

Dr. Gould: All right, everybody. Welcome to Get Your Smile On. This is Dr. Joel Gould, your wellness dentist, broadcasting live from beautiful Manhattan Beach, California. It's a beautiful sunny day here. It is 2:00PM, and we have a little different show today. We have adjusted our schedule to accommodate Dr. Dennis Goodman, an incredible cardiologist who we're going to bring on very shortly.

Today's topic is one of wellness, and everybody knows that I've been getting into sleep apnea, because I have it, discussing it and sleep disordered breathing. In my search and research for how to provide my patients with the highest level of care when it comes to sleep and what we do here in this office I came across the supplement of magnesium. In fact, we're going to call it magnificent magnesium, because this is an element that is absolutely spectacular. Magnesium was named after the Greek city of Magnesia, which was known for its fertile soil, which was really rich in magnesium. Magnesium is the eighth most abundant element on the earth, and the eleventh most abundant element in the body. Magnesium has been part of our cellular history since we evolved in the ocean and crawled up onto the shore.

Today Dr. Goodman, who is a board certified cardiologist from South Africa. He is also certified in internal medicine at Montefiore in, I believe, Pennsylvania. His book *Magnificent Magnesium*, just the cover alone tells you how important this is. It helps avoid heart attacks. It lowers blood pressure. It stops painful muscle cramps. It relieves nagging insomnia and increases calcium absorption. When I started to do my research into magnesium and why this would be so important I was brought back to my early high school days when we learned about energy and the Krebs Cycle.

Everybody knows about a crazy little thing called ATP, adenosine triphosphate. This is a chemical compound that is responsible for powering every single cellular function that you have in every one of the trillion cells you have in your body. Without adenosine triphosphate, or ATP, nothing works. The thing that people have either forgotten or, I guess I didn't know, this was already a long time ago for me, but magnesium is actually a very important part of the ATP complex.

In fact, without magnesium the ATP is not functional. So it would make sense that if you don't have enough magnesium you don't have any energy. This is something that is little known. We see all types of advertising for CoQ10 and this supplement and Vitamin C and EmergenC. This is one of the lesser known elements that we need, and it's critical to all of our bodily functions, and especially that of the heart. The heart is the most important muscle in the body. In fact, 25% of all deaths come from heart disease.

What I want to talk about today is a way that maybe western medicine hasn't focused on as closely as they should have, considering that we often wait until someone shows signs of cardiac problems, chest pains, high blood pressure. By the time these disease processes start to really affect us, things are actually pretty bad. Most of modern medicine goes in at the level where we're going to try and reduce your blood pressure.

We are going to try and stabilize the way your heart is beating, or a lot of times we don't get to look at these details until after someone's already had a heart attack.

Today my guest is really the preeminent expert on magnesium. He's also written three other books. His other book is *Thrill of Krill*. We'll have to ask him about that. Anybody who doesn't know what krill is, you can ask the great and mighty Google. He always knows. His more recent book that has just come out is called *K2, the Missing Nutrient for Heart and Bone Health*. This is actually one of the areas that I was most interested in, because as a dentist we look at calcium. We look at bone. We look at all types of things that are involved in the jaw and healing.

The Vitamin K2 is the missing link, or the missing piece, that I think that a lot of researchers don't really know what our issue is when it comes to having hardening in our arteries. When it comes to high blood pressure and stroke these are things that happen because our blood pressure gets to be too high, and why does that happen? All of our blood vessels are lined with cells that are called endothelial cells. These cells are very specific, and they line every single blood vessel in our entire body. It is these cells that take up calcium and give off calcium, depending on the right type of electrolytes we have and our diet, the amount of calcium we're eating, the amount of magnesium we have in our bodies. When we take extra calcium it doesn't necessarily go into our bones. We need a variety of cofactors of different cellular enzymes that all work together to metabolize calcium and take it out of the blood stream and put it into the bone where it can give you bone strength.

