

**FUNCTIONAL MEDICINE UPDATE**  
**SEPTEMBER 2009**  
**ISSN 1092-1761**  
**Vol. 29, No. 9**

**The Perio-Cardio Connection**

In June 2009, the American Academy of Periodontology (AAP) issued a press release titled “Healthy Gums and a Healthy Heart: The Perio-Cardio Connection,” which described newly released clinical recommendations encouraging cardiologists to examine the mouth and periodontists to ask patients questions about heart health. These recommendations were published in a consensus paper developed in concert by cardiologists and periodontists. The press release includes a quote from David Cochran, DDS, PhD, President of the AAP and Chair of the Department of Periodontics at the University of Texas Health Science Center at San Antonio: “Both periodontal disease and cardiovascular disease are inflammatory diseases, and inflammation is the common mechanism that connects them. The clinical recommendations included in the consensus paper will help periodontists and cardiologists control the inflammatory burden in the body as a result of gum disease or heart disease, thereby helping to reduce further disease progression, and ultimately to improve our patients’ overall health. That is our common goal.” REF #1

**Hygiene, Sanitation, and Nutrition: Advances Have Led to Reduction in the Burden of Infectious Disease**

As a forward to this month’s interview on periodontal health, Dr. Bland reminds listeners of his opinion that of all of the advances in medical technologies that have led to an improvement in health outcomes in large populations, advances in three basic areas—hygiene, sanitation, and nutrition—have been extraordinarily important contributors that should not be overlooked. He revisits the work of Ivan Illich, who wrote a book titled *Medical Nemesis* in the 1970s that explored ideas about the meaning of medicine and the role of health care in contemporary society. REF #2

**Telomere Length as a Marker of Biological Aging?**

Telomeres are protective DNA-protein complexes at the end of linear chromosomes that promote chromosomal stability and may be a marker of biological aging. Telomere shortness in human beings is emerging as a prognostic marker of disease risk, progression, and premature mortality in many types of cancer, including breast, prostate, colorectal, bladder, head and neck, lung, and renal cell. Dr. Bland discusses some recent studies that aimed to examine whether improvements in nutrition and lifestyle are associated with increases in telomerase activity. One study, published in the *American Journal of Clinical Nutrition* in 2009 by researchers from the National Institute for Environmental Sciences at the National Institutes of Health (NIH) and the University of Utah, examined whether multivitamin use is associated with longer telomeres in women. This was a cross-sectional analysis of data from 586 women (age 35 – 74 years) participating in the Sister Study. The results of this study provided the first epidemiological evidence that multivitamin use is associated with longer telomere length

among women. In another study (this one done by Dr. Dean Ornish's research group at the University of California, San Francisco, and mentioned in a previous issue of *Functional Medicine Update*), 30 men with biopsy-diagnosed low-risk prostate cancer were asked to make comprehensive lifestyle changes. The interpretation of data from this study indicated that comprehensive lifestyle changes significantly increased telomerase activity. REF #3 – 4

In an editorial that was published along with the study by the NIH/University of Utah group, Dr. Abraham Aziz writes about the association of leukocyte telomere length (LTL) with aging-related disorders, principally atherosclerosis. Although conflicting results had been published on whether LTL forecasts survival in the elderly, Dr. Aziz discusses recent research using a same-sex twin model. In his editorial, Dr. Aziz states that telomeres are a "mitotic clock" in cultured human somatic cells. REF #5

### **A Study of Coenzyme Q10 Supplementation in Infertile Men**

Dr. Bland discusses a study published in the *Journal of Urology* in 2009 titled "Efficacy of Coenzyme Q10 on Semen Parameters, Sperm Function and Reproductive Hormones in Infertile Men." In this study a total of 212 infertile men with idiopathic oligoasthenoteratospermia were randomly assigned to receive 300 mg coenzyme Q10 orally daily or a similar placebo regimen during a 26-week trial period, followed by a 30-week treatment-free phase. After collecting data from multiple analyses, the conclusion of this study indicated that coenzyme Q10 supplementation resulted in a statistically significant improvement in certain semen parameters. The researchers indicate that further studies are needed to draw a final conclusion and evaluate the effect of coenzyme Q10 supplementation on the pregnancy rate.

