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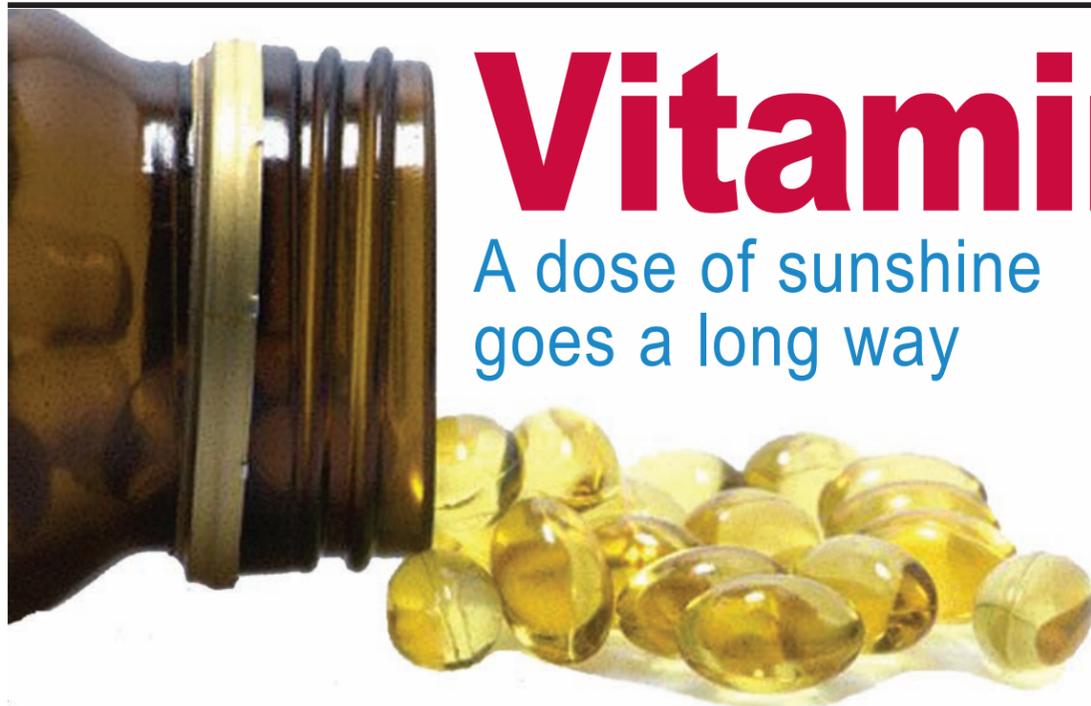
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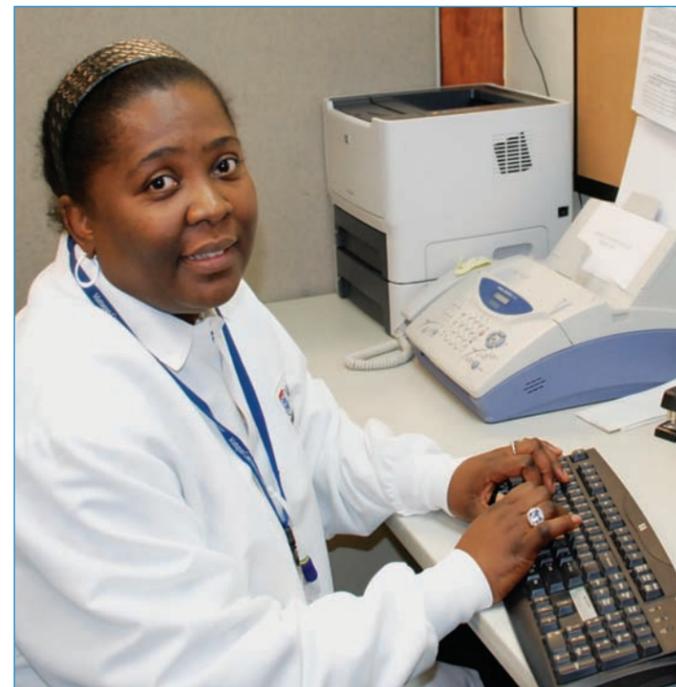
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Vitamin D

A dose of sunshine goes a long way

PHOTO BY TONY IRVING



Gerda Paulissaint, a medical advocate at Mattapan Community Health Center, attributed her aches and pains to low levels of vitamin D.

