

# How Much Sunshine Does it Take to Make Enough Vitamin D? Perhaps More Than You Think!

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Vitamin D deficiency is quite common, and a growing list of diseases and conditions are being linked with it. Regular sun exposure, without sunscreen, causes your skin to produce vitamin D naturally. But how much sun do you need?

You've probably seen some vague guidelines, recommending "a few minutes every day." But these recommendations are far too general to be useful. The amount of sun you need to meet your vitamin D requirements varies **hugely**, depending on your location, your skin type, the time of year, the time of day, and even the atmospheric conditions.

## The Vitamin D/UV Calculator

Scientists at the Norwegian Institute for Air Research have [devised a calculator](#) that will take all those factors into consideration and estimate how many minutes of exposure you need for your skin to produce 25 mcg (the equivalent of 1,000 International Units) of vitamin D.

It's not the most user-friendly interface and it is very easy to enter the wrong information. But once you get past the technicalities, it's very interesting to see how much the answers change when you vary the input.

It is also not written for US cities so you can go to [this page](#) to find out latitude and longitude of many cities and enter the numbers manually. The easiest way may be to

simply google "altitude of [your town]". Remember to convert it to kilometers. One kilometer is about 3300 feet.

If your latitude is 39 S, enter -39. If your longitude is 76 W, enter -76.

You'll also need to enter the time of day you are going out in the sun, expressed as UTC (Greenwich Mean Time). Here is a [converter that will convert local time into UTC](#). The calculator uses a 24 hour clock, so hours from 1 PM to midnight are expressed as 13 to 24.

The calculator also wants to know the thickness of the ozone layer. I suggest just setting this one to medium.

Be sure to click the radio button next to the entries. They are often not automatically selected when you fill in the values.

Keep in mind that the exposure times given are considered enough to *maintain* healthy vitamin D status. If you are starting out with a vitamin D deficiency, you might need more.



### **Dr. Mercola's Comments:**

As mentioned in the article above, figuring out how long to stay in the sun in order to produce sufficient amounts of vitamin D can be tricky business, although as a general rule of thumb, you'd want to expose as much of your body as possible to sunlight until your skin turns the lightest shade of pink.

However, the [calculator](#) created by the Norwegian Institute for Air Research could be helpful as well, especially if you have darker skin. But I would still only use it to get a general guideline.

It's important to remember that you need to get your vitamin D levels measured regularly, regardless of what method you use to raise or maintain your vitamin D levels. That way, if you find that sun exposure is not enough to maintain an optimal level, you may want to look into taking a supplement, for example.

Without testing, you will not be able to figure out how much you need, or whether the sun exposure you get, or the supplements you take, is sufficient.

For more information on recommended dosages for children and adults, please see this previous [article](#). You can find information about testing and optimal vitamin D levels at this [link](#).

Later on, I'll review several of the factors that influence how much vitamin D your body can produce when you're in the sun, but first, I want to bring up another important, related finding.

### **Preterm Births are on the Rise World-Wide**

According to a recent report by [CNN](#), nearly 10 percent of all annual worldwide births are born prematurely (before 37 weeks of development), and the trend is rising across the world. A report by the March of Dimes states that one million of these preemies die within the first month of life, each year.

In the US, the rate of preterm births has increased by 36 percent in the past 25 years, and the annual health care costs for preterm care and associated health problems is now over \$26 billion.

Africa has the highest premature birth rate, where 11.9 percent of births each year are preterm. Surprisingly, North America (consisting of the US and Canada) come in second place, with a preterm birth rate of 10.6 percent of all births.

### **Preterm Births Can be Drastically Reduced by Optimizing Vitamin D Levels**

Just days after CNN's article was published, the [Times Online](#) reported there is powerful new evidence supporting the claim that sufficient vitamin D levels can reduce your risk of having a premature delivery. It can also help protect your newborn baby from other health problems.

In what is considered the first scientific trial that meets the most stringent criteria for "evidence-based inquiry," US researchers Drs. Hollis and Wagner divulged their findings at a recent international [vitamin D research conference in Brugge](#), Belgium.

