Fitting Into Your Genes:
How Nutrition Can Alter Your Future.
Part 3 of 3

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In the first two parts of this article, I reviewed a few of the many nutritional factors beneficial for cardiovascular disease (CVD) treatment and prevention. Additionally, I have addressed how nutraceutical dosages can influence genetic (phenotypic) expression of various other disorders.

In the third and final part of this article, I will:

1. Investigate with you a particularly important nutraceutical Vitamin D - which has scientifically-investigated positive influence over cardiovascular disease (CVD) and other disorders;
2. Show how exercise and lifestyle factors are involved in decreasing the expression of various diseases, which many of us view fatalistically as part of our genes;
3. Most importantly, emphasize the synergistic effect of nutritional and lifestyle factors, their effects on preventing disease, and the importance of incorporating the holistic approach so greatly needed in healthcare today.

Synergy: Common Sense Revisited

Webster's dictionary defines synergism as the cooperative action of discrete parts such that the total effect is greater than the sum of the effects taken independently. Considering nutritional factors, when looking at particular nutrients, one must always consider these particulars in concert with the orchestration of the diet as a whole. The synergistic effect of nutrients is in harmony with and supports normal physiology. Concomitantly, exercise and lifestyle factors including work and stress management, rest and recovery, and social, emotional, spiritual and relational factors influence the melody of the harmonious orchestra of ones health.

The *synergistic approach* in the context of the profession of healthcare is what Functional Healthcare is all about. It is the return of common sense within healthcare and medicine. The effectiveness of these approaches are now proven in many research studies, and are more generally accepted by the public. Unfortunately, for the last few generations, pharmaceutical companies and conventional U.S. medicine have been closely associated, and the result has been a focus on drugs, which alter a bio-active molecule, inhibit a particular enzyme, or block or alter a specific step in normal physiology. This always results in a specific effect, with a multitude of inherent undesirable side effects, without considering the long term effect on the organism as a whole. Our bodily systems are created to work in an interconnected fashion, each system interdependent with other systems working optimally and harmoniously. There is an intelligent design integrated with the biochemical engineering requirements of our cells to conduct life on this planet, such that a particular supply of nutrients is required for our cells good health, disease prevention and health restoration.

Synergistic effects and common sense in healthcare can be lost when wading through all the information on the particular minutia of a specific nutrient or lifestyle factor. In other words, one may not see the forest for the trees. The common sense particulars of drinking enough clean water, getting adequate sunlight, appropriate daily exercise, appropriate periods of work and rest, recreation and recovery, beneficial thinking processes, meaningful close social interactions, and spiritual issues are all intertwined in the factors involved in health. Let the reader continue through the last part of this article while keeping this overriding principle in mind!

Other Nutritional Factors and Genetic Influences

Vitamin D

Vitamin D (cholecalciferol or the active form called 1,25-dihydroxyvitamin D) has been getting much attention lately for its beneficial effects in the prevention of multiple diseases. Recent articles[1 2 3 4] implicate low serum levels of vitamin D and chronic vitamin D deficiency with increased incidence of heart attack, stroke, hypertension, multiple sclerosis; cancers of the colon, prostate, breast, and ovary; types 1 and 2 diabetes, and metabolic syndrome. So not only does vitamin D deficiency cause rickets in children, osteomalacia and osteoporosis in adults, but chronic deficiency is implicated in many significant diseases. Vitamin D status is best measured in the blood by measuring 25-hydroxyvitamin D (also called 25-hydroxycholecalciferol) levels[5]. Healthy blood levels should be between 30 to 60 ng/ml[6]. Unfortunately, fairly common results are at inadequate levels closer to 20 ng/ml, far below where they should be.

Many people often feel helpless with the development of these diseases and resign themselves to having bad genes with the onset of these disorders, especially various cancers. However vitamin D gives us an illustration of a nutritional substance, essential for life, with a cascade of harmful effects when there is a deficiency. Of practical importance, many people even in the generally affluent culture of the United States, have chronic deficiencies in vitamin D[7 8]. Those most likely to be deficient in vitamin D are the elderly, darker-skinned people, those living in areas of decreased sunlight, people who avoid exposure of the skin to the sun altogether, people on full-vegan diets, those who avoid fish or fish oils, and those who avoid or can't absorb milk.

