

By **MELISSA BIGNER**

# *The* **TRUTH ABOUT** *Vitamin*

*Is it a super vitamin? Has sunscreen clouded its benefits? Are we at risk of widespread deficiency? Here's the truth about the "sunshine vitamin"*

## *What is it about vitamin D?*

Suddenly, reports starring the so-called "super vitamin" are splashed across national medical journals and newspapers everywhere. Generating as much buzz as traditional hot-button topics like breast cancer and obesity, today's "It" nutrient has docs and nutritionists debating its benefits and speculating on the cause-and-effect of deficits: Could it ward off a slew of cancers? Alleviate everything from depression to multiple sclerosis? Are today's deficiencies tied to sunscreen?

Surely the benefits of vitamin D are nothing new. Discovered back in the 1920s, it's commonly known for its role in helping the body process calcium, which in turns strengthens bones and teeth. What's novel are the escalating reports of widespread American deficiency, with some citing adult deficits as high as 85 percent. Among teens, over half are reportedly lacking in the nutrient while several states have reported seeing nominal amounts of rickets (a bone disease tied to vitamin D deficiency) reappearing in children again.

To help separate fact from fiction, we pored over research new and old, and consulted with Dr. Todd E. Schlessinger, a dermatologist affiliated with Roper St. Francis Healthcare. Here's what we learned.





When doctors studied the health benefits of **cod liver oil** back in the 1920s, they discovered vitamin D, and named it after the fourth letter of the alphabet because it was only the fourth vitamin to be isolated and revealed.

## IN THE BEGINNING...

“In the early part of the century, with rickets—the softening of children’s bones often resulting in bowed legs—rampant in northern Europe and the northern United States, the idea came about that a dietary deficiency might be the cause,” says Dr. Schlesinger. “This was confirmed in 1922, and soon after, scientists discovered that vitamin D could be produced in foods by irradiating them—that is, exposing them to ultraviolet light. Such fortification, in place since the 1930s, is largely responsible for the virtual elimination of rickets.”

The medical community breaks vitamin D down into two types. One, vitamin D<sub>3</sub>, is formed when ultraviolet B rays interact with exposed skin (also called cutaneous vitamin D); it’s also present organically in some foods. The second, vitamin D<sub>2</sub>, is solely digestible and occurs in natural foods, like oily fish, or in enriched foods. (See opposite page for an expanded list of foods.) All vitamin D heads to the liver and kidneys—cutaneous vitamin D via the bloodstream, and ingested vitamin D via the gastrointestinal tract—where it is converted into hormones that help boost calcium levels in the intestines, transforms calcium and phosphate in the blood into building blocks for bones, and regulates some aspects of cell growth.

Because calcium depends on vitamin D to fulfill its role in bone development, having the former but being severely deficient in the latter can lead to softening of the skeletal system, called osteomalacia. In children and babies, that shows up as rickets. In adults, it appears in the form of aching, “tired,” weak bones and muscles, pelvic deformities, and potentially, a waddling gait. If both calcium and vitamin D are below ideal levels in adults, osteoporosis can also occur.

### What is a vitamin?

A vitamin is a chemical that helps the body metabolize. In Vitamin D’s case, it helps process calcium and phosphate.

“STUDIES HAVE LINKED *vitamin D deficiency* TO INCREASED FALLS IN THE ELDERLY AND TO A HIGHER RISK OF SOME CANCERS, INCLUDING BREAST, COLON, AND PROSTATE.”

—Todd E. Schlesinger, MD

“Studies have also linked vitamin D deficiency to increased falls in the elderly and to a higher risk of some cancers, including breast, colon, and prostate,” says Dr. Schlesinger, adding that the same is true for developing diabetes and overall risk of early death. “And the effect of vitamin D on the immune system is just coming to light. Scientists at the University of Copenhagen have recently discovered that vitamin D plays a crucial role in activation of immune system cells that render them more capable of fighting infection or other harmful threats. Without the vitamin, these cells would remain dormant and unresponsive to the threats.”



Todd E. Schlesinger, MD

PHOTOGRAPH BY MEGHAN LOCKLAIR

## HOW MUCH & HOW TO GET IT?

Considering its proven and postulated potential, aspiring to and maintaining a steady intake of vitamin D sounds like a no-brainer. So why are deficiencies showing up instead, along with those relatively isolated cases of rickets? To get to the bottom of both answers, take a look at what’s changed since the vitamin was first introduced into milk and other calcium-rich foods.

