Micronutrients - Vitamins: Vitamin D

Transcript

Hello and welcome to our Micro-nutrients Module on vitamin D. Vitamin D is also called the sunshine vitamin. Believe or not, Vitamin D is actually not really a vitamin, it's really a pro-hormone. We'll talk more about that as we share a little bit about it and its structure. I think you all know that already. We call it a vitamin because it's something we have to get every day. We're supposed to get it from sunshine, but that doesn't always work out for a number of reasons that we'll discuss. Then we have to end up resorting to food sources.

We're here today to discuss all of that wonderful stuff. Again this information is not intended to replace a one on one relationship with a qualified healthcare professional, it's not medical advice. It's intended to be educational so that you can share with your clients ways that they can create balance restore balance and get their health back in order but it's certainly not diagnosis or treatment. If they're under the care of any medical practitioner or under any medication, it's really important that they check in with their medical practitioners. Let's go ahead and get started.

We'll star of with a really cool diagram which shows us the biochemistry to an extent of vitamin D. Let's review this, you may already know this but I like to review it so just we're on equal fling from the start. Good old sunshine, good old badly treated sunshine I believe because we've got into a situation in our society where the sun is deemed as evil, bad etcetera. People are blocking the sun, they're putting on these toxic chemicals on their screens to keep them from getting sunburned when in reality the truth is the dangers of deficient sun exposure are actually much greater than the dangers of excess sun exposure. Really what we want is the ideal amount of sun exposure, just like we want the ideal amount of all the nutrients that we're dealing with. We have the UVD rays that hit our skin and in the skin we have a precursor to vitamin D which is called dehydrocholesterol. There goes cholesterol.

Another thing that's has a bad reputation when really is a very essential chemical in our body. The dehydrocholesterol gets converted into pre vitamin D and then into vitamin D which goes into circulation and it goes into…the first step is the liver where the D3 gets converted to 25 hydroxyl D3. That by the way is the form that we measure when we do vitamin D blood test.

It then goes from the liver into the kidney where the 25 hydroxyl is converted to 125 di-hydroxyl vitamin D. Then that goes to the intestines, the bones, the immune cells and whatever else we need to use the vitamin D and it's a lot of places in the body as you'll soon see.

We have vitamin D coming in from your diet then it's similar. It gets absorbed through the intestines into the circulation and then it goes to the livers and then the kidneys. It's the same source, it's just that you're taking it the D pre-formed in your diet or you're being exposed to the sun and having the dehydrocholesterol converted to pre D3 to D3 then that goes to circulation. It's an overview, let's take a look at what all these means.

This is a quote from Zoltan Rona in the book that we'll show you later about the sunshine vitamin, she says, "Sun's phobia, sunscreen and spending too much time indoors have contributed to the problem of vitamin D insufficiency. Many people have been to stay away from the sun and put on the sunscreens and block the sun in every way that we end up with a lot of pale people who are vitamin D deficient. Vitamin D deficiency can be a precursor to cancer and the cancers that vitamin D deficiencies can lead to are mostly more dangerous than the kind of cancers that excess sun exposure on the skin can lead to and I'll show you that in a bit.

What are some of the functions of vitamin D? Vitamin D has functions all throughout. You can see the structure of vitamin D here, it's a sterol molecule and it's similar to some of our other steroid hormones: estrogen, progesterone, cholesterol (which is not a hormone, but it's a sterol). Vitamin D is a sterol. It helps the gut absorb calcium and phosphorous. Which is why it's so important for what? Bone health. It's not that the Vitamin D is building the bone it's helping the gut absorb more calcium and phosphorous so that the bone can be built. It also helps to regulate the calcium phosphorous metabolism in the blood. It's important for adrenal gland health, it's important in blood sugar control of course by absorption in the bone metabolism is very important, it's important for the brain and the nervous system development and functioning which is why sometimes we see people getting problems with their depression. When they don't have enough D it's amazing how people sometimes can say they're depressed, they're depressed, they're depressed. Send them out in the sun and then given them some Vitamin D and that depression goes away. Nothing is usually that simple, it's usually a multifactorial approach when you're working with people, but you can't overlook the simple staff like Vitamin D deficiency.