Born and raised in Haiti, Gerda Paulissaint, 46, came to Boston about 12 years ago and a funny thing happened. She started having all sorts of aches and pains. Walking up a flight of stairs was particularly painful. "It was as if my legs were talking back to me," she remembers.

She knew she had high blood pressure, but that didn't explain that sort of pain or her restless sleep. She dismissed all of her symptoms as simply the result of stress. Without much further thought, she quietly went on with her work as a community health advocate at Mattapan Community Health Center.

And then a light switch turned on.

Many of her patients were complaining of similar aches and pains and most of them had received blood test results

showing they lacked a sufficient amount of vitamin D.

"Wait a minute," she recalls thinking.

It finally donned on her that she too might be short on vitamin D. She didn't wait for a test to confirm her theory. She purchased a supply of over-the-counter vitamin D supplements.

Evidently it helped. Paulissaint later requested a test to determine whether she was deficient. The test revealed a level of 38 nanograms per milliliter (ng/mL) — a number within the acceptable range, but just barely.

The lack of vitamin D is not all that uncommon. The recent National Health and Nutrition Examination Survey (NHANES), a program sponsored by the Centers for Disease Control and Prevention, found that a large portion of adults

in the United States had low levels of vitamin D.

Adolescents are not immune. A 2004 study by Children's Hospital Boston determined that the problem was common in otherwise healthy adolescents. Almost one-fourth of the patients studied were low in the vitamin and 5 percent were severely deficient.

The researchers further determined that race, diet, lifestyle and season all played a role. Vitamin D deficiency was more prevalent in black teenagers, those who consumed more soft drinks than milk and those with a high body mass

index, an indicator of excessive weight.

So severe is the problem that rickets — once considered a thing of the past — has re-emerged in infants and children, particularly among blacks and those who are lactose intolerant.

Dr. Michael F. Holick, a leading authority on vitamin D and professor of

Gerda, continued to page 4

The man to see on vitamin D

Of all Douglas Fairhurst's medical problems, the most bewildering were his weakening muscles. An avid bicyclist, Fairhurst, 74, could barely lift his leg much less pedal a bike. "I could hardly walk," he said.

That's when Fairhurst turned to Dr. Douglas Bibuld, the medical director of Mattapan Community Health Center.

An expert on vitamin D, Dr. Bibuld was well aware of the benefits that accrue from the aptly named "Sunshine Vitamin." Received primarily from the sun's ultraviolet rays, vitamin D is known for its ability to maintain healthy bones.

But given the fact that almost every cell is equipped to interact with vitamin D, Dr. Bibuld is convinced that the benefits extend far beyond bone health and includes protecting the immune system and preserving muscle strength.

Equally important, Dr. Bibuld was aware of the prevalence of inadequate levels of vitamin D among older blacks — a deficiency that scientists attribute to increased risks for several life-threatening diseases and debilitating conditions.

It didn't take long before Dr. Bibuld prescribed a heavy dose of vitamin D for

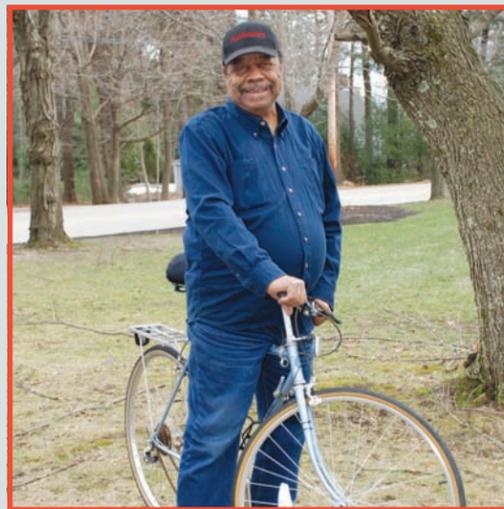


PHOTO BY TONY IRVING

Because of weakness in his legs, Douglas Fairhurst was unable to ride his bike. After several months of a prescription of vitamin D, he's back in form.

Fairhurst — and that appeared to at least restore a barely adequate level.

The 25-hydroxy vitamin D test is the most accurate way to measure how much vitamin D is in the body. A reading below 20 nanograms per milliliter (ng/mL) is deficient;

scores between 20 and 29 are considered insufficient. Scores of 30 or more are considered sufficient. Fairhurst's reading was 32 — and that was after the heavy doses.