For starters, Americans are living longer. At the turn of the 20<sup>th</sup> century, world life expectancy was about 30 years of age; today, Americans average 79.5 years of life. Thus in the past, those who mainly absorbed vitamin D via the sun likely died before the harmful effects of ultraviolet B radiation—such as melanoma—presented and/or were realized. Further, when was the last time you heard of someone downing a teaspoon of cod liver oil (one of the richest natural sources of vitamin D)? Compound those points with the variety of drinks—sodas, sports drinks, powdered drinks—that have taken the place of old faithfuls like fortified milk and orange juice, and you can see where vitamin D consumption and creation faced a decline. (For recommended daily doses, see page 27.)

Most people naturally ingest only 100 IU daily via their regular diet, and therefore fall far short of the minimum daily recommendation of 200.

In fact, the National Institutes of Health (NIH) says most people naturally ingest only 100 International Units (IU) daily via their regular diet. But that amount falls short of the recommended daily dosages for any age group (anywhere from 200 to 1,000 IU). To hit the ideal allowances each day—the calcium-synthesizing catalyst formed by vitamin D only lasts five days, so there needs to be a steady feed of it to maintain healthy levels—you’ve got to mix and match your sources. “It’s been suggested by some researchers that approximately five to 30 minutes of unprotected sun exposure to the face, arms, legs or back at least twice a week will produce enough vitamin D to satisfy daily requirements,” says Dr. Schlesinger. “But ultraviolet (UV) radiation causes cancer and is responsible for most of the estimated 1.5 million skin cancers and 8,000-plus deaths from melanoma in the United States each year. So the American Academy of Dermatology (AAD) contends that there is no safe level of UV exposure from the sun that allows for maximal vitamin D synthesis without increasing skin cancer risk. Instead, they suggest individuals make up the difference through dietary or supplementary sources.”

### Is vitamin D a wonder drug?

According to Dr. Schlesinger, that remains to be seen. “Based on available evidence and emerging research, it seems that vitamin D is very important for our bodies—many problems arise when it is present in low quantities. The question is whether there is enough evidence to support an increase in the daily dose guidelines. I think we’ll get these answers soon.”

Though it’s not proven yet—it takes scores of conclusive studies—there are hints that Vitamin D may inhibit the following life-threatening diseases:

- Breast cancer
- Colon cancer
- Prostate cancer
- Multiple sclerosis
- Type 1 & Type 2 diabetes
- Viral infections
- High blood pressure

## Vitamin D-Rich Foods



**HERRING**  
Atlantic, raw  
2,061 IU



**OYSTERS**  
eastern, wild, raw  
941 IU



**SALMON**  
pink, canned  
898 IU



**MACKEREL**  
Atlantic, raw  
351 IU



**SARDINES**  
Atlantic, canned in oil  
262 IU



**ORANGE JUICE**  
fortified with calcium  
and vitamin D  
259 IU



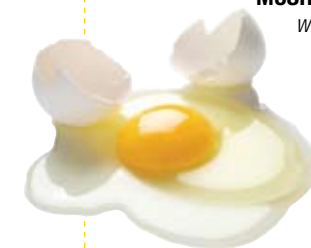
**MILK**  
low-fat, fluid, 1% milk  
fat, with added vitamin A  
248 IU



**CEREAL**  
Bran cereal such as  
Kellogg’s All Bran  
219 IU



**MUSHROOMS**  
white, raw  
164 IU



**EGG YOLK**  
Egg, yolk, raw, fresh  
68 IU

(based on 200-calorie servings)



The Lowcountry dishes out ample vitamin D via sunny, summer days. Here, local kids cool off at Whirlin' Waters inside North Charleston's Wannamaker Park.

PHOTOGRAPH COURTESY OF CCPRC

## VITAMIN D REQUIREMENTS

Age	Recommended Daily Dosage
birth to 13 years	200-400 IU
14-18 years	200 IU
19-50 years	200 IU
51-70 years	400 IU
71+ years	600 IU

Source: The National Institutes of Health (NIH)

## At-Risk Groups

There are a few groups who have a tougher time getting vitamin D through the sun, supplements, or fortified foods than most. For example, it takes longer for UVB rays to create vitamin D in dark-skinned people (like African-Americans or Latinos) because their higher melanin levels slow down production. Plus, compared to other ethnicities, African-Americans tend to be more lactose intolerant, which means they don't always consume as much enriched milk or yogurt as other races. Veiled women (typically Arabic or Muslim) can also miss out on the nutrient

Anyone who falls into an at-risk group should take supplements; the kind and amount is best determined by a physician.

due to their limited exposure to the sun and lack of supplemental vitamin D (stats show that in the Middle East, some 72 percent of adults ages 30-50 are deficient, 83 percent of them women).