Very important for digestion and nutrient absorption as well as the blood brain permeability and the gut membrane permeability. So, if you've got low Vitamin D status, and a leaky gut, and you're having some brain fog and other things that might suggest blood brain barrier permeability, bad shape.

This status needs to be addressed. Doesn't mean that it's the BR and the Endo and that all these problems go away just be balancing D, but so many people over look it and they get on calls to me and they start asking me about all these fancy things they should be doing.

"What about this, and what about that and why do I have this?"

I say, "Have you had your D checked?"

"Yeah, I did."

"How long ago?"

"Three years ago."

"What was it?"

"It was low."

"What did you do?"

"Oh, the doctor told me to take whatever 2,000 IUs of Vitamin D everyday."

"How long did you take it for?"

"Just a few months."

"Are you still taking it?"

"No."

"Did you get it tested again?"

"No."

"Then let's do something much more proactive here much more foundational than trying to find the perfect herb or the perfect supplement to fix the problem. We need to do the basics and Vitamin D is really important. I know it's hard to ... "

"Yeah, I've got to go back, and you've got to go back every three months initially and then maybe every six months," but it's really important to fine tune it. A lot of factors play in to Vitamin D absorption which we'll look at in a bit. One of them is genetics. You may have the genetic markers that affect the Vitamin D receptors and your body's going to need more of the Vitamin D in order for it to be effective.

Let's look at some other functions of Vitamin D. Immune system health, mood, mind, memory behavior, muscle, nerve and athletic performance, normal blood pressure, pancreatic health which means blood sugar and digestive enzymes, right? Skin health, sleep and what is sleep tying to besides everything? Everything, right? Blood sugar balance and hormone balance and digestion and thyroid. Sleep is critical. Vision partners with Vitamin A to help with vision. Weight control. It helps with carbohydrates and fat metabolism. It's almost like a great mimicker, you can get symptoms in just about any part of your body when you're deficient. It's an important thing to jump in right from the beginning and make sure people have good Vitamin D status. We can't stress that enough.

You want to maintain homeostasis take Vitamin D. The body is always looking to do that. If you detect that you're low in Vitamin D, low Vitamin D is going to cause you to be low in calcium and phosphorous because you remember Vitamin D affects the uptake in the digestive tract that's going to cause ... The low calcium and phosphorous especially calcium is going to cause the parathyroids to reduce parathyroid hormone and that's going to go to the bones and release some calcium and phosphorous to bring the levels back up. If the Vitamin D goes back to a sufficient level it releases calcium and calcitonin and then the calcium and phosphorous return back to the bone. So, if you don't get the Vitamin D levels back up that calcium and phosphorous you just concealed in your bones and in your blood and now come back to the bone now leads to osteoporosis. It's really, really important.

There's several different forms of Vitamin D, there's D3 which is exclusively in animal sources. Usually you find it under the skin or under the hair so lanolin is a good source of Vitamin D in animals. It’s not actually in the flesh of the animal, but it’s under the skin. So if you hide an animal, or you shave an animal like a sheep, you know, you shave the sheep you’re going to get the laminin underneath. Vitamin D2 is found in plant sources in small amounts.

We also call that Ergocalciferol that’s found in mushrooms, and that’s why some of the newer vegan sources of D—vitamin on the market are ... Actually no, Vitamin D3 is what’s found in the mushrooms. So the D2 is found in a lot of others, but D3, the only really place you can find D3 in the plant kingdom is in mushrooms. You’re going to argue whether mushrooms are actually a plant kingdom or not because they’re funguses and they grow on other things. D2 is found in plant sources, so synthetic D2 and that’s fortified products, like if you buy, Vitamin D milk or AND homogenized fortified milk, that’s going to be a synthetic form of D.

There've been mixed studies. The studies show that vitamin D is clearly more easily absorbed, and readily absorbed, but D2 can actually be absorbed fairly well. You can get larger doses of people who want to maintain a vegan diet, and not take supplements that are not vegan that the vitamin D2 sources. You might have to tab a little bit higher dose than you would for D3. Some of the studies show that it’s not that considerable a difference.