The best way for us to assure that we get adequate vitamin D is by getting about 20 minutes a day of unobstructed summer sunlight. Our bodies synthesize vitamin D through sunlight exposure. Pale and fair-skinned individuals make about 20,000 units of vitamin D after about 20 minutes of summer sun[9]. This is about 100 times more vitamin D than the U.S. government Food and Nutrition Information Center says you need every day. (More on this controversy shortly!). Darker skinned individuals may need about 30 minutes of sun or more a day for adequate vitamin D synthesis.

DRI's for Vitamin D Get a D Grade

Dietary Reference Intake (DRI) is a set of guidelines set up in 1997 to give more detailed guidance than the Recommended Dietary Allowances (RDA) system which preceded it. The DRI for vitamin D for ages up to 50 is 200 IUs. After 50 it increases to 400 IUs, and after 70 increases further to 600 IUs.

However, good research points to the high likelihood that the DRI's for vitamin D are so low that they essentially assure that everyone sticking to them would have a significant deficiency, thereby contributing to the genetic expression of diseases such as heart attack, stroke, hypertension and the other diseases mentioned earlier in this article! An excellent study performed by Heaney[10] and

other researchers show that healthy men generally require 3000 to 5000 IU of vitamin D per day to maintain healthy blood 25-hydroxycholecalciferol levels. Their conclusions essentially say that the recommended DRI's for vitamin D are inadequate to maintain serum 25-hydroxycholecalciferol concentration in the absence of substantial production of vitamin D by skin exposure to sunlight.

To Do's Regarding D

Since vitamin D is so important for many health issues including CVD prevention, to maintain healthy vitamin D levels, do the following:

- Have your nutritional health care practitioner measure your blood 25-hydroxycholecalciferol level
- Have your blood 25-hydroxycholecalciferol level checked monthly during the winter
- If fair skinned, get 20 minutes of full sunlight each day with at least your face and forearms or calves exposed
- If dark skinned, get 30 minutes of full sunlight each day with at least your face and forearms or calves exposed
- ***Do not*** use sunscreen for the first 20 to 30 minutes in full sun
- If living in an area with little direct sunlight, take a multivitamin with at least 1000 IU of vitamin D/day (especially during winter, or if your religion requires you to have most of your skin covered)
- Take fish oil daily (especially if on a full vegan diet)

Nutrient-Lifestyle Synergy and Genetics

Optimal intake of Vitamin D combined with adequate sunlight exposure is an excellent illustration of how appropriate nutrient intake and lifestyle factors have profound synergistic influences on health. Individual nutrients taken alone are insufficient to maintain optimum health and decrease genetic expression of disease. When nutrients are consumed through healthy foods, with nutraceuticals judiciously used, in coordination with healthy lifestyle and exercise factors, beneficial outcomes on ones genetic expression can be expected. So my patient John, mentioned at the beginning of this 3 part series, can not claim bad genes as the sole cause of his problems.

The investigation of many other beneficial nutraceutical influences for CVD and other disorders could be reviewed. Nutraceutical substances such as Policosonol, CoQ10, Red Yeast Rice, Nattokinase and Guggal with their beneficial influences on CVD could be reviewed. Additionally, their synergistic effects in relation to each other and to other disorders could be investigated. Nevertheless, for a well balanced functional healthcare focus, exercise and lifestyle factors will now be addressed.

Exercise and Lifestyle Factors

Exercise

A combination of regular aerobic exercise and strength training has one of the most powerful positive effects for prevention of many diseases, even some genetically linked disorders. However, the lack of regular exercise is one of the most common deficiencies in many middle aged and older Americans. This deficiency is now becoming common even in young children. From a purely common sense viewpoint, we all know that we cannot possibly maintain optimal health, prevent disease, and decrease genetic predispositions toward disease without regular exercise.