And therein lies one of the problems now under serious debate within the medical community: Just what level of vitamin D in the blood is required for optimal health?

The Vitamin D Council, a California-based non-profit established to increase awareness about vitamin D deficiencies and its related diseases, recommends a reading of 50 to 80 ng/ml for everyone all year round.

According to the Council, at levels below 50, the body uses vitamin D as quickly as it is made. Above 50, the body begins to store it for future use.

A related debate swirls around the recommended daily allowance for vitamin D. The Academy of Pediatric Medicine recently increased its recommendations from 200 International Units (IU) to 400 IU a day for children and adolescents.

The Institute of Medicine (IOM), a non-profit organization that provides advice on

health issues, recommends 400 IU a day for adults up to the age of 60 and 600 IU for those over 60. But even the Institute has doubts and is revising its recommendations.

Vitamin D specialists, such as Dr. Bibuld and Boston University School of Medicine's Dr. Michael Holick, argue that 600 IU are barely enough and contend that at least 1,000 IU are needed to allow vitamin D to perform all of its functions.

Don't get Dr. Bibuld started on the current recommended daily allowance of 400 IU. "That's way too low," he said.

He recommends 4,000 IU a day for blacks — and much more for those who are deficient.

The Mattapan Community Health Center is squarely behind Dr. Bibuld on vitamin D. The Center is now part of a collaboration with the American Public Health Association to develop a national policy on vitamin D.

From what the Center has seen, the numbers are alarming in the black community. With the assistance of Dr. Holick, they found that in 2007, 85 percent of their patients tested for vitamin D levels had

Douglas continued to page 4

Calcium and vitamin D: The dynamic duo

Many of us were taught growing up that calcium is the building block to healthy bones — drinking milk and eating dairy products will make us healthy and strong. This adage is undisputedly true, but what we didn't know was that vitamin D is required for calcium to do its job.

If calcium is the building block to healthy bones, vitamin D is considered the cement. Without an adequate supply, calcium can not be utilized by our bodies to build strong bones and perform other vital physiological functions. Calcium is absorbed through the small intestine, and this process is not possible without ample amounts of vitamin D. The two work in unison to build a healthy body.

"Vitamin D's role in keeping our bodies functioning properly has been underappreciated," says Dr. Jan Cook, Medical Director of Medical Innovation and Leadership for Blue Cross Blue Shield of Massachusetts. "It plays an extremely important role in the body's absorption of calcium and is vital to a person's development, growth, and maintenance of a healthy body."

A Powerhouse

Scientists are learning more every day about the important link between calcium and vitamin D. Researchers have discovered that vitamin D actually regulates the amount of calcium in our bodies. Vitamin D increases the rate at which calcium is reabsorbed from the food in the gastro-intestinal tract. Without adequate levels of vitamin D, a large percentage of dietary calcium is never absorbed by the intestine and instead is lost as waste products. Sounds scientific, but it is a very important fact to know!

Calcium is the most common mineral in the body and one of the most important for proper functioning. Although 99 percent of calcium is found in bones and teeth, it's that 1 percent that's the powerhouse of the body. Without calcium, muscles would not contract, nerve cells would not communicate with each other, the heart would not beat effectively. Blood clots because of calcium, and hormones, such as insulin — which regulates sugar in the

blood — are secreted with calcium's help.

So important are these functions to survival that, when levels of calcium fall below the required level, the body robs the vital mineral from the bones — the storehouse of calcium. So you can see why maintaining a good level of calcium and vitamin D is critical.

Calcium for life

It is clear then that too little calcium can result in bone loss, particularly in postmenopausal women. The National Institutes of Health has determined that women may lose as much as 5 percent of their bone mass every year after menopause. Men are not exempt. According to the website www.aboutcalcium.com, men are also vulnerable to bone loss and need to consume adequate calcium through their older years as a preventive measure, and in their younger years to achieve peak bone mass.

Children often don't get enough calcium, which is essential to build their growing bones. A lack of calcium in childhood can also have a lasting health impact. In recognition of this fact, the Massachusetts Department of Public Health has taken an active role in targeting youth for the prevention of adult bone loss. This action stems from research findings that suggest the most important period for adequate calcium and vitamin D absorption is during teenage years. Studies have shown that peak bone mass is reached around the age of 20. After adolescence, as the body ages, bones gradually deteriorate.