As you know, as we get older a lot of people end up being on calcium supplements because their bones are brittle. What we can do a little bit ahead of getting to the stage where our bones are brittle is we could consider the idea that there's only one way to get the calcium out of our arteries and into our bone, and that is with the right chemical mediators. Of course we will talk about magnesium, but Vitamin K2 is a little known vitamin, and it's one that you're going to probably hear a lot more about. I really look forward to bringing you all the latest and greatest on this particular vitamin.

We're still waiting for Dr. Goodman to come online here. I'm going to go on just a bit further about a few things here. We've been talking a lot about sleep apnea and different issues that people are having with their sleep. Magnesium is a very useful element when it comes to that. Magnesium is what we burn through when we're stressed, so when we're having a stressful day emotionally or physically we really metabolize a ton of magnesium. If we burn through all our magnesium, our body is going to start to react by having difficulty both with our heart pumping blood and also with us even just generally feeling like we have energy. It makes perfect sense that if we took the supplement we would be feeling a little more energized.

What is wrong with society today that we do not have enough magnesium in our diets? Magnesium was everywhere. It was in all the soil in all the farmlands in all the Western world. Over many years of farming the magnesium has been depleted from the soil. As a result, the foods that we eat are deficient in magnesium. In fact, there's a lot of statistics that show that almost every American is deficient on their magnesium. Since this is such an important element with regards to heart health, it's really incredible that the whole

medical industry hasn't sort of taken a little closer look at something that's natural, something that we used to get from the garden, something we used to actually be in contact with as we walked in bare feet. Throughout our evolutionary journey we were in contact with this element. You can get it into your system by soaking your feet in Epson salts. It does cross over your cellular membranes. You don't just get magnesium from taking it.

I kind of want to go back to a different time, maybe 10,000 years ago or 20,000 years ago or even 40,000 years ago, where we as the incredible organic animals that we are today evolved. We evolved under different conditions. We didn't wear shoes. We didn't have paved streets. We were in contact with the soil a lot more, and absorbing magnesium. Here we are, this incredibly evolved animal, really living in a beautiful gilded air-conditioned comfortable cage, shielding ourselves from dangerous rays of the sun, and preventing our bodies from touching the magnesium that's out there everywhere in the world. So when we go back to more basic diets, and we look at raw food diets and different diets that are rich in vegetables, we see that people who follow these diets have higher levels of magnesium, simply because of the way their diet is.

We're going to take a commercial break here in one second, and I'm going to go see if we can chase down Dr. Dennis Goodman. He is calling in from Manhattan, and I do believe that he's had a pretty busy day. We're going to go to a commercial break in just one second, and we'll hopefully come back with Dr. Dennis Goodman. Sorry to keep you all in such suspense. Let's hang on for one quick second for our commercial break.

All right, everybody, we are back live on the air, and we definitely have a little technical glitch here. We're still waiting—oh, we have him on. Dr. Goodman, are you there?

Dr. Goodman: Hello, Dr. Gould. How are you?

Dr. Gould: Please call me Joel. Thank you so much. Welcome to the show. Glad we got you.

Dr. Goodman: Thank you. Sorry there a little glitch getting through, but I hope I didn't keep you waiting.

Dr. Gould: You'll be able to hear when we post this on the website, but what's interesting is that I did read your book, and I read it cover to cover. It was a good thing, because I had to kind of wing a lot of the stuff that I wanted to ask you about. So hopefully I did your book some justice.

We can just jump right into it. I gave people a little bit of your background. Why don't you just tell us a little bit about yourself and where you're at right now?

Dr. Goodman: It goes back to many years ago I was born in South Africa, and I went to medical school at the University of Cape Town. It's associated with Groote Schuur Hospital where they did the first heart transplant by Christiaan Barnard in 1967. So I was very privileged to be there to train. Then I came to the United States, and I did my residency in Pittsburgh, and I did my cardiology fellowship at Baylor in Houston, where Dr. Michael Devecchi

was another legend. I went to the cardiology program that was associated with his cardiac surgery program, and he did the first bypass surgery in 1955. I've been trained by these giants. I'm very lucky, because what happens is you get inspired, and then I decided to go to San Diego, and I was there for 20 years. I actually did invasive cardiology and was ultimately very involved Scripps. I was the Head of Cardiology at Scripps Memorial for many years.

