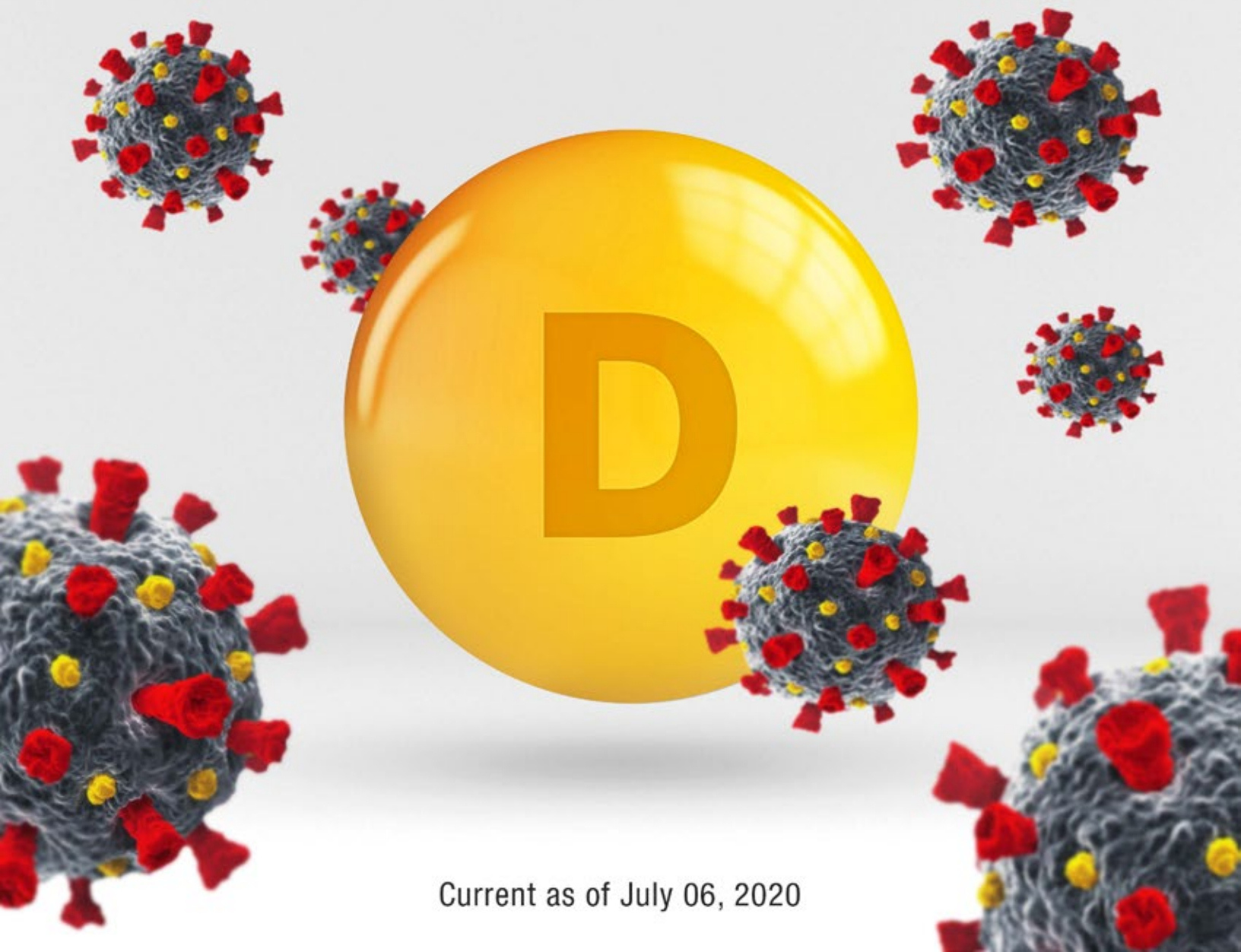


Vitamin D

In the Prevention of

COVID-19



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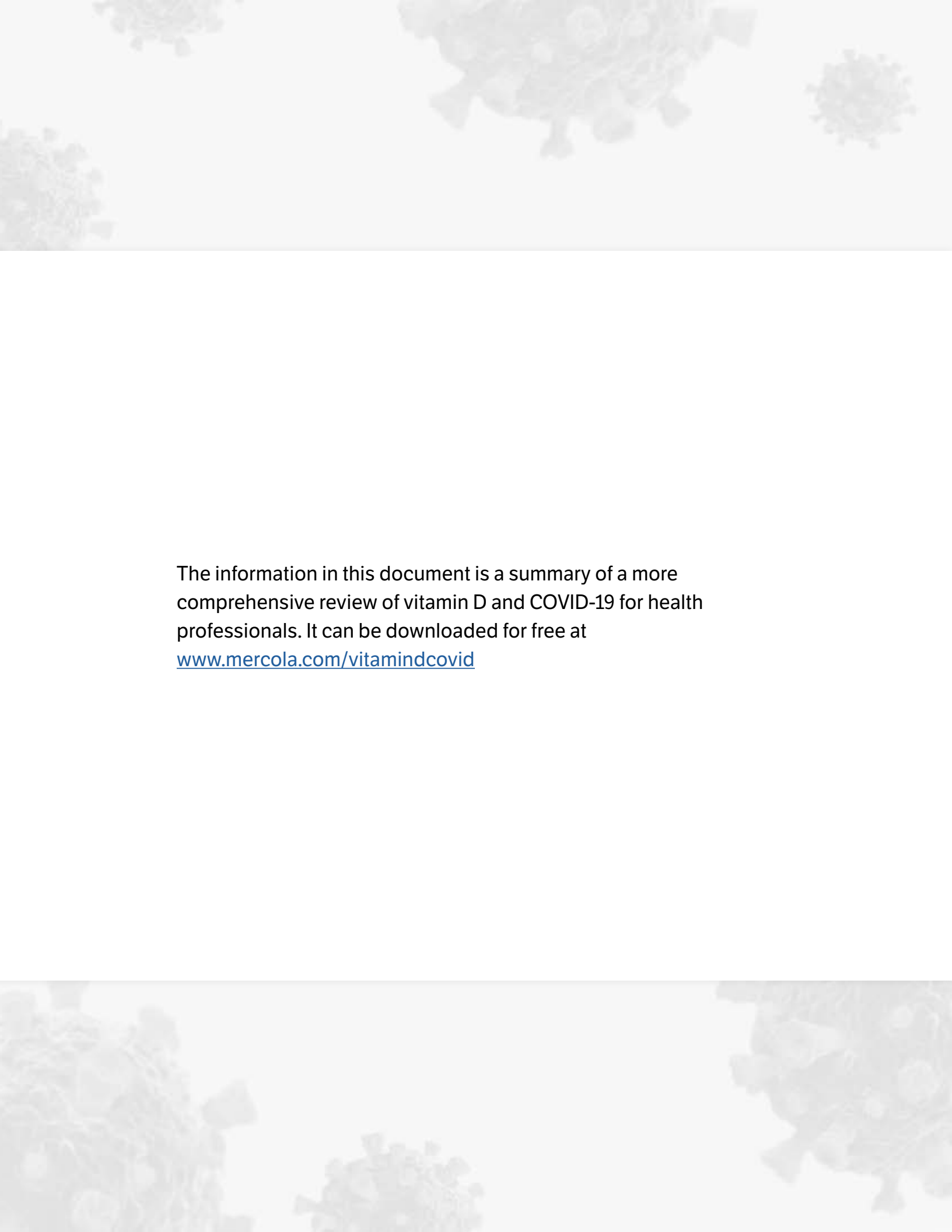
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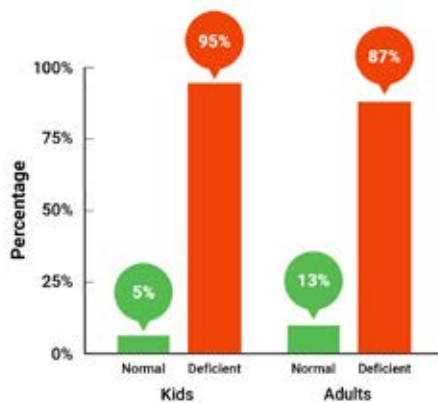
The information in this document is a summary of a more comprehensive review of vitamin D and COVID-19 for health professionals. It can be downloaded for free at www.mercola.com/vitamindcovid

About 90% of US is Vitamin D Deficient

The current epidemic of vitamin D deficiency has collided with the COVID-19 pandemic and likely radically increased the number of deaths because of vitamin D insufficiency.¹

While it will be some time before we know the full extent of SARS-CoV-2, we do know that at least 40% of the population has severe vitamin D deficiency as conservatively defined by a blood level of 25-hydroxyvitamin D below 20 ng/ml (50 nmol/l).²

Vitamin D Levels by Age



SOURCE: Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), National Health and Nutrition Examination Survey, Hyattsville, MD, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2013-2014. <https://www.cdc.gov/nchs/nhanes/ContinuousNHANES/Default.aspx?BeginYear=2013>

Figure 1

While conventional consensus holds that vitamin D levels over 30 ng/ml are sufficient, many vitamin D researchers believe that blood levels over 40 ng/ml are the ideal vitamin D levels.³⁻⁵

When we use the optimum vitamin D level as being over 40 ng/ml, as you can see in Figure 1, over 95% of children and 87% of adults have less than the ideal level of vitamin D in their blood of 40 ng/ml or 100 nmol/liter.