Your body needs more calcium as you age. The federal government's recommended daily requirement for infants is 210 milligrams (mg), whereas adults 19 to 50 years should get a minimum of 1,000 mg per day. Over 50, you need at least 1,200 mg per day. Calcium intake above the recommended daily requirement is usually not a problem. However, over a long period of time, people ingesting large amounts of calcium (above 2,500 mg per day) can get kidney stones.

The good news is that it's easy to get calcium. It's found natu-

rally in dairy products, leafy green vegetables and certain seafood, and is added to foods, such as cereals and orange juice. Supplements can help when diets are lacking.

Where's the calcium?

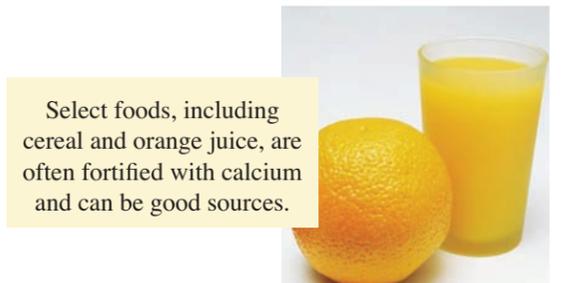


Calcium is found in dairy products including yogurt, cheeses and milk; to reduce fat intake try skim milk or low fat products.

Dark, leafy green vegetables such as spinach, kale, collard greens, and broccoli are all good sources of calcium. These foods are great in salads, stir-fries or even on their own.



Seafood like sardines, pink salmon, ocean perch, blue crab, clams and rainbow trout can be a tasty way to up your intake.



Select foods, including cereal and orange juice, are often fortified with calcium and can be good sources.

Your bones will thank you.

Vitamin D deficiency is an important health concern, especially for people who don't get enough sunlight and those with darker skin. That's because vitamin D deficiency can lead to diseases like rickets and osteoporosis, conditions that cause bones to become thin and fragile.

The good news is that for most people, vitamin D deficiency is entirely preventable. Fortified foods like milk, cereal, orange juice, bread, and yogurt are great sources of this essential vitamin. In fact, many people choose to simply take a once-daily supplement to maintain their vitamin D levels.

Talk to your doctor about your risk of vitamin D deficiency, and ask how you can make vitamin D a part of your healthy diet.



MASSACHUSETTS

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So many choices

Calcium can also be obtained through supplements, but the trick is to determine which one. There are many choices — carbonate, citrate, lactate, gluconate. Here are some helpful tips.

- Calcium carbonate contains the most calcium per pill (40 percent), but should be taken after meals.
- Calcium citrate contains less calcium per pill (20 percent), but does not need to be taken with food.
- Determine the amount of "elemental calcium" — the amount available for the body to absorb and what's counted in the recommended daily dose of calcium. If not specified, check the Nutrition Facts label. The amount of elemental calcium will be listed in milligrams (mg) according to "serving size" — generally one or two tablets.
- Gluconate and lactate contain low content of elemental calcium, and would require several tablets to meet the calcium requirement.
- Avoid dolomite, oyster shell and bone meal calcium. They might contain metals and lead.
- Look for USP (United States Pharmacopeia) symbol on the package, which designates standards for quality and purity.
- If the symbol is not listed, you can test the quality of pill by dissolving it in clear vinegar. Stir occasionally. If the pill dissolves within 30 minutes, it will also dissolve in your stomach.

Questions & Answers

1. Why does obesity increase the risk of vitamin D deficiency or insufficiency?

Vitamin D is a fat soluble vitamin which means it is stored in our fat cells. As our weight and percentage of body fat increase, vitamin D levels fall. Overweight individuals appear to deposit some of their vitamin D in their excessive fatty tissue, making it more difficult to raise their vitamin D levels. Studies have shown that obese people tend to obtain lower levels of vitamin D — even when exposed to ultraviolet light or when taking vitamin D supplements.



Lisa Michelle Owens, M.D.
Medical Director
Brigham Primary Physicians at
Faulkner Hospital

2. Why are vitamin D supplements necessary for breastfeeding babies?

Breastfeeding babies get their milk from their mom and human milk does not have adequate amounts of vitamin D to meet the needs of a growing baby.

3. What's the best source of vitamin D for vegetarians?

Depending on the foods they embrace, vegetarians can get vitamin D from foods fortified with vitamin D, such as cow or soy milk, yogurt, orange juice and certain cereals. Vitamin D supplements and sun exposure are also opportunities for boosting vitamin D levels in those who do not eat fish.