I started to realize when I was putting stents in and opening up arteries when people were having heart attacks that I started to feel a bit like a fireman when you go to a house that's burning down. Sometimes you manage to stop the fire and save the house and save the people, and it's a little bit like that when you're trying to take care of people having a heart attack. Obviously you feel so good if you can really help somebody, and sometimes you can't, because it's too late. I really started to focus on where I think it's really at if we're going to make a real difference, and that is prevention and getting people to take responsibility for their health early on.

I know you know this, Joel, but 80% of chronic illnesses, like atherosclerosis, diabetes, obesity, many inflammatory conditions, arthritis, a lot of that stuff is reversible. If you start early enough, and the word really is preventable. 80% of these conditions are actually preventable. So then I started moving into the whole arena, and I've always been interested in holistic integrative approach. I was at Scripps integrated medicine in San Diego in La Jolla with Dr. Mimi Guarneri for maybe two years, and now I'm the Director of Integrated Medicine at NYU and very interested in whatever we can do to try to help people to understand that there's so much that they can do for themselves, both with lifestyle changes and also taking appropriate supplements and understanding.

I'll just make these four points, because I know you're totally on board with it. Every single patient, in fact a patient I just saw, I spend time talking about wellness, and I say that wellness is not the absence of disease. Being well for me there are four pillars. There are four important points. I always call them the four legs of a stool, and they all need to be intact and working properly for you to be well. One is nutrition with appropriate supplements. Two is exercise and flexibility. Three is stress management, and four is sleep. That's a quick summary of where I'm at.

Dr. Gould: That's a lot to say, and I'm glad that you did mention that. The whole aspect of wellness is something that I've been focusing on. A lot of people are starting to understand that in dentistry, as in any other profession, when it comes to someone's health being proactive and getting ahead of a problem before it starts is really critical, and I don't think I've heard anybody really explain wellness in such a concise way. Thank you for doing that. I appreciate it.

Which is going to bring us to your book *Magnificent Magnesium*. This isn't your new book, but this is how I found you. I found you through my work in sleep disordered breathing, and myself personally as a sleep apnea sufferer I came across the idea that magnesium would be a help for insomnia, and as I listened to some of your speaking engagements and read more I realized this is so much more than just another supplement that someone should be taking. What opened your eyes to magnesium? Was there an ah-ha moment where you said, I've got to focus on this?

Dr. Goodman: Good question, Joel. The question is why pick magnesium? I started to just hear about magnesium, because unfortunately we really don't talk about the stuff in medical school, even though mine goes way back. Even today nutrition is not a big subject. Even I'm talking to my colleagues about magnesium they kind of sometimes just don't get it. It's partly because you need a moment where you realize that this is such a crucial nutrient, and I always tell people seriously, if there's only one nutrient that you can take it should be magnesium.

I know Vitamin D is right up there, but I'm just saying because magnesium is not made by the body. You require it. You're require it from basically dietary intake. So there are over 300, probably 350, enzyme systems in the body that require magnesium. Essentially your body can't function properly if you're magnesium deficient. Where do you get magnesium? You get it from dark green leafy vegetables, nuts and seeds, halibut, Greek yogurt, some dairy products. The bottom line is people don't get enough of these vegetables, spinach, Swiss chard, broccoli, that type of stuff. Unfortunately even if they are eating that they may get the stuff from soil that is deficient in magnesium.

I actually learned measuring what I call red blood cell magnesium level on every single patient, because we don't have a good way to tell if you're magnesium deficient. Serum magnesium is not a good way. Only 1% of the magnesium in the body is in the serum, so when your doctor measures a serum magnesium he says you're okay, it doesn't mean you're okay, because the body does everything it can to keep that serum level in the normal range, even at the expense of tissue deficiency. I measure red blood cell magnesium. The best lab for it is Lab Corp, so you can ask your doctor for that. It's not perfect, but it's better, much better than the serum magnesium. I find that 75-80% of my patients are deficient, and they've got suboptimal levels. That goes along with other literature that says 80% of Americans are deficient in magnesium.