Why do we become vitamin D deficient?

Well, some of it is really obvious, right? We have sun's phobia. We wear too much sunscreen. We sit indoors all day at our computers doing our work, and don't get much time outdoors. Poor liver function, as you remember, we have the kidney and the liver that have to convert the forms of D that come in to the forms that the body can use. Poor bile production which means that you are not going to be absorbing the vitamin D as well, because remember if they're fat soluble vitamins ...I think I failed to say that at the beginning, but D is a fat soluble vitamin.

Food allergies can prevent absorption. A leaky gut, irritation in the gut, any kind of impairment, northern climates and cold climates. It's said that above Atlanta, Georgia in the US, above Atlanta, Georgia, in the winter you won't get anywhere near enough vitamin D, you won't get any vitamin D. In fact it's said you can lay naked on your roof the entire summer long, if you live above that Atlanta, Georgia area and you won't get any vitamin D. So you either have to be getting enough in the summer to be able to store it, which we can because it is fat soluble and it can get stored or you need to be supplementing through the winter.

Genetics play a huge role. There's a particular SNIP singular nuclear type polymorphism which is basically a variation in the genetics where yours is different from what it "should be," and it affects the vitamin D receptors and the uptake of the vitamin D.

Showering and scrubbing with soap, believe it or not. If you're out in the sun, and you get excess exposure if you come in and just shower and scrub with soap right away, you're going to scrub off that vitamin D precursor while it's being converted to vitamin D before it's fully absorbed into your skin. So it's recommended that you wait ... Actually 48 hours before you scrub with soap, and leave the areas that have been exposed in order to get the best vitamin D.

Obviously if you've got parts of you that you've been out under the car, and getting grease on you or whatever, you need to use the soap, but I'd stick to using soap in the pits and in the privates. That's it. Pits and privates. Everything else, we just don't use soap. Unless of course there's some grease or something else that's gotten on there, or some other kinds of dirt that won't come off.

Statin drugs can create a deficiency in vitamin D. We know that statin drugs interfere with CoQ10 but also interferes with vitamin D.

Here's just a picture I got from the male clinic, but this is what they're showing, and all the different things that can result from vitamin D deficiency. It's rampant, right? Psychiatric disorders, Schizophrenia and depression. This is the male clinic saying this. This is not alternative medicine journal. Urinary tract and tuberculosis and infections they even list. High blood pressure and coronary heart disease, breast, colon, prostate and other kinds of cancer.

We spend a lot of time covering up from the sun to prevent the types of cancers like abyssal cell which are most likely to develop from sun exposure which are benign, and we risk vitamin D deficiency and breast, colon and prostate cancer among other things. Diabetes and syndrome X are like—Syndrome X is precursor to diabetes, as you know, obesity.

These are other things that can be caused by vitamin D deficiency.

Wheezing, and that's the uptake of the air, of the low volume. And then in terms of bone muscle, Osteoporosis. Osteomalacia is the softening of the bones. In our vitamin A talk, we talked about the Malacia of the Keratomalacia, of the cornea, right? Kerato? I think it is Keratomalacia, but Osteomalacia is actually softening of the bones. It's a little bit different than porous bones. It's actually soft bones.

Osteoarthritis, rickets, which is a severe form of vitamin D deficiency. We don't generally see that severe form of vitamin D deficiency but you look up rickets, you look up all the signs of rickets and then you look for subtle signs of those symptoms in your patients to confirm vitamin D deficiency; muscle aches and weakness.

On the other side, they've listed a whole bunch of things that are contributing in terms of medications and supplements that can affect the absorption and the utilization of vitamin D. So, anti-seizure medications, glucocorticoids, Rifampin, HAART (Highly Active Antiviral and Rifampin, used in TB treatment). St. John's Wort. So, too much St. John's Wort can affect it. Too much St. John's Wort can affect the skin, maybe if you can afford a phobic kind of reaction some think that's the mechanism. Then, when there's poor absorption like in the case of Chrome ripple cystic fibrosis and Coeliac, and then in the case, of course, of organ failure like liver and renal, because those are going to be problems and then Nephrotic Syndrome which is a chronic condition of the kidneys.