Why was coenzyme Q10 chosen for this study? According to the study authors, coenzyme Q10 (CoQ10), or ubiquinone, is an isoprenylated benzoquinone that is an antioxidant, an energy promoting agent, a membrane stabilizer, and a regulator of mitochondrial permeability transition pores. In sperm cells, most CoQ10 is concentrated in the mitochondria of the mid piece and energy-dependent processes in the sperm cell depend on the availability of CoQ10. CoQ10 in seminal fluid shows a direct correlation with semen parameters. REF #6

### **Additional Research by Dr. Dean Ornish on Lifestyle Management and Prostate Cancer**

In a 2008 issue of *Urology*, Dr. Dean Ornish's research group from the University of California, San Francisco, published an article titled "Clinical Events in Prostate Cancer Lifestyle Trial: Results from Two Years of Follow Up." The Prostate Cancer Lifestyle Trial was a 1-year randomized controlled clinical trial of 93 patients with early-stage prostate cancer undergoing active surveillance. The patients in the experimental arm were encouraged to adopt a low-fat, plant-based diet, to exercise and practice stress management, and to attend group support sessions. After following the patients in the experimental arm and the control group for two years, these researchers concluded that patients with early-stage prostate cancer choosing active surveillance might be able to

avoid or delay conventional treatment for at least two years by making changes in their diet and lifestyle. REF #7

### **Articles on Cognitive Performance and Successful Aging**

Dr. Bland discusses a variety of recent articles looking at different aspects of cognitive performance and aging. The first article is titled “The Alzheimer’s Disease-Diabetes Angle: Inevitable Fate of Aging or Metabolic Imbalance Limiting Successful Aging,” and examines the question of whether age-related diseases such as Alzheimer’s disease (AD) and type 2 diabetes (T2D) represent the endpoint of aged, exhausted, and dysfunctional cells having reached their maximal life expectancy, or whether AD and T2D are the consequences of living in superabundance, including excessive food supply, work demands, psychosocial stress, and an excessive sedentary lifestyle. A second article titled “Epigenetic Codes in Cognition and Behaviour” focuses on brain biochemistry by reviewing recent findings on the role and mechanisms of epigenetic codes in the brain, and discusses their implication in synaptic plasticity, cognitive functions, and psychiatric disorders. “Brain Foods: The Effects of Nutrients on Brain Function” is an article that describes how regulators of synaptic plasticity can function as metabolic modulators, responding to peripheral signals such as food intake, and how understanding the molecular basis of the effects of food on cognition will help us to determine how best to manipulate diet in order to increase the resistance of neurons to insults and promote mental fitness. Finally, Dr. Bland discusses a 2009 article in the *Journal of Neurology, Neurosurgery, and Psychiatry* on 25-hydroxyvitamin D levels and cognitive performance in middle age. REF #8 – 11

### **Clinician/Researcher of the Month**

**Gan Siok Ngoh, BDS, MSc**  
**Orchard Scotts Dental**  
**501 Orchard Road**  
**#05–08 Wheelock Place**  
**Singapore 23 8880**  
**Republic of Singapore**

Dr. Gan Siok Ngoh is a specialist in periodontology practicing in Singapore. She has spent many years evaluating complementary therapies contributing to health, including traditional Chinese medicine, nutrition, spinal and chiropractic associations, and kinesiology. Dr. Gan provides a detailed explanation of inflammation as the common link between oral and systemic conditions. Systemic diseases that have been linked with periodontal infections include cardiovascular disease, pre-term/low-birth-weight babies, diabetes mellitus, rheumatoid arthritis, and renal and respiratory conditions.

Dr. Gan reviews the warning signs that can indicate the presence of inflammation in the mouth and gums. The mouth is described as a site that can serve as an early-warning system for inflammatory processes that may be occurring throughout the body. Dr. Bland and Dr. Gan discuss important article on this subject, including research linking

periodontal disease to certain cancers. They also talk extensively about the link between oral infections and vascular disease epidemiology. REF #12-13

Listeners who would like to learn more about the links between periodontal health and systemic diseases are encouraged to visit [www.thesystemiclink.com](http://www.thesystemiclink.com).

