Actions

What’s needed to Solve the vitamin D Deficiency?

• Measure the 25-hydroxyvitamin D serum levels.
• Provide intake from UVB exposure, supplements, fortified foods, to get serum levels to 40-60 ng/ml (100-150 nmol/L).

D*action Project

• An international study to assess the health effects of large populations who have serum levels in the 40-60 ng/ml (100-150 nmol/L) range.
• Cedric F. Garland, Dr. P.H., F.A.C.E., Moores Cancer Center, University of California San Diego is the study’s principal investigator.
• Participants will provide health information and do a vitamin D test every 6 months for a period of 5 years.
• Physicians, clinics, research groups and other health interested groups are encouraged to join the project. Individuals can also enroll in the project.
• There are currently over 7000 individual participants from all over the world; approximately 50% of them started with levels below 40 ng/ml (100 nmol/L).
• Diagnosis & Treatment of Vitamin D Deficiency seminars are held for medical professionals.
• Custom studies are done for research groups. Contact Carole Baggerly, Director, info@grassrootshealth.org for further information.

Join D*action: www.joindaction.org
Get your blood level tested, take action!

Download the Disease Incidence Prevention Chart showing serum levels required to prevent many diseases: www.grassrootshealth.net/diseasepreventionchart.pdf

D*action is a public health project of GrassrootsHealth, a 501c3 non-profit organization. www.grassrootshealth.net customerservice@grassrootshealth.net 760-579-8141

Call to D*action Scientists

University of California Scientists Panel

University of California Davis
Bruce D. Hammock, Ph.D.
Hari A. Reddy, Ph.D.
Ray Rodriguez, Ph.D.

University of California Los Angeles
John Adams, M.D.
Milan Fiala, M.D.
Martin Hewison, Ph.D.
H. Phillip Koeffler, M.D.
Keith C. Norris, M.D.

University of California Riverside
Mathew Mizwicki, Ph.D.
Anthony W. Norman, Ph.D.
Laura P. Zanello, Ph.D.

University of California San Diego
Richard L. Gallo, M.D., Ph.D.
Cedric F. Garland, Dr. P.H.
Frank C. Garland, Ph.D.
Edward D. Gorham, Ph.D
Tissa Hata, M.D.

University of California San Francisco
David Gardner, M.S., M.D.
Bernard P. Halloran, Ph.D.

International Scientists Panel

Carlos A. Camargo, M.D., Dr. P.H., Massachusetts General Hospital
John J. Cannell, M.D., Atascadero State Hospital
Heide S. Cross, Ph.D., Vienna Medical University, retired
Edward Giovannucci, M.D., Sc.D., Harvard School of Public Health
Adrian F. Gombart, Ph.D., Linus Pauling Institute
William B. Grant, Ph.D., Sunlight, Nutrition and Health Research Center
Robert P. Heaney, M.D., Creighton University
Michael F. Holick, Ph.D., M.D., Boston University School of Medicine
Bruce W. Hollis, Ph.D., Medical University of South Carolina
Candace Johnson, Ph.D., Roswell Park Cancer Institute
Joan M. Lappe, Ph.D., R.N., Creighton University
Tetsuya Mizoue, M.D., Ph.D., International Medical Center, Japan
Stefan Pilz, M.D., Medical University of Graz, Austria
Gerry Schwalfenberg, M.D., University of Alberta
Joerg Spitz, M.D., Society for Medical Information and Prevention
Vin Tangpricha, M.D., Ph.D., Emory University
Donald L. Trump, M.D., Roswell Park Cancer Institute
Reinhold Vieth, Ph.D., University of Toronto, Mt. Sinai Hospital
Carol L. Wagner, M.D., Medical University of South Carolina
JoEllen Welsh, Ph.D., University at Albany-SUNY
Walter C. Willett, Dr. P.H., M.D., Harvard School of Public Health
John H. White, Ph.D., McGill University
Susan J. Whiting, Ph.D., University of Saskatchewan

Disease Incidence Prevention by Serum 25(OH)D Level

| Disease Incidence Prevention Chart | 20 | 15 | 10 | 5 | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Studies of Individuals             | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| Cancers, all combined              |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Breast Cancer                      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Ovarian Cancer                     |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Colon Cancer                       | X               | X               | X               | X               |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Non-Hodgkins Lymphoma              |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Type 1 Diabetes                    |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Type 2 Diabetes                    |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Stroke                              |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Fractures, all combined            |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Falls, women                        |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Multiple Sclerosis                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Heart Attack (Men)                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Natural Experiments                |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Kidney Cancer                      |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Endometrial Cancer                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Rickets                             |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |

Disease Incidence Prevention Chart prepared by: Garland CF, Baggerly CA
**Vitamin D Frequently Asked Questions**

**Why do we need vitamin D?**
Every tissue in our bodies needs vitamin D and will not work correctly if we do not get enough. In its most extreme forms, vitamin D deficiency produces rickets in children and osteomalacia (bone softening) in adults.