All of these things, in addition to the sunscreen, how dark your skin is, the latitude and the season is going to affect this. There are these things on the right side are going to contribute to vitamin D deficiency. The things on the left are what vitamin D deficiency might look like.

We'll just go through some of these, but this is so many thing that vitamin D deficiency can result in, and you might say well, "How will I know if somebody has vitamin D deficiency?" "How will I know at all, because these are like wide-spread all over the place?" "If somebody has depression, does that mean they're vitamin D deficient?" Like anything else, it's like a score card. We talk about that in our history taking, right? So, you have your list and it goes through all the different vitamins and minerals as well but we're working on vitamins now. You look at vitamins, you look at vitamin D deficiency and then you look at the symptoms of other things. You see, where do they have the most things lining up? You try to make a decision based on that.

Now, vitamin D, of course, you can tell, because you blood test them. A lot do people, they just don't have access to easy testing. Here in the US, we can use DirectLabs.com and anybody can go get the vitamin D deficiency they're testing. They just have to cough up 50 bucks. There's also online places where you can go where you can send away for a kit, you prick your finger, you send them your blood and they test it.

It's easy to test vitamin D but not necessarily all over. So, you might rather be relying on the person's history. If they're overweight, it affects the metabolic rate. It affects the thyroid. It can lead to a person being overweight having high blood pressure. We've already talked about the bones.

Autism is ...Can be related to it. A lot of kids with Autism have vitamin D deficiency. Auto-Immune Conditions, Cancer, Depression, Asthma, Migraines, even Cystic Fibrosis. I know that's often times thought of as a genetic thing, but it's a genetic predisposition and vitamin D deficiency can exacerbate it. There's types of diabetes. All kinds of auto-immune diseases, including Multiple Sclerosis, schizophrenia. Epilepsy, PCOS which is Polycystic Ovarian Syndrome.

Polycystic Ovarian Syndrome is a condition caused by elevated blood sugar and insulin resistance and it causes excessis of the androgens, the testosterone and DHEA, in females. Which can lead to some issues with fertility, with acne, with Weight Gain and a whole bunch of other things. It's not a pleasant situation. All kinds of muscular skeletal pain. Muscle weakness. Poor balance. Systemic inflammation and Fibromyalgia. All of these can be possible manifestations of vitamin D deficiency.

So, let's look at, if you're measuring these stuff, and this is of course US measures, there are plenty of sites online that you can go to and get the conversion into Standard International Units. It says right here you can multiply by 2.496 so if you're in Canada or England of Europe, any place else in the world besides the U.S. you're going to be using the Standard International Units so you can multiply these numbers by 2.496.

Anything over 100 is considered excessive vitamin D, anything under 10 is considered seriously deficient. Anything under 20 is considered an over deficiency, under 30 is deficient. According to our western medicine 30 to 50 is sub-optimal and 50 to 70 is the proposed optimal range. Some studies suggest that 70 to 100 is the real optimal range because that's the rate at which cancer rates plummet, people with those levels don't have much in the way of cancer. You get somebody tested, you look to see where they fall, and then I can share with you how to supplement.

What I'll typically do is that if somebody is under 10 which is seriously deficient I'm going to put them on 20,000 IUs a day for minimum six weeks, probably for three months. Here's the deal though, I've had people go on the 20,000 for six weeks and go back and retest and have gone from 8 to 100.

I've had other people stay on the 20,000 for up to a year and a half and only go up to sixty. So it's kind of vary widely. That's why I usually like it to test against six weeks. If they don't want to spend the money, it's not convenient, I'll generally say, "Well, do the 20,000 for six weeks and then switch to 10,000." Then I'll think they're going to excess that way. If they're between 10 and 20, I'll probably do that same thing. If they're between 10 and 20, I'll not have them go three months without ... I'll probably do the same thing.

If they're between 20 and 30 usually I'll start with 10,000. I'll start them with 10,000 and I'll recheck them in six weeks at most three months, and then if they're still low then we bump it up. If they're going up, but they're going up very, very slowly then we bump it up a little bit. We want to get them up. With vitamin D you can actually replenish and repeat very quickly. The trick is maintaining it.