4. Why does vitamin D deficiency increase during the winter in northern cities?

Vitamin D insufficiency or deficiency increases during the winter months because of the increased prevalence of overcast days and the reduced strength of ultraviolet B rays — the major source of vitamin D development. The significant decrease in sunlight results in dramatic decrease in the activation of vitamin D in our skin.

5. If a person prefers to avoid the sun, is it possible to obtain adequate levels of vitamin D through the diet?

Yes, but the amounts required may be excessive. Milk and orange juice are classic beverages fortified with vitamin D. Yogurt is often fortified with vitamin D as well. It is important to note that cheese, which is a good source of calcium, does not contain high amounts of vitamin D. Oily fish, such as salmon and mackerel, is the best natural source of vitamin D in the diet.

6. Is there a risk of getting too much vitamin D?

Vitamin D toxicity is rare and occurs only with very excessive use of vitamin D supplements. It is not possible to get too much vitamin D from the sun. Toxic levels of vitamin D can cause nonspecific symptoms such as nausea, vomiting, poor appetite, constipation, weakness, and weight loss. More serious side effects include elevated blood levels of calcium, causing mental status changes such as confusion and heart rhythm abnormalities.

7. What's the difference between vitamin D2 and vitamin D3?

When people have very low levels of vitamin D, or are considered deficient, doctors will prescribe high doses of vitamin D2 (available by prescription only) to take once a week for a few months. The dose is usually 50,000 International Unit (IU). When levels improve, doctors then switch them to once daily vitamin D3, which is available as an over-the-counter supplement. If a person has mildly low levels of vitamin D, or are considered insufficient, doctors will start them on daily vitamin D3 from the very beginning. The supplements typically are sold in doses of 1,000 to 2,000 IU.

Who's at risk?

- African Americans – melanin reduces the skin's ability to make vitamin D
- Those with limited exposure to sunlight
- Breastfed infants – mother's milk does not contain enough vitamin D
- Elderly – less able to convert vitamin D to its active form
- Vegetarians that follow a strict plant-based diet
- People with certain intestinal problems, such as celiac disease
- Obese people – excess fat impedes the circulation of vitamin D

A closer look

IMAGE FROM DELAVAL



Vitamin D deficiency and insufficiency are common in young people. So much so that rickets, or bone weakness, has made a comeback. Rickets is seen more frequently in black children often due to less time playing outdoors and low consumption of dairy products particularly in those who are lactose intolerant. Teens who favor soft drinks and iced teas over fortified milk and cereal are also hard hit. The American Academy of Pediatrics recently revised its guidelines and now recommends a minimum daily intake of 400 IU of vitamin D beginning soon after birth and continuing through adolescence.

February is Vitamin D Deficiency Month

Links to low levels

Several studies suggest that normal levels of vitamin D are required to reduce the risk for many chronic illnesses, such as:

- Rickets
- Osteomalacia (adult rickets)
- Osteoporosis
- Fractures and falls
- Osteoarthritis
- Bone and muscle pain
- Muscle weakness
- Heart disease
- Heart failure
- Stroke
- Hypertension
- Depression
- Schizophrenia
- Multiple sclerosis
- Asthma
- Flu
- Obesity
- Inflammatory diseases
- Breast cancer
- Colon cancer
- Prostate cancer
- Autoimmune diseases
- Diabetes 1 and 2
- Fibromyalgia
- Chronic fatigue syndrome
- Metabolic syndrome

Healing the racial divide in health care

Bostonians come in many flavors.

But we're working to make health care excellent for everyone.

Boston is rich in ethnic and racial differences. They make our city vibrant.

But when those differences show up in the quality of health and health care, that's a cause for concern. And action.

This is a national problem that Boston shares. Last year, a survey by the Boston Public Health Commission revealed that Boston's racial and ethnic groups have strikingly different risks of illness and death.

The percentage of babies born prematurely and at a low birth-weight to black mothers is nearly double what it is for white mothers. Black men are twice as likely to die from diabetes as white men.

Latino Bostonians are more likely to be hospitalized for or die from asthma and have a higher incidence of diabetes and HIV. Asian people in Boston have higher rates of tuberculosis and hepatitis B.

Mayor Thomas Menino formed a task force to find ways to eliminate disparities in health and challenged hospitals and community health centers, among others, to take concrete steps to make the quality of health care excellent for all Bostonians.