Their findings included:

- Mothers who took 4,000 IU's (ten times the RDA of 400 IU) of vitamin D during pregnancy had their risk of premature birth reduced by half
- Premature babies born to women taking high doses of vitamin D were reduced by half at both 32 and 37 weeks, and

- There were also fewer babies who were born “small for dates”
- Women taking high doses of vitamin D had a 25 per cent reduction in infections, particularly respiratory infections such as colds and flu as well as fewer infections of the vagina and the gums
- The “core morbidities of pregnancy” were reduced by 30 per cent in the women who took the high-dose vitamin D. (Including diabetes, high blood pressure, and pre-eclampsia – a potentially deadly increase in blood pressure and fluid)
- Babies getting the highest amounts of vitamin D after birth had fewer colds and less eczema

Another [2009 study](#) on vitamin D deficiency in newborns with acute lower respiratory infection confirmed a strong, positive correlation between newborns' and mothers' vitamin D levels.

That study found that over 87 percent of all newborns and over 67 percent of all mothers had vitamin D levels lower than 20 ng/ml, which is a severe deficiency state. As a result, the researchers recommended that all mothers optimize their vitamin D levels during pregnancy, especially in the winter months, to safeguard their babies' health.

In addition, numerous other [studies have found that vitamin D may protect against a number of birth defects](#).

Researcher Dr. Bruce Hollis of the Medical University of South Carolina also said:

*“I’m telling every pregnant mother I see to take 4,000 IUs and every nursing mother to take 6,400 IUs of vitamin D a day.*

*I think it is medical malpractice for obstetricians not to know what the vitamin D level of their patients is. This study will put them on notice.”*

Along with Dr. Carol Wagner, the pair has researched vitamin D’s impact on pregnancy outcomes for a number of years. In 2006 they published a study in the journal CMAJ, [“Nutritional vitamin D status during pregnancy: reasons for concern,”](#) and in a 2007 [study](#) they discovered that that vitamin D deficiency is quite common in pregnancy.

Naturally, pregnancy is not the only time you need to be mindful of your vitamin D status. Most people, including children, adolescents and seniors, are in fact deficient.

As I’ve stated on many occasions, getting your vitamin D from the sun (or a safe tanning bed) is the absolute best way to optimize your vitamin D level, but there are a number of factors that influence your vitamin D production that you need to take into account, and below I will explain why.

## Factors That Influence Production of Vitamin D in Your Skin

Production of previtamin D3 in your skin is highly individual and varies depending on several factors, including:

- Skin color, and current tan level
- Amount of time spent in the sun
- Weather conditions such as: cloud cover and pollution, ozone layer, surface reflection
- Latitude and altitude (elevation)
- Season
- Time of day
- Use of sunscreen
- Clothing

So, let's review these factors to see how they affect your production of vitamin D when you're trying to metabolize it naturally, [from the sun, as opposed to getting it from an oral vitamin D supplement](#).

### Skin Color, Current Tan Level, and Amount of Time Spent in the Sun

Caucasians and others with paler skin will hit an "equilibrium point" after about 20 minutes of exposure to UVB light, at which point vitamin D will no longer be produced.

You can tell you've reached your optimal exposure for the day when your skin turns a very light shade of pink. After that you're only increasing your chances of getting burned, which is something you definitely want to avoid. There is NO additional benefit to staying in the sun any longer. You only risk damage by extending your time in the sun.

It's not like your gas tank. Your body can only produce a limited amount of vitamin D every day. Once it reaches its limit you only cause damage by going beyond that amount. However, once you have a tan you spend much longer in the sun.

If you have darker skin, reaching this equilibrium point can take two to six times longer (or up to an hour or two), depending on your pigmentation.

A light-skinned person fairly far from the equator (such as in the UK or the northern U.S.) needs at least three of these 20 minute sessions per week, in bright midday sunlight and with few clothes.

A dark-skinned person, of course, should be outside significantly longer, and more often, to get the same effect.