I know you know this, because you read my book, but there are major problems that occur when you're magnesium deficient. Let's start with the symptoms. How would people know just what symptoms may indicate? It doesn't mean you are, but may indicate. You can imagine it's a broad spectrum, because every system is affected. So the commonest symptoms I'm going to mention are fatigue, palpitations, muscle cramps, insomnia, anxiety, depression's associated with magnesium deficiency. Magnesium deficiency's associated with asthma, with diabetes, with obesity. Those last few are obviously conditions, but in terms of symptoms a lot of nonspecific symptoms, but I really cannot tell you how many times I've had patients come and go, "I'm sleeping well. My palpitations are gone. I don't have muscle cramps anymore. I feel much better. I feel much more energy." So those are symptoms.

Then if you wind up being chronically magnesium deficient you're at risk from these things that I spoke to you about, atherosclerosis and diabetes and obesity. The bottom line, Joel, is that most people are deficient. Because it's so easy to take magnesium, and it's so inexpensive I'm just going to make this last point, which is that everybody can take it except people who have kidney problems. So you do have to check with your doctor.

Dr. Gould: Before you get too far, the tests that you're talking about, and when it comes to testing for different things it's always confusing for most patients, even confusing for myself and other doctors. You're testing the actual content of magnesium in a red blood cell rather than in the tissue. Is that very usual?

Dr. Goodman: You separate the serum, right, from the red blood cells, so you actually have to spin it down to do it properly. What we're doing is we're getting content of magnesium that's not in the serum. The red cell is a very, as you can imagine, it's a metabolic powerhouse, the red blood cell. It's actually the supplier of oxygen to the tissues, hemoglobin. So we're getting a good sense with what's going on by just knowing how much magnesium there is in the red cells.

Dr. Gould: Right. Before you came on I made everybody go back to their high school days of ATP and the Krebs Cycle and things they didn't want to remember. So we did talk about that. The question I have is if someone is deficient how long does it take for them to build this? Is this something that builds within days or weeks or does it take two or three months like Vitamin D takes a while to build into your tissues?

Dr. Goodman: Good question. Just to go back to a point you made. ADP gets converted to ATP for energy to be utilized, and magnesium is a key cofactor for that. So it's very important that you have magnesium around so that you can convert ADP to ATP, which I'm sure is what you mentioned.

Here's the deal in terms of how long does it take. What I do know is that symptoms can improve very quickly. I've seen people come back a week later saying they feel a difference. I've seen a blood pressure drop significantly within two weeks. I don't measure red cell magnesium levels again before at least three months, because there's no point. I think that it takes a few weeks before you can expect to see an improvement in the red blood cell levels, but I don't pay huge attention to it, because sometimes the level doesn't increase significantly, yet the patient is feeling much better.

I use the red blood cell magnesium to help me diagnose a deficiency, and then I repeat it, but if I've got someone on a good amount of magnesium and they're feeling better, if the level is still on the low side I'm not going to start pushing up to really high doses. I don't believe it's a test that you've got to keep checking, but I do check it, and I have seen it improve significantly in people who are deficient.

Dr. Gould: I wanted to ask you. There's a way you can ingest magnesium, but there's also you can soak your feet in Epsom salts. There's an oil that you talk about that you can rub onto your body. Do you ingest any of that? Does that get into your red blood cells?

Dr. Goodman: Sure. That's a good question. You can get your magnesium through, obviously we spoke about the diet. Then you can get it through supplements that you're taking. Let's make a point about that. I always recommend taking a supplement of magnesium that ends in ate. For example, citrate, glycinate, threonate, malate, those are the best forms because they are the most bioavailable. Magnesium hydroxide is actually milk of magnesium, so if you go to the store, and you get a magnesium you'll end up probably getting

magnesium hydroxide because it's the cheapest, and it doesn't have very good absorption. I always tell patients, unless you've got a problem with constipation, avoid the hydroxide form. I happen to like something called magnesium dimalate. It's a company called Jigsaw. The only reason I mention it is they have a slow release technology, and that means it's going to be slowly absorbed over several hours. That's better than getting a bolus into your stomach, and then you end up having an increased risk for GI side effects. That's the tablet form.