Only 5% of children and 13% of adults have achieved ideal levels. But this is for all ethnicities. As you can see in Figure 6 at the end of the document, **less than 1 percent of Black children have achieved this healthy level.**

Do Studies Prove Vitamin D Works for COVID-19?



Although there are currently no prospective controlled studies demonstrating vitamin D's effectiveness in COVID-19, there are many such studies underway. As of early June 2020 there were over 20 studies in progress on the use of vitamin D in COVID-19.^{6,7} By the end of 2020 we should have some of the results of these trials that should support vitamin D supplementation.

Vitamin D Deficiency Increases Your Risk for COVID-19

A recent study at the University of Chicago of over 4,000 patients⁸ found that untreated vitamin D deficiency was associated with an increased risk for COVID-19 infection. Another observational study involving 212 patients in Southeast Asia found that of those with a critical or severe case of COVID-19, only 4% had normal levels, while 96% of those with a mild case of COVID-19 had normal vitamin D levels. See Figure 2.

Another retrospective study involving 780 cases in Indonesia found that vitamin D status was strongly associated with COVID-19 mortality.⁹ A summary of their findings is in the impressive Figure 3 below, which demonstrates a radical reduction in the death rate from COVID-19 as vitamin D levels increase to over 30 ng/ml.

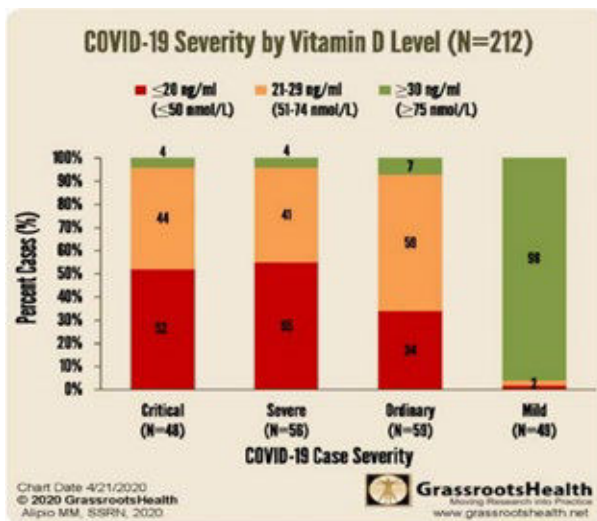


Figure 2



Figure 3

Vitamin D Reduces Your Risk of Viral Infections

There are many reviews that consider the ways in which vitamin D reduces your risk of viral infections.¹⁰⁻²² Vitamin D likely reduces risk of viral respiratory infections because it influences several of your immune pathways, with the net effect of boosting your mucosal barrier defenses while simultaneously dampening excessive inflammation.²³

Vitamin D Has Many Benefits Aside From Bone Health and Immune Support

Vitamin D differs from most vitamins in that your body can produce it on its own with exposure to sunlight, and that its primary active metabolite is a steroid hormone. Unlike most vitamins, which act as antioxidants or enzyme co-factors, the $1,25(\text{OH})_2\text{D}$ form of vitamin D works by binding to a vitamin D receptor present in your cells. Once vitamin D activates the receptor, it becomes a master regulator of cell function (Fig. 4).



Figure 4

Does Vitamin D Work?

A number of people might be opposed to vitamin D supplementation and would counter that there are many vitamin D trials showing it is ineffective with no clinical benefit.²⁴ In every case, though, this is due to a common flaw in the vitamin D study.

Typically, the studies that fail to show a benefit of vitamin D supplementation use a specific dose of vitamin D rather than adjusting the dose to achieve an optimal vitamin D blood level.

This is because these studies are designed similarly to pharmaceutical trials where participants are randomized to a drug or placebo and all participants start with a baseline concentration of zero. With vitamin D studies, individuals start with varying 25-hydroxyvitamin D levels in their blood, so the dose response will vary according to the blood level.