### **In Closing: “The Sacred Law of Salads”**

Dr. Bland discusses an article titled “Giacomo Castelvetro’s Salads. Anti-HER2 Oncogene Nutraceuticals Since the 17<sup>th</sup> Century?” In this 2008 article published in *Clinical Translational Oncology*, a group of researchers discusses new nutraceutical management strategies against HER2-positive breast cancer disease in the 21<sup>st</sup> century by focusing on a book written in 1614 by Giacomo Castelvetro titled *The Fruit, Herbs & Vegetables of Italy*. According to the article authors, in this 17<sup>th</sup> century text, Castelvetro tried to persuade the English to eat more like Mediterraneans by promoting what he called “The Sacred Law of Salads,” which included consumption of raw vegetables and generous amounts of olive oil. The authors suggest that Castelvetro’s book might be considered the first (unintended) example of customized diets for breast cancer prevention based on genetic make-up, and that these potentially protective dietary protocols could be evaluated in human pilot studies in the future. REF #14

### **References**

1. [http://www.perio.org/consumer/perio\\_cardio.htm](http://www.perio.org/consumer/perio_cardio.htm)
2. Barnet RJ. Ivan Illich and the Nemesis of Medicine. *Med Health Care Philos.* 2003;6(3):273-286.
3. Xu Q, Parks CG, DeRoo LA, Cawthon RM, Sandler DP, Chen H. Multivitamin use and telomere length in women. *Am J Clin Nutr.* 2009;89:1857-1863.
4. Ornish D, Lin J, Daubenmier J, Weidner G, Epel E, et al. Increased telomerase activity and comprehensive lifestyle changes: a pilot study. *Lancet Oncol.* 2008;9(11):1048-1057.
5. Aviv A. Leukocyte telomere length: the telomere tale continues. *Am J Clin Nutr.* 2009;89:1721-1722.
6. Safarinejad MR. Efficacy of coenzyme Q10 on semen parameters, sperm function and reproductive hormones in infertile men. *J Urol.* 2009;182(1):237-248.
7. Frattaroli J, Weidner G, Dnistrian AM, Kemp C, Daubenmier JJ, et al. Clinical events in prostate cancer lifestyle trial: results from two years of follow-up. *Urology.* 2008;72(6):1319-1323.
8. Bierhaus A, Nawroth PP. The Alzheimer’s disease-diabetes angle: inevitable fate of aging or metabolic imbalance limiting successful aging. *J Alzheimers Dis.* 2009;16(4):673-675.
9. Graff J, Mansuy IM. Epigenetic codes in cognition and behavior. *Behav Brain Res.* 2008;192(1):70-87.
10. Gomez-Pinilla F. Brain foods: the effects of nutrients on brain function. *Nat Rev Neurosci.* 2008;9(7):568-578.

11. Lee DM, Tajar A, Ulubaev A, Pendleton N, O'Neill TW, et al. Association between 25-hydroxyvitamin D levels and cognitive performance in middle-aged and older European men. *J Neurol Neurosurg Psychiatry*. 2009;80(7):722-729.
12. Michaud DS, Liu Y, Meyer M, Giovannucci E, Joshipura K. Periodontal disease, tooth loss, and cancer risk in male health professionals: a prospective cohort study. *Lancet Oncol*. 2008;9(6):550-558.
13. Desvarieux M, Demmer RT, Rundek T, Boden-Albala B, Jacobs DR Jr, et al. Periodontal microbiota and carotid intima-media thickness: the Oral Infections and Vascular Disease Epidemiological Study (INVEST). *Circulation*. 2005;111(5):576-582.
14. Colomer R, Lupu R, Papadimitropoulou A, Vellón L, Vázquez-Martín A, et al. Giacomo Castelvetro's salads. Anti-HER2 oncogene nutraceuticals since the 17<sup>th</sup> century? *Clin Transl Oncol*. 2008;10:30-34.

*The information given and discussed in these materials is for research and education purposes only and is not intended to prescribe treatment.*