Then you can take it in the skin. You can actually use a spray, or you can actually use a lotion. There's a company called Ancient Minerals. I have nothing to do with these companies in terms of getting, I want you to know that. I mention them. I do not, and I'm saying this on the air, I'm not making any money because someone goes and buys these products. I happen just to think that they are available and that they're the best ones out there. Ancient Minerals is where you can get your lotions and sprays. Then I use Epsom salts. I have a bath approximately once a week, and it feels great, because it's another wonderful way. You put a cup of Epsom salts in a bath, and you soak for 15 minutes. You can just put your feet in if you don't like getting into a bath. Put your feet in a bowl with some Epsom salts. That's the transdermal way to do it.

Whichever way you're getting, it's just like rubbing in hormones. You can raise the levels of the red blood cells, whether it's coming in the red cells through the skin or whether you're getting it through the gut.

Dr. Gould: I want to interrupt you for one second just to let my listeners know, because we are live that we're going to go a bit over in time, just because we got a bit delayed. If you still have a few minutes there's a few more things I want to talk about. I wanted to let everybody listening know that we're just going to go a bit over. I want to go back to this. First of all, when we're done here we're going to tell everybody about your website and how they can order your book and how they can get more information on this. I will be providing information that we talked today on my website, so people who want to know where they can get these different compounds can look to that. So we'll talk about that later. Just anybody listening who's interested, we will have that for a follow up.

The one issue that we sort of haven't covered is the stomach or the GI upset that people who just start taking magnesium have. Is that avoided by doing the transdermal method?

Dr. Goodman: Yes. That's absolutely right, Joel. You're not going to have that side effect if you take it transdermally. I haven't experienced any problems. That's why I tell people with any magnesium that you take by mouth you may get some loose stool effect. So whatever amount you're taking try to cut it back. For example, I think we should mention what's a good dose. People don't know. I tell them a good starting dose is 3mg per pound. Most of my female patients are on 400mg a day. My male patients 500mg a day. You can actually take up to easily 5mg per pound. If you're stressed you should increase your level to 5mg per pound.

You can take it if you have insomnia problems all at night. I've had a lot of patients who just by taking the whole dose, let's say the 500mg at night before they go to sleep,

because it helps you to sleep. You can do that, or you can divide it in two or three doses. If there's a loose stool effect, you can cut it down to even once a day. Obviously it's better than nothing, but then I tell people you may not be getting enough. You would have to supplement transdermally, and I want to go back to this idea of having this magnesium dimalate slow release is a good way to really minimize the chances of loose stools and diarrhea.

Dr. Gould: That's actually what I was pretty interested in. Just because we've got a lot of people with gastrointestinal issues in general. I want to switch gears real quick here. I'm just kind of curious. To me, when I read your work it was a profound understanding, because I'm all about intervening with getting a good cleaning before you get periodontal disease, but to me this seemed like such a no-brainer. It seemed like such a basic thing that an element that's such a huge part of who we are as humans. What are your colleagues saying about this? Is this something that's being received well? How has it gone?

Dr. Goodman: That's a good question, and the answer is I wish it was better. I can tell you that I'm part of a preventative medicine team at NYU, and I can tell you the good news. The good news is they invited me to come and give a talk about magnesium, and I spoke to them with a fellow. We prepared it, and they are at least saying, let's hear about it. Some of them have actually emailed me and said to me, how much should we take and what should we tell the patient? So it's kind of hush hush, because it's not easy for people to accept this and take it on board easily when it hasn't been drummed into us. Why is that? There's so much literature. You saw in my book how many articles I quoted, but a lot of them are observational studies, and there's so much information. Until a lot of traditional physicians see some double blind randomized trial in a big journal they don't believe that this is for real, and I tell people, please have an open mind. At least try it on the patients. You'll be amazed just how much improvement you actually see.