There's been studies where they've given people 100,000 IUs of vitamin D three, four, five times a week and after two weeks have their numbers go up dramatically into the normal range from very low. However, those are studies so they were able to test more frequently. I'll certainly would never put somebody on 100,000 IUs of vitamin D for more than three days and the three days is because sometimes in acute viral infection you can knock it out with a combination of D, A and C at high levels, around 100,000 IUs. I'll only do that for a few days, and then bring it down. If I was in a lab situation where I could test these people all the time, I'll probably be a lot more aggressive with the supplementation, but you don't want to get into the excess because I'll show you what some of the symptoms are of excess. It's not that big of a deal but people freak out and if it goes too long it can be dangerous.

Then if they're between 30 and 50 I might go... I'll probably go 10,000 for three months and test them after that. If they start out between 50 and 70, I'm probably going to put them on 5,000 and check them in three months and see where they're at. I really like them ideally to get to the 75 to 100. What you're going to find is that you'll start to get an intuitive sense of how much you should be giving them based on what they've got, and based on where they came from. If you know their genetics it helps even better because if you know they have snips for the vitamin D receptors, you're going to be much more comfortable with higher doses.

Let's look at some of these statistics, it's really, really rampant vitamin D deficiency. Way, way rampant. Of all the people in this particular study, I gave you the link there, they found that 41% of the people had vitamin D levels below 20, that's over deficiency. 68.1% of African-Americans had below 20, so it's clearly a higher problem and part of it is that the darker the pigment the less efficient we are at picking up vitamin D. So, you need to stay out longer. Same thing with Hispanics, 69.2% had Vitamin D levels below 20, these are huge numbers. This is a study from 1988 to 1994, 45% of people had vitamin D levels of greater than 30, that is hardly any.

By 2001 to 2004 only 23% had levels greater than 30, and here we are saying that we want people to be in the range of 70 to 100 or even 50 to 70 if we want to be conservative, and here's people only 23% of people even had greater than 30. It's a serious problem and it's probably causing a lot of the chronic health challenges that people have and nobody is really showing them.

Let's talk about skin cancer and sun exposure. The most deathly dangerous of this skin cancer is this melanoma, an it's not related to sun exposure, it might mildly be, but recent studies suggest it can be caused by vitamin D and omega 3 deficiencies. The basal cell carcinoma which is triggered by sun exposure is actually benign, and can be removed. Of course we don't want to get excess sun exposure, and get a basal cell carcinoma and have to get it removed, but the point is that they're benign. We're putting on all these sunscreen that are carcinogenic and getting our vitamin Ds deficient to prevent a kind of cancer that's benign when the more serious cancers like prostate, breast, uterine and melanoma are actually caused by vitamin D deficiency.

The trick is to tell people to get out of the sun when the skin starts to turn a little pink, don't stay out there till you're bright red, brown isn't going to hurt. If you need sun blocks don't use those carcinogenic over the counter stuff that you buy at the grocery store, instead you can use zinc oxide or titanium dioxide. Who's at the highest at risk of vitamin D deficiency? Well, overweight, they have a greater need because they could store it in the fat, and it doesn't get released into circulation to do its thing. Pregnant women need more, they're feeding their babies. The elderly, because the skin loses the ability to produce as it gets older and more damaged then they get more deficient. Then dark skinned people because the melanin blocks the UVD rays.

Let's talk about testing. I highly recommend that everybody gets a baseline test, so whenever you have somebody come in, if they don't bring you a vitamin D test that is recent within three months get them to get a baseline. You see with that where they're at, you talk to them about sun exposure, safe sun exposure and then you give them recommendation for supplementation. Until it's stable, I'll recommend testing every three months for at least a year because otherwise you're not going to get it right, you're just not going to know. You have to test it both in the winter and the summer because it's going to make a difference unless you're in the tropics.

How much is safe to supplement?

