# Winter Vitamin D Update

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00:01 Speaker 1: You are very welcome to this video. Now, I keep a file on my computer, and every time I find an interesting study about vitamin D, whether it's in favor of vitamin D helping immunity or against vitamin D helping immunity, I just keep it in a separate file and I keep the link. But I haven't found any that intimate that or indicate that vitamin D is bad for immunity. They are all, that vitamin D is promoting the immune function. So I've put a few of these together, mostly from this past month, mostly from October 2020 and some other research, that really shows how important this is because we are missing a trick here. Now, we all know hands, face, space. That's good. Everyone has got that one now. The two we haven't got are hands, face, space, ventilate. It doesn't quite rhyme. Hands, face, space, ventilate. Ventilation is still rubbish. And vitamin D is the other one that people are missing out on. So I'm gonna give you the evidence now. You decide for yourself. Now just by way of a bit of background science.

01:07 S1: Vitamin D is essential as an immunomodulator. Now, you probably know this, but immunomodulation means that vitamin D can promote the immune response. But it prevents an overdrive of the immune response as well, because if you get too much immune response, you get inflammation, and we know that inflammation is part of the problem in people that are very sick with COVID-19, and indeed a host of other conditions caused by inflammation. So it's an immunomodulator. So without enough vitamin D, you won't have enough basic immunity, but then the inflammatory reaction related to the immunity, which is no longer controlled, can go out of control and you can get severe inflammation. So vitamin D is an essential immunomodulator. It makes sure that the porridge is not too hot, and it makes sure that the porridge is not too cold, that it's just right. And this works for the innate and the adaptive immune systems.

02:00 S1: Now, the innate immune system is the immunity that we have that works against a wide variety of potentially infecting pathogenic microorganisms and viruses, but it's innate, it's non-specific. Whereas specific immunity is immunity that we acquire which is specific to a particular organism, like a particular virus. So like if you've had mumps, you won't have immunity to chicken pox or something like that. Each one is specific. And vitamin D is essential for the innate immune response, working generically against a wide variety of organisms and agents, and it's required for the specific acquired immunity as well. It's needed for both. And we need both for protection against COVID-19, as indeed with all infections. We need it to protect us against all environmental potential infections, because out there, there's just a milieu of organisms just waiting to infect us. It's our immune system that keeps us sterile on the inside. All dirty outside, we're all sterile inside. Quite amazing that it can do that.

03:05 S1: So necessary for both arms of the immune system. Enhances innate immunity. It enhances immune little proteins, peptides, antiviral effects that disrupt the viral envelopes. So in this way, these immune peptides, they're working a bit in the same way as soap does, breaking down the outside envelope of the virus. Not that we should be eating soap, of course we shouldn't, but it is working in a similar way. It suppresses the excessive expression of pro inflammatory cytokines.

03:38 S1: Now, cytokine storm is a term that's probably entered into the common parlance now. Too many of these cytokines, which are cell-to-cell communication molecules, are released. They stimulate this massive inflammatory effect and we get the problems such as severe acute respiratory distress syndrome for example, which we don't want because it's caused by the inflammation. So they they suppress the excess pro inflammatory cytokines, regulate expression of ACE2 receptors. Now, this one is quite specific to COVID-19, because as you know, the ACE2 receptor is the way the COVID-19 virus gets into the cell, binds on to the cell. And just to finish this brief introduction, epidemiological and clinical evidence is increasing, and it's related to the incidence, the severity and the mortality in COVID-19.

04:38 S1: So there's increasing evidence that having good levels of vitamin D reduces the incidence, the number of new cases of COVID-19, how sick those people are and how likely they are to die. And low levels of vitamin D are also associated with high blood pressure, diabetes, cancer, cardiovascular disease. So if people had good levels of vitamin D, perhaps there would be less of these. But of course, you can immediately see whether that's true or not, that all of these conditions are comorbidities, the hypertension, the diabetes, the cancer, the cardiovascular disease. So we can see it's all kind of going together. So lack of vitamin D, which is basically a pandemic, there's a great lack of vitamin D around the world, is something which would be so easy to correct and yet governments don't seem to be acting on it.

05:33 S1: Right. Let's get down to specific evidence. Now, this is the initial clinical trial study. We looked at this in great detail, effects of Calcifediol. Now, some people say, I was brought up to say Calcifediol, some people say Calcifediol. But I was brought up to say Calcifediol. I think that's more of the English way to do it. So these patients in this clinical trial in Spain, relatively small number, but some were given Calcifediol and some were given nothing. Now Calcifediol is what the body turns the vitamin D that you take in the tablet or in your diet or in the sunshine into. So if I'm exposed to the sun, my skin makes this vitamin D3, or if I take vitamin D tablets, D2 or D3 tablets, that goes into my blood, but it takes up to about a week for the liver to convert it to Calcifediol, which is then further processed by the kidney. It is quite complicated.