With my background in bodybuilding and having formerly been a personal trainer working with many people, I have some practical insights into why exercise deficiencies predominate in middle age and the elderly:

- People tend towards comfort and ease; exercise requires some discomfort and challenge
- Regular exercise takes planning, discipline and effort
- Results come over time, not immediately
- Family and work responsibilities often require that regular exercise take a lower priority
- Starting regular exercise is harder as we age
- Habits don't change easily
- Those having never exercised regularly don't know what it feels like to feel *really good*

Practical solutions to implementing regular exercise I have gathered in over 30 years of exercising regularly and teaching others to do so can be summarized in two words:

- Planning
- Choices

Planning to exercise a certain number of days each week on a regular basis requires ordering your schedule, what and when you eat, coordinating family and work time, choosing stress management and emotional control techniques, and regularly obtaining adequate and timely rest. This is essentially a Functional Healthcare approach towards living. In other words, you must make choices, each day, throughout the day to control your internal environment, even though things that will happen outside of yourself will often direct you to forgo your planning for exercising. This is why I recommend to all my patients that whenever possible, they try to exercise first thing in the morning. The benefits of the synergy between diet, nutraceuticals, and exercise and lifestyle disciplines can have profound influences on genetic expression and how you fit into your genes.

Summary Points and Recommendations

A summary of points to remember and recommendations from part 1, 2 and 3 of this article are provided:

- Nutraceuticals tend to have beneficial synergistic effects
- Nutrients effect genetics
- DRI levels for vitamins are often insufficient
- Take high doses of B6, B12 and Folic acid
- Elevated homocysteine is associated with many diseases
- Have your healthcare practitioner regularly check your homocysteine levels
- Nutraceuticals are supplemental to a good diet
- One diet does not fit all
- Personalized health care is available for you now with the right practitioner
- Nutraceuticals, diet and lifestyle factors significantly influence many diseases and genetic expression of disease
- Have your health practitioner regularly check your blood 25-hydroxyvitamin D levels
- Get 20 to 30 minutes of sun each day...without sunscreen
- Plan to exercise regularly and choose to do so

I hope this has been helpful in some way for all who have read this. In parting, I hope that as you slide down the banister of life, may all the splinters be pointing away from you!

Dr. Husbands has 15 years experience as a Chiropractor with dual board certifications as a Certified Clinical Nutritionist (CCN) and in Anti-Aging Health. He has extensive post-graduate training in nutritional management of illnesses, and BioSET Allergy Elimination. He's recently returned to the San Francisco Bay Area, after practicing in Southern California for 13 years. He is also a former competitive bodybuilder and is still involved in recreational bodybuilding at 48 years-young!

References

[1] Zittermann A. Vitamin D in preventive medicine: are we ignoring the evidence? Br J Nutr. 2003 May;89(5):552-72.
[2] Holick MF. Vitamin D: A millennium perspective. J Cell Biochem. 2003 Feb 1;88(2):296-307.
[3] Marniemi J, Alanen E, Impivaara O, et. al. Dietary and serum vitamins and minerals as predictors of myocardial infarction and stroke in elderly subjects. Nutri, Metab and Cardiovascular Dis. June 2005;15(3):188-197.
[4] Need AG, O'Loughlin PD, Horowitz M, Nordin BE. Relationship between fasting serum glucose, age, body mass index and serum 25 hydroxyvitamin D in postmenopausal women. Clin Endocrinol. 2005 Jun;62(6):738-41.
[5] Vieth R. Vitamin D supplementation, 25-hydroxyvitamin D concentrations, and safety. Am J Clin Nutr. 1999 May;69(5):842-56.
[6] Tangpricha V, Turner A, Spina C, et. al. Tanning is associated with optimal vitamin D status (serum 25-hydroxyvitamin D concentration) and higher bone mineral density Am. J. Clin Nutrit. December 1, 2004; 80(6): 1645 - 1649.
[7] Sullivan SS, Rosen CJ, Halteman WA, Chen TC, Holick MF. Adolescent girls in Maine are at risk for vitamin D insufficiency. J Am Diet Assoc. 2005 Jun;105(6):971-4.
[8] Glerup H, Mikkelsen K, Poulsen L, et. al. Commonly recommended daily intake of vitamin D is not sufficient if sunlight exposure is limited. J Intern Med (2000)247 (2), 260-268.
[9] Webb A, Pilbeam C, Hanafin N, Holick M. An evaluation of the relative contributions of exposure to sunlight and of diet to the circulating concentrations of 25-hydroxyvitamin D in an elderly nursing home population in Boston. Am J Clin Nutr, Jun 1990; 51: 1075 - 1081.
[10] Heaney RP, Davies KM, Chen TC, et. al. Human serum 25-hydroxycholecalciferol response to extended oral dosing with cholecalciferol. Am J Clin Nutr. 2003 Jan;77(1):204-10.