I work with a chief of psychiatry. He's in my office here at NYU. He does a session here, and he told me next year he's doing a whole session, a whole morning, on holistic integrative approaches to psychiatric illness, and he asked me to speak about magnesium. So your question is a very good one. I think that we are making progress. You've got to start with people who've got an open mind who want to listen, and slowly but surely we educate each other. I've tried to think of myself as a bridge, Joel, just like you, between traditional and alternative and integrative medicine. We've got to have a communication going on before we can even begin to hope the other side's going to take anything on board, and we have problem like, as you know, on the other side where you've got some people saying that everything the doctors do with pharmaceuticals is giving poison, which is ridiculous. We've got the extremists on both sides.

Dr. Gould: It brings me back to we had a conversation that neither one of us have come up initial in the American system, and we maybe have a different perspective. One of the things that as a Canadian working here I get frustrated because on one hand we have the absolute must have a double blind study done by a reputable university before they'll even look at something that's natural, and on the other hand we have the farthest everything raw, just the whole everything is holistic, everything is not based in science. I

don't like that fringe either. I know there's a middle ground, and I'm here with this show hopefully raising awareness about someone like you and your book, because this is obvious to me that there's a very easy middle ground. It's having a background in science and being open to the idea that we are animals that evolved over the last million years, and we have to look at our environment and what we ate to make us whole.

I'm glad to have somebody like you on my show. I want to wind things up here. I do want to have the opportunity, because I do want to talk to you for future about K2, and I'd love to talk to you about some other things.

Dr. Goodman: Sure.

Dr. Gould: For today, I want to let all my listeners know, if you would give us your website, and again, his books are available on Amazon.com, of course. We will have the links on my website. I'll go ahead and let you tell everybody how to get a hold of you, and we'll let you go. I know you've probably had a long day, and you're probably ready to relax.

Dr. Goodman: I'm not quite done yet. It's like the middle of my day. My website's DennisGoodmanMD.com, and you'll find an email address there. I'm at NYU. You can find me if you just go and Google my name, Dennis Goodman, MD, you'll find all the information. I've written three books. One's magnesium, one Vitamin K2, another one was about krill and omega 3s. I'm working on my next book, and my whole idea that we're educated, and I commend you too, Joel, because we're trying to raise awareness. We're trying to give people information, and some of the information we have maybe it's not steeped in the science that other people expect. It doesn't mean you don't want to listen and say let's see how it works, as long as it's not doing any harm. I am pushing all the time to do studies, to try to have a scientific approach, because we want to be able to make recommendations that are not just empiric stories. I know you believe the same thing. My website is DennisGoodmanMD.com. My email is Dennis.Goodman@NYUMC.org, but you can find that information on my website.

Dr. Gould: Thank you so much. You're such an articulate guest. I can't wait to have you back in the future.

Dr. Goodman: I look forward to it, and congratulations on what you do, because until people can get out there and speak out it people don't know. We didn't get to this, but one of the reasons we don't have these big studies is because it's very expensive, right? Unfortunately only the drug companies can afford these very expensive studies. So we've got to try very hard to find ways that we can do proper studies without spending too much money.

Dr. Gould: I totally agree. Thank you so much. You have a great rest of your day.

Dr. Goodman: Take care. Bye bye.

Dr. Gould: Bye. All right, everybody, that was Dr. Dennis Goodman. Really groundbreaking stuff here. Thank you for listening. We ran a bit late, but I think it was well worth it. Please

with any type of vitamin supplements for any medical issue please consult with your own doctors. This show is for informational purposes only. Let's be reasonable. You can always contact me through my Facebook page or on Twitter and at ModernAmericanDentistry.com, and I'll be happy to answer any of your questions. Thank you so much, and until next week, get your smile on. Stay well. Thank you.