06:30 S1: So when these people were sick, they gave Calcifediol and that meant the vitamin D was working straight away, rather than waiting a week for the liver to convert into the active form because these patients could have been dead within a week. So that was why they gave Calcifediol, but basically it's the same as giving vitamin D, it's just that it works quicker. And the result of this now are well known and 50 patients treated with Calcifediol, one required admission to intensive care... One required admission to intensive care, that's 2% of the sample. None of them died. All discharged. So all 50 patients no deaths, all discharged without complications. Zoomed into that maybe... There we go. So the patients that were given Calcifediol, the vitamin D, fast-acting vitamin D, no deaths, all discharged, no complications. The untreated patients, 13 of them required intensive care, that's 50% of them, and two of those patients unfortunately died. Now what I was distracted by there was the leaves blowing into the window. It's autumn time, there's less sun. We're not making the vitamin D we did in summer, and of course we have a massive second surge all over the northern hemisphere at this time.

08:00 S1: Now, this Calcifediol trial, they are extending this now, 1,000 patients, 15 hospitals in Spain. So at least someone's doing a good quality clinical trial on this now. So that was the original clinical trial, and that's the only clinical trial as such that's been done. All these others are observational studies, but there's evidence after evidence after evidence, and it's just amounting to such an overwhelming case now. But let's carry on.

08:31 S1: Now this study here, "Vitamin D Status in Hospitalized Patients with SARS-Coronavirus-2 Infection," published in the Journal of Clinical Endocrinology and Metabolism, peer reviewed, it's an accepted paper. Just published a few days ago 27th of October 2020. So bang up-to-date research. The aim was to assess the serum 25-hydroxyvitamin D. That's the vitamin D in the blood levels in hospitalized patients with COVID-19. And they wanted to analyze the possible influence of vitamin D status on disease severity. Now it's a retrospective study. This is not ideal, and it's not really... So it's not a prospective clinical trial, but it was case-controlled in a sense, because they had 216 hospitalized patients, and they had a 197 population-based controls. So 216 patients in hospital, 197 controls. So what they could do is they could compare the serum vitamin D levels in that group and the serum vitamin D levels in that group, and see if there is a difference between them. So it is fair to say it's case-controlled, although they weren't given a treatment. This group weren't given a placebo or anything like that, so it is short of a clinical trial, but it's still good because you've got a comparison group.

09:53 S1: So what were the results from that? Results. Vitamin D deficiency was defined as a serum vitamin D level of less than 20 nanograms per mil. Now it's a bit confusing, because we can measure vitamin D levels in nanograms per mil or nanomoles per litre. But 20 nanograms per mil is equal to 50 nanomoles per liter. So less than that was defined as deficient, which is reasonable. Now, the COVID patient group, the mean, the average level of vitamin D in their blood, in the hospitalized patients, was 13.8, and 82% of them were found to be deficient in vitamin D. That is quite a significant finding. The community group, the controls, that weren't in hospital, their mean level was 20.9. So the hospitalized patients, 13.8, the non-hospitalized people, 20.9, 52 milimoles per liter. And the P-value there is remarkably low. That means this result would not have arisen by chance. Very, very small chance that the result have arose by chance, meaning there's a genuine difference between the two groups. And 47.2% in the community group were found to be deficient. Now, still significant. A lot of people are still deficient, but it was 82% in the hospitalized group. So hospitalized patients, community controls, clearly a big difference there. The hospitalized patients having lower vitamin D levels.

11:36 S1: And also interestingly in this study, blood levels lower in men than women, of course we do know men get more severe COVID-19 than women. So not a clinical trial, but a very good comparison study. So I would say that evidence is quite good. Of course, on it's own it means nothing, so we need to add other things to it to see what... To see if it makes sense in context. Like this study here... Evidence of the protective role of ultraviolet vitamin B... Ultraviolet radiation B, sorry, not vitamin B. Evidence of protective role of ultraviolet B. So that's a particular wavelength of ultraviolet, that helps the... In combination with the skin, produces vitamin D in the skin. Again, 20th of October... The 19th of October 2020, so bang up-to-date research. Now, this is published in Nature Science Report, so again, prestigious journal, nothing wrong with the science reporting here. Now, ultraviolet B radiation mediated by vitamin D synthesis, so the ultraviolet radiation promotes vitamin D synthesis in the skin. Now what this group did was they took data, a lot of data from 152 countries, over 108 days, from 6,524 patients, so a significant international data collecting exercise.