Brigham and Women's Hospital (BWH) and Massachusetts General Hospital (MGH) provided significant funds for the City's special disparities



program and along with other hospitals agreed to take immediate actions that include:

- measuring the quality of patient care and patient satisfaction by race, ethnicity, language, and education;
- improving education and cultural competence for doctors, nurses and other caregivers, and staff and patients;
- helping patients take an active role in their care;
- working to diversity their professional workforce and governing boards;
- collaborating closely with members of the community.

BWH established the Health Equity Program to reduce disparities in neighboring communities. The hospital's new Center for Surgery and Public Health will, among other things, examine disparities in surgical care.

MGH created the Disparities Solutions Center to work with providers, insurers and community groups in Boston and nationwide. The hospitals and Partners HealthCare are putting more than \$6 million into finding and fixing disparities in care.

If there's one place where we should all be the same, it's in the excellence of our health care.

More information at Boston Public Health Commission at www.bphc.org

BRIGHAM AND
WOMEN'S HOSPITAL

PARTNERS
HEALTHCARE
A charitable non-profit organization

MASSACHUSETTS
GENERAL HOSPITAL

medicine, physiology and biophysics at Boston University School of Medicine, is unequivocal about the importance of vitamin D and its proper levels required for optimal health.

He refers to several studies that have linked low vitamin D levels with the risk of heart disease, stroke, multiple sclerosis, type 1 diabetes, depression, asthma, many cancers and diseases of the immune system.

In the most recent issue of the *Annals of Family Medicine*, a study indicated that disproportionately low vitamin D levels might explain higher death rates from cardiovascular disease in blacks. The researchers concluded that vitamin D levels might be an independent — and possibly modifiable — risk factor for cardiovascular disease.

The importance of vitamin D is a subject of on-going debate. Researchers from Massachusetts General Hospital found that it may be vitamin D — not C — that keeps colds, the flu and other respiratory illnesses at bay. They noted that people with asthma and emphysema, for example, might be particularly susceptible to respiratory infections from vitamin D deficiency — an indication to some medical experts that it might also play a key role in the immune system.

Vitamin D is a bit of an enigma. For starters, it really isn't a vitamin at all. Vitamins are organic compounds that the body needs but cannot make on its own. Rather, the body receives its vitamins from the food and liquids that we eat and drink.

Unlike other vitamins, vitamin D is made by the body, is found in very few foods, and, oddly enough, is actually a hormone.

Appropriately named the “Sunshine Vitamin,” vitamin D’s major source is the sun — ultraviolet B (UVB) rays to be exact — the same rays responsible for suntans and sunburns.

And skin cancer.

The American Academy of Dermatology warns against unprotected exposure to ultraviolet rays. The Academy declared “There is no scientifically validated, safe threshold level of UV (including UVB) exposure from the sun that allows for maximal vitamin D synthesis without increasing skin cancer risk.”

Dr. Deborah Scott, a dermatologist at Brigham and Women’s Hospital, says the sun is an excellent source of vitamin D. But everyone — including African Americans — must guard against excessive exposure. “There’s a balance between sun exposure and vitamin D,” she said.

But where that balance lies is a bit tricky. The times of exposure — and resultant vitamin D levels — vary by

person, season, city and time of day.

Processing those sunrays is a group effort among the skin, liver and kidney. But in order for the process to work, the UVB rays have to be long and strong enough to pull off the job. And they are — from the spring through early fall. But in the late fall and winter, they are too short and that explains increased deficiencies during cold months.

A major biological function of vitamin D is to help the body absorb calcium and phosphorus. Calcium is stored in bones, but is a major workhorse throughout the body. It makes the heart work and muscles contract. If vitamin D does not do its job, the body “robs Peter to pay Paul” by taking calcium from the bones and using it elsewhere. The impact on bones can be devastating.

That’s why low levels of vitamin D are associated with osteoporosis, rickets in children and osteomalacia, or soft bones in adults. Fractures and falls are common in those lacking vitamin D.

The issue of vitamin D is of particular interest to blacks. Melanin — the substance that gives skin its color — provides

a barrier to UVB in the skin. That does not mean skin of darker hues cannot make vitamin D — it just takes more time. While it may take whites and people with light skin about 10 minutes to process sufficient levels of vitamin D, it may require blacks closer to an hour.

All of this was new to Paulissaint. Having enough sunshine was not a problem when she lived in Haiti. But living in Boston

presented an entirely different challenge, especially considering that symptoms for Vitamin D deficiency are subtle and often unrecognized.