Studies that show vitamin D doesn't work, fail to adjust the dose based on person's blood level of vitamin D



It is important to understand that any study evaluating the impact of vitamin D supplementation needs to use a

design based on blood levels of 25-hydroxyvitamin D concentrations, rather than administered vitamin D doses.^{25, 26}

Once you understand this and you carefully review the methods section of a study being used to dispute the benefit of vitamin D supplementation, you will find that nearly every negative vitamin D study failed to individualize dosing based on blood levels. Further, one of the biggest omissions was any defined co-factors.²⁷



Vitamin D Dosing

Ideally, everyone should test their vitamin D blood level, as this will help identify the optimal starting dose. GrassrootsHealth has analyzed data from over 15,000 people taking vitamin D and put together a calculator.

All you need to do is input your weight, current vitamin D level and desired vitamin D level and it will suggest a dosage for you. It can be found at <https://www.grassrootshealth.net/project/dcalculator/>

Please understand, though, that this is merely an estimate and it would be ideal to retest in about three to six months since vitamin D levels rise slowly. But as mentioned above, since there is virtually no risk of taking a dose of 8,000 units per day, this seems to be a safe strategy. However,

Most people need about 8,000 units of vitamin D per day to achieve a healthy level of over 40 ng/ml.



if you are normal body weight or underweight, you can reduce this amount by 1,000-2,000 units per day as less vitamin D is needed.

If you are unable or unwilling to get a vitamin D test, they have found that the average dose to achieve a healthy vitamin D level of 40 ng/ml is about 8,000 units per day.

If you are underweight you will want to reduce this dose to 6-7,000 units per day as heavier people tend to need more vitamin D.

Safety of Vitamin D Supplementation

Some are concerned about overdosing on vitamin D. It is important to place vitamin D supplementation and its potential risk in its proper context. If you search the literature you will not find a single reported death from vitamin D toxicity in the past 10 years. But, there have been nearly half a million deaths from COVID-19 so far this year.

It is also useful to understand that significant levels of vitamin D can be produced from sun exposure during non-winter months. Approximately 10,000 to 25,000 IUs of vitamin D₃ can be produced in a short time in the sun with full-body exposure, so it should be obvious that your body can easily handle high doses of vitamin D.²⁸

The U.S. Institute of Medicine issued vitamin D guidelines nearly ten years ago.²⁹ The institute admitted that no studies had reported adverse effects of supplementation with less than 10,000 IU/day of vitamin D. Although doses of 15,000 IU/day are rarely needed or recommended, they were found to be safe.³⁰



Other Nutrients That May Increase the Effectiveness of Vitamin D Supplementation

Since over half the population does not get enough magnesium, and far more are likely deficient,³¹ magnesium supplementation is recommended when taking vitamin D supplements.

This is because magnesium helps to activate vitamin D, as the enzymes that metabolize vitamin D in the liver and kidneys require magnesium.³² In fact, about half of those taking vitamin D supplements are unable to normalize their vitamin D levels until they take magnesium.³³⁻³⁵

GrassrootsHealth found³⁶ that those who do not take supplemental magnesium need, on average, 146% more vitamin D to achieve a blood level of 40 ng/ml (100 nmol/L), compared to those who take at least 400 mg of magnesium per day.

The dose of magnesium should be around 500 mg/day, but more if you don't have the loose stools that can occur with higher-dose magnesium supplementation. If you have kidney damage, discuss the dose with your physician.

Take at least 500 mg of magnesium with your vitamin D



One can also take 150 to 200 mcg of vitamin K2 per day, as it works synergistically with vitamin D. This will help drive the calcium that vitamin D helps increase in your blood, and drive it into your bones to build healthier bones.³⁷ The only concern is that if you are on Coumadin, you have to discuss vitamin K2 with your physician as it will interfere with Coumadin.³⁸

Vitamin D Campaign to Arm the Susceptible Public

If you have ever traveled by airplane, you will likely recall the safety instructions from flight attendants during take-off, which tell you that, in the event of an emergency, an oxygen mask

will automatically appear in front of you. But they also tell you that if you are traveling with a child or someone who requires assistance, to be sure to secure your mask first, and then assist the other person.

The lesson here is that it will be important to adopt the vitamin D recommendations and its co-factors in this paper for yourself and family first, before sharing with your friends and community. But, if we hope to limit the damage from this virus, we need to work together to educate and empower the populations that are most at risk for the next wave of COVID-19.