## Weather Conditions

The more clouds there are, the less UV radiation reaches the earth's surface. However, UV can penetrate cloud cover to some extent, so it is still possible to get sunburned on a cloudy day. This is especially true under light clouds, which can block infrared radiation but not UV radiation, leaving the day deceptively cool.

Likewise, some types of ground cover reflect UV radiation, increasing its intensity even in deceptively shaded areas. These surfaces include sand, snow, and water.

Air pollution, on the other hand, can block UV radiation too effectively. If the air pollution contains large amounts of ozone, UV penetration can be reduced to a sometimes dangerously low level for at-risk populations. This can be particularly true of cities surrounded by hills or mountains, which trap air pollution.

## Latitude and Altitude

Sunlight is, of course, strongest at the equator, where the sunlight comes from directly overhead rather than at an angle; the solar radiation therefore has the shortest distance to travel through the earth's atmosphere. The UV radiation is about four times as strong at the equator as it is at the Arctic and Antarctic circles.

To find the latitude of your town or city, check out this easy-to-use [International Latitude / Longitude finder](#) to determine how your latitude affects your sun exposure:

- Between **0 and 10 degrees latitude**, there is very intense sunlight for several hours before and after noon, year-round. Pale or untanned skin will be completely overwhelmed in just a few minutes.
- Between **10 and 30 degrees latitude**, there are several hours of very strong sunlight each day, especially during the summer, but the hours after dawn and before dusk can be milder.
- Between **30 and 50 degrees latitude**, sunlight can be strong during the summer, but a tan can be built up gradually by starting in the milder spring.
- **Upwards of 50 degrees latitude**, summers are often short. However, the inhabitants of these countries often have pale skin that should still be exposed to summer sunlight with care. Anyone with very dark skin living at these latitudes is at a very high risk of vitamin D deficiency.

UV radiation is also more intense at higher altitudes, because there is less atmosphere to absorb it. The radiation increases by about 10 percent for every additional mile above sea level. You will therefore burn more easily when you're at high altitudes -- a fact that is often difficult to remember because it is usually colder at higher altitudes.

## Season

Always start “priming” your skin early in the spring when the sun’s rays are still mild. In summer, avoiding being outside when the solar radiation is most intense is a good idea at most latitudes, to avoid sunburn.

In many parts of the world it is even possible—and probably advisable—to sunbathe at noon in the winter with as little clothing as the weather permits (finding a place that is out of the wind can reduce the cold significantly). This is the time of year when you need to be most concerned about the amount of vitamin D you are receiving, as your vitamin D levels can drop by up to 50 percent during winter months.

## Time of Day

UV levels are at their most intense at noon. This is because when the sun is directly overhead, it has the least distance to travel through the atmosphere before reaching the earth’s surface.

You’re better off sunbathing during the off-peak hours: before 12 noon or after 3 pm.

## Use of Sunscreen and Clothing

Keep in mind that [using sunscreen](#) while outdoors in large part nullifies your efforts to metabolize adequate amounts of vitamin D. I recommend [testing your vitamin D levels](#) to make sure you're not deficient before resorting to sunscreen of any kind.

But, if you really need some form of sun protection because you’re outside for extended periods of time, either use light clothing to cover exposed areas, or look for [safer, natural sunscreen products](#) that contain no petrochemicals, which you can likely find in your local health food store.

Another excellent resource is the EWG's "[Skin Deep Report](#)," where you can find out which brands of sunscreens are free from toxic chemicals.

## Bathing

It is important to remember, if you are using the sun or a safe tanning bed to obtain your vitamin D, that the vitamin D takes about 48 hours to be completely absorbed into your blood stream, and you can easily wash it off with soap and water.

So you might want to consider only using soap in your armpits and groin for at least 48 hours to allow all the vitamin D to be absorbed. Personally I never use soap on my body other than these places (and my hands of course). Seems a waste to remove the

sebum which is a collection of fatty acids on the skin. Over-washing can impair one of primary methods of staying healthy.

Not washing my skin hasn't ever seemed to harm it and many people comment that my skin is as soft as young child's. I think that also has to do with keeping fat content optimized by avoiding processed fats and having high quality omega-6 and 3 fats.