Those who suffer from ailments like Crohn's Disease are also more prone to deficiencies, as gastrointestinal issues limit fat absorption through digestion. "Vitamin D is a fat-soluble vitamin, so people with this condition require supplements," explains Dr. Schlesinger, adding that obese people may experience similar troubles. Excess fat absorbs the vitamin, so their bodies lack sufficient vitamin D in circulation.

Also at risk for deficiency: breast-fed babies (breast milk isn't rich in vitamin D and infants should have limited exposure to sunshine) and the elderly; according to Dr. Schlesinger, a recent study revealed that 60 percent of female residents of a U.S. nursing home were so deficient that they developed secondary hormone abnormalities.

The solution? Anyone who falls into these at-risk groups should take supplements; the kind and amount is best determined by a physician.

*“Using sunscreen DOES REDUCE YOUR SKIN’S ABILITY TO MAKE VITAMIN D, BUT IF YOU’RE FOLLOWING NUTRITIONAL GUIDELINES, YOU SHOULD BE GETTING ENOUGH THROUGH YOUR DIET.”*

## Can I overdose on vitamin D?

The NIH places the maximum upper limit of vitamin D at 1,000 IU daily for children up to 12 years old and 2,000 IU daily for adults. Vitamin D poisoning shows up as nausea, heart trouble, confusion, and kidney stones, among other things. But because you can't overdose on vitamin D via the sun (your skin production of the nutrient halts when levels hit superfluous amounts), it's believed that unless you are chugging a bottle of cod liver oil or downing several supplements, you're highly unlikely to OD on vitamin D.



**Obese individuals** are more prone to vitamin D deficiency because **excess fat tends to absorb the vitamin**, not allowing the release of vitamin D into circulation.

## Let the Sun Shine In?

But what about sunscreen's role in all this? Does it share in the blame for today's vitamin D decline? "Using sunscreen or sunblock does reduce your skin's ability to make vitamin D," Dr. Schlesinger concedes. "But if you are following the nutritional guidelines, you should be getting enough through your diet."

"Many experts think that the amount of sun exposure needed to get enough vitamin D is minimal since the skin is very efficient at producing it," he adds. "So I advise wearing sunscreen and going about your day, because you should get enough cutaneous vitamin D from daily routines—like walking to and from your car."

Vitamin D plays a crucial role in building a healthy immune system, which helps cells fight infection more effectively.

Dr. Schlesinger and the AAD both have a pretty persuasive argument for doing such. Bottom line, when you consider that getting your vitamin D via the sun involves intentional exposure to a carcinogen, while ingested supplements do not, the risks of accidental sun overexposure—cancer from tanning or burning—shortchanges its benefits. So put on your sunscreen year-round and take your supplements. Compared to melanoma, a plain old multi-vitamin and a big glass of enriched milk makes for a dream dessert.



The American Academy of Dermatology (AAD) contends that there is **no safe level of UV exposure** from the sun that allows for maximal vitamin D synthesis without increasing skin cancer risk. Instead, they suggest individuals make up the difference through **dietary or supplementary sources.**

### Interacting With Vitamin D



#### POSES HEALTH RISKS:

*Consult your physician before mixing vitamin D with any of the following medications, as the combination can lower the effectiveness of your medication or create serious health risks:*

- Atorvastatin (Lipitor)
- Nifedipine (Procardia)
- Verapamil (Calan)
- Nicardipine (Cardene)
- Diltiazem (Cardizem, Dilacor)
- Amlodipine (Norvasc)
- Corticosteroids (prednisone)
- Digoxin (Lanoxin)



#### BOOSTS CALCIUM LEVELS:

*Ask your doctor about combining these medications with vitamin D supplements to boost calcium levels, bone metabolism, and vitamin D levels in the blood:*

- Estrogen
- Isoniazid (INH)