13:00 S1: And they found a permanent unit increase in ultraviolet index is associated with a 1.2 percentage point decline in the daily growth rates for cumulative COVID-19. So every time the ultraviolet index went up a unit, the percentage of COVID-19 daily growth rate in cases was down by 1.2%. So in other words more ultraviolet light in the weather, more ultraviolet light, more vitamin D produced, new cases of COVID-19 went down. And also, the case fatality rate went down as well, and a 1% points decline in the case fatality rate, again, related to the ultraviolet index. So again, as the amount of ultraviolet over summer went up, the amount of deaths from COVID-19 went down. And this is a trend, remember, identified from 152 countries, 6,500 patients. And globally, they calculated using clever mathematics I don't fully understand, that there would be 12%... -12% of cumulative COVID-19 deaths, and -38% on the case fatality rate. So globally, they found between a 12% and a 38% reduction in fatalities. That is really quite a significant potential reduction.

14:40 S1: And I'm gonna give some direct quotes from these authors now. See now I've put it in italics if it's direct quote. So we find a significant negative association between ultraviolet index and COVID-19 deaths. In other words, the ultraviolet goes down, the COVID-19 deaths go up, the ultraviolet goes up, the COVID-19 deaths go down. It's a negative or an inverse association. They go on to say, "Indicating evidence of the protective role of ultraviolet B in mitigating COVID-19 deaths, if confirmed via clinical studies," which is what we so desperately need, "then the possibility of mitigating COVID-19 deaths via sensible sunlight exposure or vitamin D intervention would be very attractive."

15:38 S1: So frustrating because of course, this proves nothing because it's an association correlation study, but they all seem to be giving the same results. We need this large-scale clinical trial to prove it. But it's just... Everything you read just seems to add and add to the evidence. Let's keep going. This study here, vitamin D deficiency... Sorry. Vitamin D sufficiency, when vitamin D is sufficient. Okay. And they say at least 39 nanograms per mil is sufficient, and some people put it higher than that. But anyway, they found an association between blood levels of vitamin D in the blood, 25-hydroxy vitamin D levels, and its effect on adverse clinical outcomes. That was what they were studying and they studied 235 patients. What did this study find?

16:31 S1: Now, based on the Centers for Disease Control criteria, amongst study patients, 74% had severe COVID-19 infection and 32.8% were vitamin D sufficient. So among our study... So 74% of the patients had severe COVID, and of those 74% of patients that had severe COVID, 32.8% were found to be sufficient in vitamin D. Sufficient in vitamin D, so that means that 68% were deficient, doesn't it? Now just putting it the other way around.

17:09 S1: Right. So again, pretty consistent data. Vitamin D sufficiency, that they say is 30 nanograms per mil, which is 75 nanomoles per liter, was the level that they were using. This resulted in reduction in clinical severity, reduction in in-patient mortality, and reduction in levels of C-reactive protein. So reduction in clinical severity, less severe, less people dying, less C-reactive protein in the blood, and the C-reactive protein is an inflammatory mediator. So the more of C-reactive protein, the more inflammation. So they found that people that were vitamin D sufficient had less C-reactive protein in the blood, and they also found in terms of the immune system, increased lymphocyte percentage. And it's the lymphocytes... You might remember the lymphocytes are the B and the T lymphocytes, which are so vital for viral immunity. The B lymphocytes producing the anti-bodies and the T-lymphocytes killing the virally infected cells as we've looked at several times.

18:26 S1: So again, it's not a clinical trial, but the data again is completely consistent. Now, vitamin D deficient groups. Now let me give you some information, now it's a little bit surprising, vitamin D insufficiency in Southern Arizona. Now, I've never been to Arizona, but I've seen The Westerns, and it's all desert and sunshine, isn't it? Now it's a very sunny state and yet there's vitamin D deficiency there because people often just don't go in the sun, it's too hot.

19:07 S1: So this is from the American Journal of Clinical Nutrition, and again, peer-reviewed accepted paper. So in Southern Arizona, the population average was 26.1 nanograms per mil, below 20 nanograms per mil. The low rates were taken as below 20 nanograms per mil, fair enough. So that was the average in the population, 26.1 nanograms per mil. But then, they looked at how many people had less than 20 nanograms per mil, how many people had less than 20 nanograms per mil or 50 nanomoles per liter. So 20 nanograms per mil, 50 nanomoles per liter, how many were below that. Now in African-American derived peoples, it was 55%, in Hispanics it was 37%, and in White population it was 22%. And of course, we have looked recently that these populations have more than four times the rate... More than four times the rate of hospitalization compared to this sector of the population, hospitalized four times more.