We need to create an army that can go out and reach these target populations that are at high risk during the next wave of the infection. The target populations are the elderly and people of color, as well as those with chronic diseases, and pregnant and nursing mothers.³⁹



It is important to know that YOU can make a difference by taking this information and sharing it with others, especially those who have influence to spread this message to at-risk populations.

By a little investment of your time you can save many lives at virtually no cost. Remember, if it is the late spring, summer or early fall, you

likely can get enough vitamin D for free by merely going outside around solar noon, just being careful to never get burned.

To help you with these efforts we have created a Facebook Group page called **Vitamin D to Fight COVID** (<https://www.facebook.com/Vitamin-D-to-Fight-COVID-100187858424136>)



Let's Work Together Against COVID-19!

Join Our Facebook Group:
Vitamin D to Fight COVID
<https://www.facebook.com/Vitamin-D-to-Fight-COVID-100187858424136>

Black Americans and People of Color Are at Risk of COVID

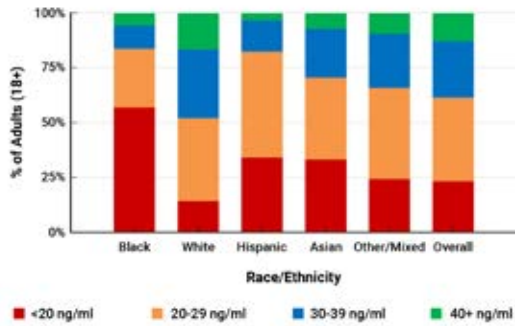


Collectively, Black Americans represent one-eighth of the population in the U.S., but they have suffered one-fourth of known COVID-19 deaths. They are dying at twice their population share.⁴⁰ So what could explain this dramatic difference in death rates between white and Black Americans?

In the graph below that is compiled from approximately 15,000 tests done at GrassrootsHealth over the last 13 years, you will notice that the levels of

25-hydroxyvitamin D (as the measure of vitamin D status based on race in the U.S.) that only 16% of Black adults have adequate vitamin D levels while over three times that number, or nearly 50%, of white adults have vitamin D levels over 30 ng/ml.

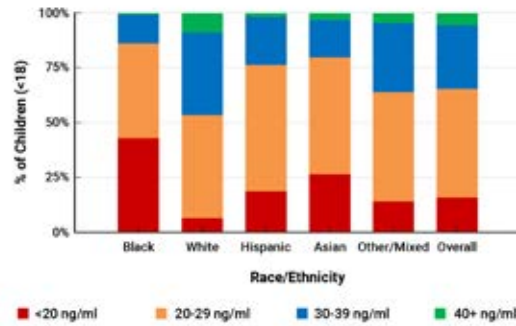
Vitamin D by Race/Ethnicity for U.S. Adults (18+)



Data from 2013-2014
© 2020 GrassrootsHealth
CDC, NCHS, NHANES

Figure 5

Vitamin D by Race/Ethnicity for U.S. Children (<18)



Data from 2013-2014
© 2020 GrassrootsHealth
CDC, NCHS, NHANES

Figure 6

Coordinated efforts to share this important message to those in the Black community could radically reduce deaths. Sharing this important message with your community, churches and other large groups would also be really helpful.

Elderly Focus

Based on a recent analysis of COVID-19 deaths,⁴¹ it is clear that one of the most underappreciated aspect of COVID-19 is its effect on those living in nursing homes and assisted living facilities. This population is particularly at risk of vitamin D deficiency as they are often unable to go outside much and, even if they were able to have sufficient sun exposure, they have a diminished ability to convert that to vitamin D.⁴²

COVID-19 affects the elderly far more severely, on average, than younger individuals. Those





living in nursing homes and assisted living facilities seem to be at an extraordinarily increased risk of dying from COVID-19. As of June 2020, 42% of deaths occurred in nursing homes and assisted living facilities.

Our goal is to reach the physicians who care for these patients. Many of these facilities have only a few doctors, but if they are convinced, they can prescribe vitamin D to all of their patients.

You can help by connecting with the managers of these facilities and sharing this document and the far more comprehensive professional version available at www.mercola.com/vitamindcovid with them. Let them know you are trying to help protect all the residents by getting them on vitamin D, and ask them to help you connect with the doctors who can facilitate this.

It may seem daunting, but this can go a long way to reducing the illness in the elderly. Remember to join the Facebook support group, where you can share your success and ask questions about how to implement these plans.



Be Better Prepared Against COVID-19.

Join Us at Vitamin D to Fight COVID:

<https://www.facebook.com/Vitamin-D-to-Fight-COVID-100187858424136>



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