#### INTERFERES WITH VITAMIN D ABSORPTION:

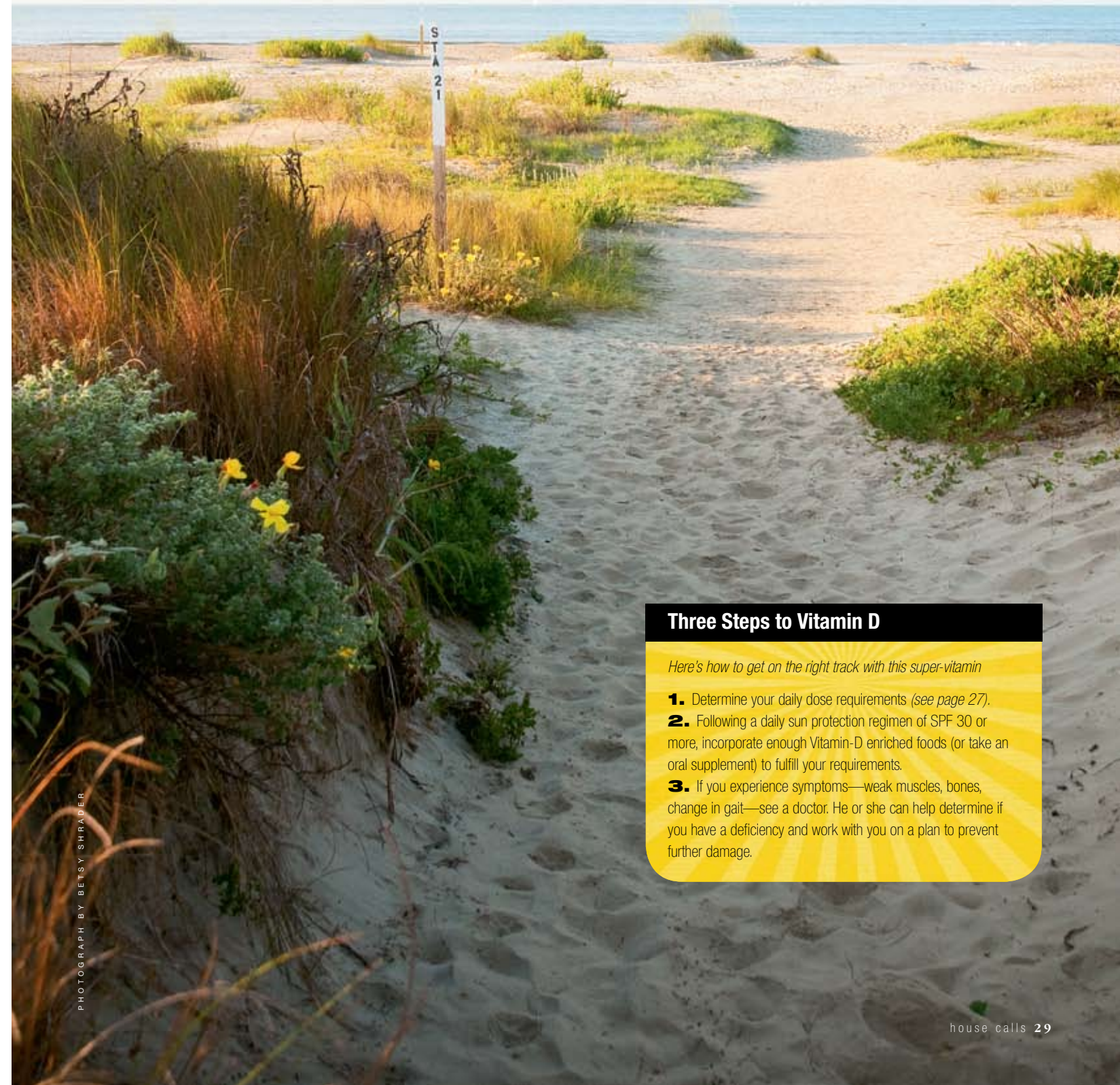
*These drugs, when used regularly, block the absorption of the vitamin and cause further deficiency:*

- Antacids
- Phenobarbital
- Phenytoin (Dilantin)
- Primidone (Mysoline)
- Valproic acid (Depakote)
- Cholestyramine (Questran, Prevalite)
- Cholestipol (Colestid)
- Rifampin
- Mineral oil
- Orlistat (Alli)



## Proper vitamin D levels

ARE ASSOCIATED WITH A 26 PERCENT REDUCTION IN HIP FRACTURES IN SENIORS.



### Three Steps to Vitamin D

*Here's how to get on the right track with this super-vitamin*

- 1.** Determine your daily dose requirements (*see page 27*).
- 2.** Following a daily sun protection regimen of SPF 30 or more, incorporate enough Vitamin-D enriched foods (or take an oral supplement) to fulfill your requirements.
- 3.** If you experience symptoms—weak muscles, bones, change in gait—see a doctor. He or she can help determine if you have a deficiency and work with you on a plan to prevent further damage.