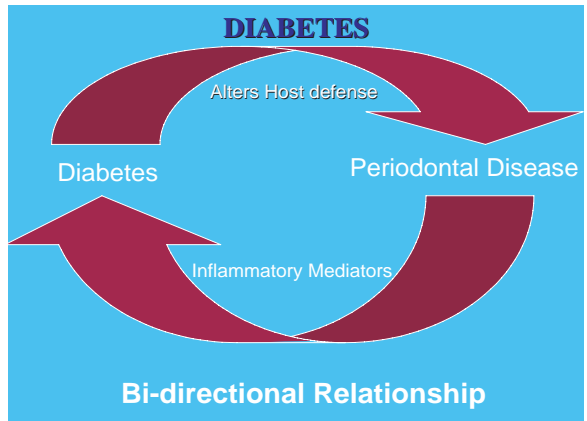
# Diabetes

Diabetes is one of the fastest growing diseases in the United States. In 1998 there were 800,000 new cases of diabetes reported. In 2002 there were 1,300,000 new cases; an increase of 500,000 in just four years. Twelve percent of the U.S. population is diabetic. Diabetes is now the fastest growing disease in the United States.

Physicians have known for many years that diabetic control is greatly complicated by inflammation and infection of any sort anywhere in the body. This especially includes periodontal infection and inflammation.

Poorly controlled diabetes increases the severity of periodontal disease and vice versa. This has been described as a bi-directional relationship. I prefer to call it a positive feedback loop. Figure 2.

In order to stop the cycle you have to break the loop and the easiest way to do that is aggressively treat the periodontal disease.



If a diabetic periodontal patient maintains good oral hygiene after treatment there is very little to no periodontal effect on their blood sugar control. Diabetic patients that do not have active periodontal disease treated or maintained will have a very difficult time controlling their blood sugars.

## Pre-term Low Birth Weight (PTLB)

There is a very strong linkage between pre-term low birth weight (PTLB) and active periodontal disease.

Pre-term by definition is less than 37 weeks and low birth weight is less than 5lbs 8oz. Incidence of PTLB is 10% and rising in the United States. The major risk factors are maternal age, previous PTLB, low maternal weight gain, and genital/urinary tract infections (GUI). GUI is the number one risk factor. It has been found that infections other than from the reproductive tract can also cause PTLB.

The same periodontal inflammatory mediators that we have been discussing are also involved in normal childbirth. If these mediators are being pumped into the bloodstream from other sources (such as periodontal disease) pre-term childbirth can and will commence.

It has also just been reported this year (2006) that periodontal bacteria are being found in the amniotic fluid after pre-term delivery. This indicates a direct correlation of bacteria getting into the bloodstream from the gum tissues and infecting the amniotic fluid..

Two studies done by Dr. Nestor Lopez have investigated this relationship. The first study in 2002 found that women with untreated periodontal disease had a 10.1% incidence of PTLB. Women that had periodontal disease but were treated had a 1.84% incidence of pre-mature delivery.

In a second study (2005) Dr. Lopez did showed that just superficial gingivitis resulted in a 6.17% incidence of PTLB. Women that initially had gingivitis but were treated had a 2.14% incidence of PTLB.

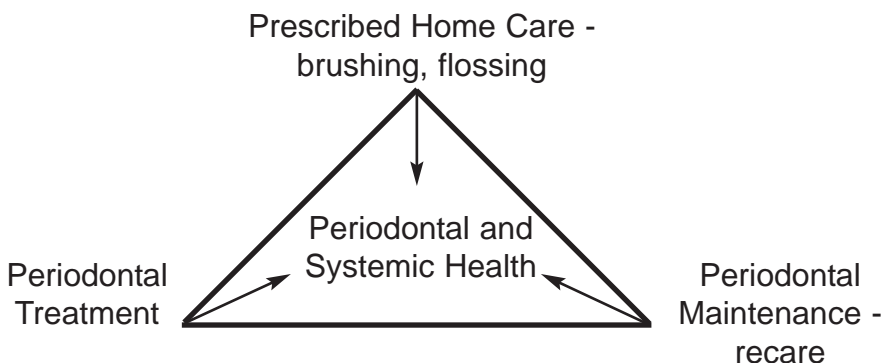
Studies consistently show that by treating active periodontal disease the rate of PTLB will be decreased. © Barry W. Heaton, DDS

## Things You and Your Dentist/Periodontist Can Do

So now we have information about periodontal inflammation, periodontal disease, and its linkage to systemic disease or conditions. What I would like all readers to know is that this is a preventable and treatable risk factor.

Prevention involves following the prescribed home care routine shown to you by your dentist or dental hygienist. It is critical that bacteria be kept off the tooth at the gumline. It is also very important that you keep your maintenance or recare appointments. If either maintenance or home care is not followed the probability of periodontal disease is high.

If you do have periodontal disease it is a treatable risk factor and can involve what I call a triad of treatment.



If any one of the three is not done, treatment will not be successful.

In closing, periodontal health is emerging as one of the prerequisites for overall bodily health.