20:32 S1: And there was also more obesity associated with these two groups as well. And obesity is very relevant for vitamin D because if someone is low in vitamin D, and they take vitamin D because it's a fat soluble vitamin, most of the vitamin D that's taken initially just goes into the fat soluble tissue and doesn't get into the blood. So obesity is a risk factor for vitamin D deficiency. Now, yesterday we looked at First Nation American populations, and here's another study, this one is Northern Arapaho and Eastern Shoshone tribes in Wyoming. Part of their census for disease control study. So now, when I read this, I was actually quite shocked. These people groupings, the Northern Arapaho and The Eastern Shoshone peoples die an average of 30 years earlier than White people in the state. Now that is just absolutely shocking that this state of affairs is allowed to continue. It really is appalling. A 30-year difference in life expectancy amongst Native Americans as opposed to White Americans. A huge difference. And studies show that nearly 80% of all adults have deficiency of vitamin D levels at very low levels equal to or less than 20 nanograms per mil. So very low Vitamin D levels.

22:17 S1: Again, it's not proof, it's an association, but it's another consistent association to go with the many of other consistent associations we've shown. And what I'll do in the link below this video, I'll put the link to previous videos we've done because we've looked at so much evidence of this now. Now, obesity was also a problem in these Indian groups, where circumference, which was associated with a higher risk of obesity related disease. In women, it was 95% were obese, men were 80%. Well, too much abdominal adiposity anyway and there were was also hypertension and diabetes. That's associated with lack of vitamin D, that's associated with lack of vitamin D. People that are obese are significantly more at risk for lack of vitamin D. It's all completely consistent. Now, just to finish, East Virginia Medical School protocol have taken this on, EVMS, E Virginia Medical School, check out their website, absolutely excellent. Now, for prophylaxis of COVID, they're recommending between 1,000 and 3,000 international units of vitamin D a day. Now, it's a bit confusing because there's two ways of measuring it.

23:43 S1: So 3,000 international units a day, we see would go in there, so 3,000 international units a day would equal 75 micrograms. 75 micrograms, and of course there's a 1,000 micrograms in a milligram, so that's the conversion between international units and micrograms. But that's what East Virginia Medical School are written in their protocol. Note, recommended daily amounts is 800 to 1,000 in the United States, in the UK it's even less. So they're advocating the higher end of that or up to 3,000 to prevent COVID-19 in the community, prophylaxis. They say the safe upper limit, safe upper limit daily dose is likely greater than more than 4,000 international units a day, is what that website is saying. Check it out for yourself. Now, what about patients at home who developed COVID-19? Well, they're advising two to 4,000 international units a day. Mildly symptomatic patients in hospital, they're giving much larger doses, 20 to 60,000 international units as a single dose, or Calcifediol which would work quicker, 200 to 500 micrograms as an alternative. And just to remind ourselves again, that is the conversion that is useful to remember.

25:24 S1: Personally, I take 2,000 international units a day now the sun has dropped out of the Northern English sky. So massively increasing cases in the Northern Hemisphere, no two ways around that. We anticipated this, we didn't quite know how quickly it would be, it's quicker than most people have thought, the projections for increased deaths in the UK are higher than people thought, but the factors are people congregating in together, lack of sunlight, I believe lack of vitamin D is a big factor, now that Autumn is here. And it really is time we had proper government advice on vitamin D. Now, the government don't have the clinical trial data to draw on because it's not there, but there are so many associations now with vitamin D and we have the scientific advisory group for emergencies. It's really time they looked at all the data I've presented on this series of videos now.

26:34 S1: And in my view, there's more than enough evidence there to recommend at least somewhat increasing doses of vitamin D for the public over this coming winter time, because it is going to be a difficult winter because the vaccines aren't going to be here till next spring essentially, at the earliest. So there we are, more evidence on vitamin D. I'm convinced by it, look at the evidence yourself, see if you're convinced. I could have picked many, many more things, just I didn't wanna go on for hours and hours on the video, but I didn't find any contrary evidence. So that's what I'm doing, that's what the East Virginia Medical School recommends. Look at the evidence, talk to your own healthcare providers and make your own decisions on that. And as always, thank you for watching this video. And if you've got an MP, why don't you write to him and say, "Oi, talk to Matt Hancock and say, 'Get this sorted out.'" Okay? Thanks for watching.

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