**Pharmaceutical Mythology:  Testosterone Does Not Increase CVD Risk; It Protects against CVD.**

Question from NUTRI-SPEC doctor:  **"Do you have the study showing that low testosterone is a primary risk factor in cardiovascular disease?"**

--- The study?  --- If you do a search of the medical literature via PubMed, you will come up with over a thousand studies showing that low testosterone is a risk factor for cardiovascular disease, and many of those studies go as far as to show that testosterone replacement therapy decreases the incidence of heart attacks.  Any medical physician who does not have his head buried in the sand should be aware of the countless studies over the last 3 decades showing how low testosterone increases cardiovascular mortality, and how supplying adequate testosterone is protective.  Regrettably, only a tiny percentage of the medical profession knows anything about how the human body functions in health and disease --- with their education completely controlled by the pharmaceutical industry.

However --- recently, controversial findings seemed to cast doubt on the well-known connection between hypogonadism and cardiovascular disease.  It has become increasingly popular over the last 10-15 years to supplement men with testosterone inappropriately.  The term "manopause" has been coined to highlight the fading testosterone levels in many men.  Unscrupulous and/or ignorant physicians are supplementing with testosterone every man that gets into his 50s and starts to "lose it" a little bit.  So, many of these men are running high testosterone (as well as secondary very, very high estrogen due to conversion from excess testosterone supplementation.)  These men, and only these, are now suffering an increased incidence of cardiovascular disease.  As a result, there have been a few studies published in the last couple years cautioning against testosterone as dangerously increasing the incidence of cardiovascular disease.

To investigate whether there is any validity to that cautionary reaction, there have been a couple studies done in the last few years that clarify the picture quite well.  --- One comprehensive article is not a clinical study, but rather a meta-analysis of the data produced by many, many other studies.  This meta-analysis was published in the European Journal of Endocrinology in 2011 and entitled, *Hypogonadism as a Risk Factor for Cardiovascular Mortality in Men: A Meta-Analytic Study.*

This meta-analysis looked at nearly 1,200 articles on the connection between testosterone and cardiovascular disease.  The unequivocal conclusion was that low testosterone (as does elevated estradiol) correlates with increased risk of cardiovascular disease and cardiovascular mortality.  Furthermore, it concluded that testosterone replacement therapy in hypogonadism (--- i.e.,

appropriate testosterone replacement therapy) moderates metabolic components associated with cardiovascular risk. (Specifically, it was found that in cardiac patients testosterone replacement therapy resulted in a significant increase in treadmill exercise time to 1mm ST segment depression.)

Some of the same researchers did a meta-analysis looking at the connection between low testosterone and metabolic syndrome, and yet another analysis relating testosterone to Type II diabetes (the ultimate result of metabolic syndrome). These meta-analyses concluded that even after adjusting for age and Body Mass Index, Type II diabetes is associated with lower testosterone. Furthermore, testosterone replacement therapy is associated with a significant reduction of not only fasting glucose, but also fat mass and particularly triglycerides (--- and high triglycerides is the #1 risk factor for cardiovascular disease). It is unquestionably concluded that low testosterone is an independent risk factor for Type II diabetes, and of metabolic syndrome with all its sequelae, including cardiovascular disease.

Another study (not a meta-analysis, but an actual clinical study) was published in the Journal of Sexual Medicine in 2010 entitled, *Low Testosterone is Associated with an Increased Risk of Major Adverse Cardiovascular Events: Lethality in Subjects with Erectile Dysfunction.* This study concludes that low testosterone levels are associated with a higher death rate from major adverse cardiovascular events. It also suggested that testosterone replacement plays a protective role against the development of atherosclerosis.

Another article published in the Journal of Andrology in 2009 is entitled, *The Dark Side of Testosterone Therapy: Cardiovascular Disease.* The study concludes, "A considerable body of evidence exists suggesting that androgen deficiency contributes to the onset, progression, or both, of cardiovascular disease. Androgen deficiency is associated with increased levels of total cholesterol and low density lipoprotein, increased production of pro-inflammatory cytokines, and increased thickness of the arterial wall. Low testosterone also contributes to endothelial dysfunction. Testosterone supplementation restores arterial vasoreactivity, reduces pro-inflammatory cytokines, lowers total cholesterol and triglyceride levels, and improves endothelial function."

We could go on and on and on, but the evidence in favor of maintaining a healthy testosterone level to achieve many benefits is irrefutable, but specifically and most importantly, to protect against cardiovascular disease. A man's testosterone should remain above 600 well into old age. Testosterone below 500 is pathological, and indicates the need for physiological testosterone supplementation (as a gel or cream) of at least 10-20 mg daily, or as much as necessary to elevate testosterone to above 600.