Milder degrees of deficiency are now understood to be one of the causes of a vast array of chronic diseases, including osteoporosis, impaired immune competence, various autoimmune diseases (such as diabetes and multiple sclerosis), several cancers (breast, colon, lung, lymphoma and prostate, among others) high blood pressure, pregnancy complications and cardiovascular disease. All may develop because of, or be exacerbated by, vitamin D deficiency.

Asking the body to deal with these disorders without adequate vitamin D is like asking a fighter to enter battle with one hand tied behind his/her back.

**What is vitamin D?**
Vitamin D is one of the chemicals that the tissues of our body use to unlock the DNA blueprints which each tissue contains and which are needed for our cells to produce the many biochemical products required for their day-to-day functioning.

**Where do I get vitamin D?**
The principal source of vitamin D is our own skin. A chemical compound naturally present in the superficial layers of skin is converted, on exposure to UV-B radiation, to cholecalciferol (vitamin D3). However, we manufacture this vitamin D only if we expose our skin to UV-B radiation, to cholecalciferol (vitamin D3).

**How much vitamin D do I need?**
The body needs at least 4000 IU/day in order to maintain a healthy concentration of 25(OH)D in the blood. Because most of us don’t get enough sun exposure, the little vitamin D we get that way, plus food and fortified food sources, totals no more than about 2000 IU/day. Thus in order to meet the body’s needs for about 4000 IU/day, most adults should take supplements providing 1000-3000 IU daily.

**How long should I be outdoors?**
There is no single right answer. A light skinned person, wearing a bathing suit, will make about 15,000 IU of vitamin D in 15-20 minutes in July at midday. Darker-skinned individuals can do the same, but it will take twice as long.

**What is the effect of sunscreen?**
Sunscreen blocks UV-B radiation and prevents the manufacture of vitamin D.

**What about skin cancer?**
The brief exposure needed to produce adequate vitamin D is not enough to cause skin cancer. However, if you are worried about that risk, apply sunscreen after the first 15 minutes of exposure.

**Does the body have to process vitamin D before it becomes active?**
The body converts vitamin D, whether by mouth or made in the skin, to a compound called 25-hydroxyvitamin D [25(OH)D]. This compound circulates in the blood and is the measure physicians or scientists use to assess vitamin D status. High levels of serum 25(OH)D show that you are getting enough vitamin D, while low levels indicate deficiency.

**Is it important to take vitamin D daily?**
As long as the total dose is sufficient, vitamin D does not have to be taken every day. Some physicians prescribe weekly or monthly dosing. The important thing is to achieve and maintain a range of 40-60 ng/ml (100-150 nmol/L).

**What about calcium and vitamin D?**
Vitamin D enables the body’s regulation of calcium absorption. With inadequate calcium or vitamin D intake, there is insufficient calcium absorption. However, there is no hyper-absorption with high vitamin D levels. There is also a substantial body of evidence indicating there is an inverse relationship between calcium intake and kidney stone risk.

**Is vitamin D safe?**
Vitamin D is safe, if consumed in reasonable quantities. (See ‘How much vitamin D do I need?’) It is instructive to know that outdoor summer workers by the end of summer will typically have serum levels of 60-80 ng/ml (150-200 nmol/L). However vitamin D is an extremely potent compound, and if taken in abnormally high doses, can produce severe toxicity leading even to death. However, there have been no reported cases of vitamin D toxicity at serum levels of 25(OH)D below 200 ng/ml (500 nmol/L).

**What about the current IOM (Institute of Medicine) published requirements for vitamin D?**
The IOM recently (2010) increased the ‘no observable adverse event level’ from 2000 IU/day to 10,000 IU/day. This is significant progress. They tripled the intake for all individuals up to age 50. Their focus was limited, however, to skeletal health, not the full array of diseases considered by the D*action Scientists’ Panel.