

## Natural Doses of Vitamin D may Prevent Metabolic Syndrome

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The Pure North S'Energy Foundation (PN) in Calgary, Alberta, Canada, is a non-profit organization that offers a preventive health program to a large number of people. The program was launched in October 2007 with an initial focus on employees who work remotely in Northern Alberta, Canada, but was soon expanded to include volunteer participants from across the province. In more recent years, the program broadened their focus to elderly and homeless populations. Participation was voluntary and free of charge.

The program employs health professionals who provide informed lifestyle counseling at enrollment. The health professionals administer a lifestyle questionnaire, collect medical history, assess biometric measurements of the patients (height, weight, waist circumference, blood pressure) and measure serum 25(OH)D and various other biomarkers. The collected information serves the purpose of informing the health professionals as a basis for the lifestyle counseling.

This counseling includes customized recommendations on diet, physical activity, sleep and stress management. Dietary supplementation is often encouraged, and vitamin D supplementation, in particular, is given in physiological doses (5,000 to 8,000 IU/day) due to Canada's Northern latitude, limited sunlight and limited cutaneous synthesis of vitamin D. The program has used

serum 25(OH)D concentrations of 50 ng/ml (125 nmol/L) as a basis for their recommendations for vitamin D supplementation. Follow up visits for health assessments and lifestyle counseling are scheduled annually. The primary objective of the PN program is lifestyle counseling and disease prevention rather than scientific research.

Metabolic syndrome is a constellation of conditions that include abdominal obesity, elevated blood pressure, elevated triglycerides, elevated fasting glucose and reduced high-density lipoprotein (HDL) cholesterol. This syndrome has been established as a risk factor for type 2 diabetes mellitus and cardiovascular disease. The prevalence of metabolic syndrome is increasing worldwide due to deteriorating lifestyles characterized by poor dietary habits and sedentary behaviors. In Canada, a national study revealed that 20% of adults have metabolic syndrome, and this estimate is expected to rise given the aging of the Canadian population. Prevention of metabolic syndrome is an important public health objective as it will reduce of the future societal burden of diabetes and cardiovascular disease.

Recently researchers at the University of Alberta supervised by Professor Paul J. Veugelers analyzed PN's large data set to see if administering physiological doses of vitamin D were associated with a decreased incidence of metabolic syndrome.

They accessed and analyzed data of 6682 volunteer participants with repeated measurements of serum 25(OH)D concentrations and clinical evaluation for metabolic syndrome.

What struck me first were the baseline levels of 25(OH)D and prevalence of metabolic syndrome. As baseline levels rose from < 20 ng/ml to > 50 ng/ml, the prevalence of metabolic syndrome was almost four times less.

With individualized supplementation of vitamin D over 1 year, in the 1,930 participants who had never taken vitamin D, the odds ratio of getting metabolic syndrome dramatically decreased in unison with final achieved 25(OH)D levels, ranging from an odds ration (OR) of 1 at < 20 ng/ml (<50 nmol/l) to an OR of .17 at 50 ng/ml (125 nmol/l). So, those people who took 5,000 to 8,000 IU/day of vitamin D and achieved a final 25(OH)D of > 50 ng/ml cut their risk of developing metabolic syndrome by about 600 %!

The authors somewhat modestly concluded,

“The present study revealed that improvements of vitamin D status may reduce the prevalence of metabolic syndrome. Herewith the study suggests that vitamin D supplementation may further reduce the public health burden for metabolic syndrome, and possible subsequent health conditions including type 2 diabetes and cardiovascular disease.”

The study confirms the Vitamin D Council's ten-year old recommendation of 5,000 IU/day. This recommendation is based on the fact that the vast majority of people obtain 25(OH)D levels of > 40 ng/ml with 5,000 IU/day.

However, for mainly genetic reasons, some people do not obtain natural 25(OH)D levels when taking 5,000 IU/day. According to this study, it appears that the safe thing to do is to check your

vitamin D level 3-4 months after you begin supplementing with 5,000 IU/day to see if you are one of those people who do not respond adequately to this dose. It may be that you need 10,000 IU/day or more to obtain natural levels, which are around 50 ng/ml.