There's been a lot of studies looking at this. University of Toronto studies said, "There's no measurable shifts in the vitamin D until it's greater than 4,000." That when you're out in the sun you make 20,000 IUs every hour, so if you go on a tropical vacation, you're making a heck a lot more than the 20,000 a day which is the high end of the recommendation that I conservatively make. You've got skin reserves and 10,000 IUs is considered an optimal dose by Dr. Zoltan Rona author of "The Vitamin D, The Sunshine Vitamin."

He's kind of saying that for everyone it may not be the ideal for everyone, some people might go too high with 10,000, but it's definitely considered a safe dose. It's going to be hard to get tuned to unsafe doses on 10,000 a day, unsafe levels.

More serious conditions that benefit from large doses of vitamin D and this is a study by Dr. Joe Prendergast he is a Endocrinologist and he actually studied this at 50,000 a day in these conditions. So again when we're asked super physiologic doses, normal doses, how do we know, we've got to look at the history. We've got to really understand where this person's at. Cancer, it's been studied in all sorts of cancers ALS is a Lou Gehrig's disease, Amyotrophic Lateral Sclerosis, very serious neurologic condition. Depression, hashing motors, multiple sclerosis, allergies, flu, rheumatoid arthritis, heart disease, lung disease and osteoporosis.

You're not going to continue to continue 50,000 IUs indefinitely. I certainly recommend being conservative in testing. Around 50,000 I want to test in two to four weeks just to make sure you're not going to high unless you started at 8, you're probably going to be fine going four weeks. I tend to be a little bit more conservative, but this is a study that this endocrinologist determined was a good dose.

Here's a guy with psoriasis. Subset of conditions that respond to vitamin D supplementation, this is page one, I think we have to read this. The flu according to Cambridge journals Vitamin D reduces the incidence of respiratory infections in kids, muscle weakness. There's a study by Michael Holick, muscle weakness is usually caused by vitamin D deficiency because for skeletal muscles to function properly their vitamin D receptors must be sustained by vitamin D, interesting.

Then psoriasis this study in the UK was discovered that synthetic D, wasn't even natural D, synthetic D analogues were found useful in the treatment of psoriasis. It didn't really say the doses or anything, but I'm sure that's something if you're working with somebody with psoriasis that you can look into. Certainly get them tested if they got fibromyalgia, if they've got psoriasis, really, really important. What else responds to vitamin D supplementation? These are conditions: Chronic kidney disease, patients with a dense chronic kidney disease are unable to make the active form of vitamin D, so they need to be taking more in order to facilitate that conversion. Diabetes, this is a study with 10,000 kids given 2,000 IUs a day of D3 during their first year of life and were monitored for 31 years. The risk of type 1 diabetes was reduced by 80% and that's a study from the Lancet.

Asthma in school children in Japan significantly lowered in those taking a daily dose of vitamin D and that's only with 1200 IUs a day so, it doesn't have to be the massive 50,000, 20,000 doses you just have to see how things respond and supplement accordingly.

Some more conditions, periodontal disease. Raising vitamin D levels increases various chemicals in the mouth that reduce the number of bacteria these are defensing and catalyzing.

Cardiovascular disease, a Harvard University study with nurses found that women below D had a 60% increased risk of hypertension. Schizophrenia and depression, Vitamin D prenatal and during childhood, vitamin receptors in the brain are important so, even when you do this during the prenatal and during your childhood it decreases the incidence of schizophrenia and depression in their later years.

Fourth one, last one, Georgetown University Medical Center, increased sources of vitamin D will increase 70% reduction in overall cancer growth and 50% reduction tumor size among those already having the disease especially in the estrogen sensitive breast cancers. It's just knocking the cancer out the window, way more safe than chemotherapy.

Let's look at some studies that looked at very high dose of vitamin D supplementation and how that worked. John Kliney head of the vitamin D council recommends 15 to 100,000 IUs daily for cold or flu. Again that's short term, I won't do more than three to five days and I've recommended it to people. I have recommended it once to somebody she had flu that was going on for 10 days already and it wasn't getting better. I had her to do the 100,000 IUs of vitamin D and it was gone in three days. Mark Holder recommends 90% of your body weight during a swine flu attack so that means if you weigh 100 pounds, that's 90 IUs if you weigh 200 pounds that's 180 IUs, 90%.