Aches and pains, fatigue, sleepless nights—all can be signs of the deficiency and are often dismissed as the result of aging or a stressful lifestyle. More often than not, doctors are not looking for it and seldom order up the right tests.

A true believer in the power of vitamin D, Palissaint readily admits to back sliding once.

During a summer vacation in Haiti, she stopped taking the supplements. There was little need on a Caribbean island.

But when she returned to Boston and did not resume taking the supplements, she paid the price. A follow-up test revealed that her vitamin D level had dropped to 25.8 ng/mL — considered below the standard for healthy living. She is on a two - month prescription of 50,000 IU a week to get her numbers back up.

Paulissaint is now a vitamin D convert; there’s no turning back. “I feel way, way better,” she said.

“I’m a new woman now.”



Douglass Bibuld, MD
Medical Director
Mattapan Community Health Center

Looking for vitamin D?

You might not find enough in food.

Food does not provide an adequate single source of vitamin D to maintain optimal health. Only cod liver oil, salmon and mackerel are high in vitamin D. Below are examples of how much you’d have to consume of a particular food to meet the current recommended daily allowance of 400 IU.



50 ounces
of Swiss cheese.



5 cups
of fortified yogurt



10 cups
of fortified cereal



one 3-ounce
serving of sockeye salmon



4 glasses
of fortified milk



17 egg yolks

Even varying the amounts and types of food would fall short and may be contrary to a healthy eating plan. In addition, these estimates are based on 400 IU. Scientists now recommend that people consume at least 1,000 IU of vitamin D a day, thereby tripling the above amounts. That is why supplements and/or limited time in the sun are recommended to attain a healthy level of vitamin D in the blood.

How to get your D

Look to the sun

In general, five to ten minutes twice a week in the summer sun without sunscreen will make about 10,000 to 20,000 IU for those with fair skin. It will take a darker skinned person about six times that amount of time.

Doctors recommend you put on sunscreen or cover up after the minutes in the sun.

Take a pill

If you prefer to avoid sun, supplements are required. New guidelines on daily required intake are forthcoming. Specialists in vitamin D recommend a minimum of 1,000 IU a day for optimal health. Your doctor can best advise you.

Douglas *continued from page 1*

scores of below 20 ng/mL — well below the recommended minimum of 30, and, worse, the average score was about 13 in the winter months.

Dr. Bibuld understands part of the problem — at least among blacks — is that higher levels of melanin makes it more difficult to process ultraviolet B rays. Melanin tends to block rather than absorb the sun. That process is worse for the elderly whose bodies are unable to produce vitamin D as easily as in their younger days.

Dr. Bibuld believes that everyone should have a baseline test and go from there. For the most part, it’s easy to get a good dose of vitamin D and it doesn’t cost a dime — at least in the summer. Just five to 10 minutes of sun twice a week — or thirty minutes for those of darker skin is enough. It’s possible to make over 10,000 IU in that short period of time. Supplements and fatty fish can complement the sun when necessary.

And don’t worry. According to Dr. Holick, it’s impossible to overdose on vitamin D from the sun. The body stops making the vitamin when it has ample supply. Even

overdoses from supplements are basically unheard of.

Dr. Bibuld well recognizes the implications of vitamin D and its potential impact on health. “You can’t correct health disparities overnight,” he acknowledged. “But think of what this could do to health care costs and the impact on the cost of the insurance industry. It’s huge.”

Just ask Fairhurst.

At a subsequent doctor’s appointment, Fairhurst put on a performance.

“Look,” he proudly proclaimed as he held up his leg.

At first Dr. Bibuld missed the point. He thought that Fairhurst wanted his leg examined. But then he realized that Fairhurst’s strength had returned. More important, Fairhurst boasted, he was able to walk without difficulty.

Fairhurst admits he had never heard of vitamin D before meeting Dr. Bibuld and had no understanding of its impact on the body. But he does now. For him, the evidence is clear.

“I can ride my bike again,” he said.

Want to know the score?

The 25-hydroxy vitamin D test measures the level of vitamin D in the body.

Vitamin D Status

Deficient
Insufficient
Sufficient

Value

Less than 20 nanograms/milliliter (ng/mL)
20 to 29 ng/mL
30 ng/mL or more

The Vitamin D Council recommends a minimum reading of 50 ng/mL