Norm Shelley an MD into alternative medicine and functional medicine. He has taken 50,000 IUs consistently for 18 months. Everybody is different, other people would take 50,000 IUs for a month and get their numbers too high but it just depends and it's up to you to figure it out and help your patients figure it out. Important warning when you don't want to take high levels of calcium with such high doses of D because it's going to cause all that to be absorbed and you may end up with calcification. Don't increase your calcium, stay away from the calcium when you're having those high doses. Calcium-rich foods are OK of course, but not calcium supplements because you run the risk of over absorbing and the small amounts might be fine. The 30's and 40's doctors at John Hopkins gave 600,000 IUs to treat arthritis and only 10 patients developed symptoms of toxicity after two to 18 months. That's saying people needed it desperately.

How do you know if somebody's getting toxic from vitamin D? Well you look at weight loss and fatigue, those are the first signs. That can happen with anything but if you have somebody who is just suddenly dropping weight and getting exhausted and that's not something that was a problem then they may be toxic. Loss of appetite, that's another clue and nausea and vomiting, that's another clue. You drew their blood and you test and you see high blood calcium that's another clue that they may be in vitamin D toxicity. Kidney damage so the kidneys aren't filtering properly.

The only deaths that were reported with high doses of vitamin D were when steroids were prescribed with the vitamin D, it's the only time.

It doesn't mean it's safe to do high dose vitamin D you always have to be careful and air on the side of caution, you don't want to cause someone into toxicity but these are the ways that you look out for it. if you ask somebody to do 20,00 IUs of vitamin D a day and test in six weeks and in four weeks they say, "I don't know what's happening but I lost my appetite, I feel exhausted all the time, I'm feeling nauseous." You stop them you get them tested right away. That's the cool part about D, it is so responsive to testing and so easy to test.

What do you do when somebody develops vitamin D toxicity? You discontinue the supplements obviously, you stay out of the sun so you don't build it up, drinking at least four liters of water a day to help flash and the symptoms should resolve in few weeks. If the calcium level is gone up it might take a couple of months for that to normalize. I said before vitamin D is a sunshine vitamin and that's where you're supposed to get it but there're a few supplements that have it. Cod liver oil has fair amounts of vitamin D, one tablespoon is 1,360. Salmon, four ounces 511, decent; sardines is not as good, 175 per 3.2 ounces; tuna 93 per four ounces, it's not great; one egg has 43; Shiitake mushrooms a half a cup, 20. If you're doing this to Shiitake mushrooms you want to be doing it for higher doses and if it's fresh Shiitak mushrooms, half a cup is small, you could do more than that. It's a combination of things and if you have someone who is severely deficient supplementation is the best way to go.

Let's look at some supplementation guidelines. You should be taking or giving, prescribing, recommending vitamin K2 and vitamin A to go along with the vitamin D. Vitamin D you might have to take very high doses so I wouldn't recommend getting a combo formula of D and K and A together. I have seen D and K together but I've seen more of D and K I still won't recommend it. If you want somebody to make it easier they can take their D and K together they may have to take extra D if they need it and they don't can always back it off because you don't need as much of the K as you do the D. We'll take K in a later presentation.

Look at their drug interactions, you want to make sure that they're not doing drugs that are interacting, if they are that they speak to their doctor. You want to look at are there any drugs that would be hurt by vitamin D supplementation? Then of course like I said before limit or avoid calcium supplements when you're doing high dose vitamin D. I've got resources for you, I've got a list of all the different books, and some articles that have gone on my blog, some things by Mercola and a couple of other things that are just ... They're not links but they're journals that you can go look in if you want to research this in more depth.

That's the end of our vitamin D presentation and I hope this was really helpful. I'll leave you with the nuggets of it's really critical to get someone's vitamin D levels balanced no matter what the symptoms they're presenting with because you saw there're so many symptoms that could be related. Now it's often time D plus something else, but we're digging through with causes always. Get the vitamin D tested, get the vitamin D supplemented, do the checking make sure it's every three months or so over the course of the year.

Make sure you can average up the sunny weather and the not sunny weather and see what they actually need to be supplementing.

I like to supplement as little as possible but as much as necessary.

Thank you.