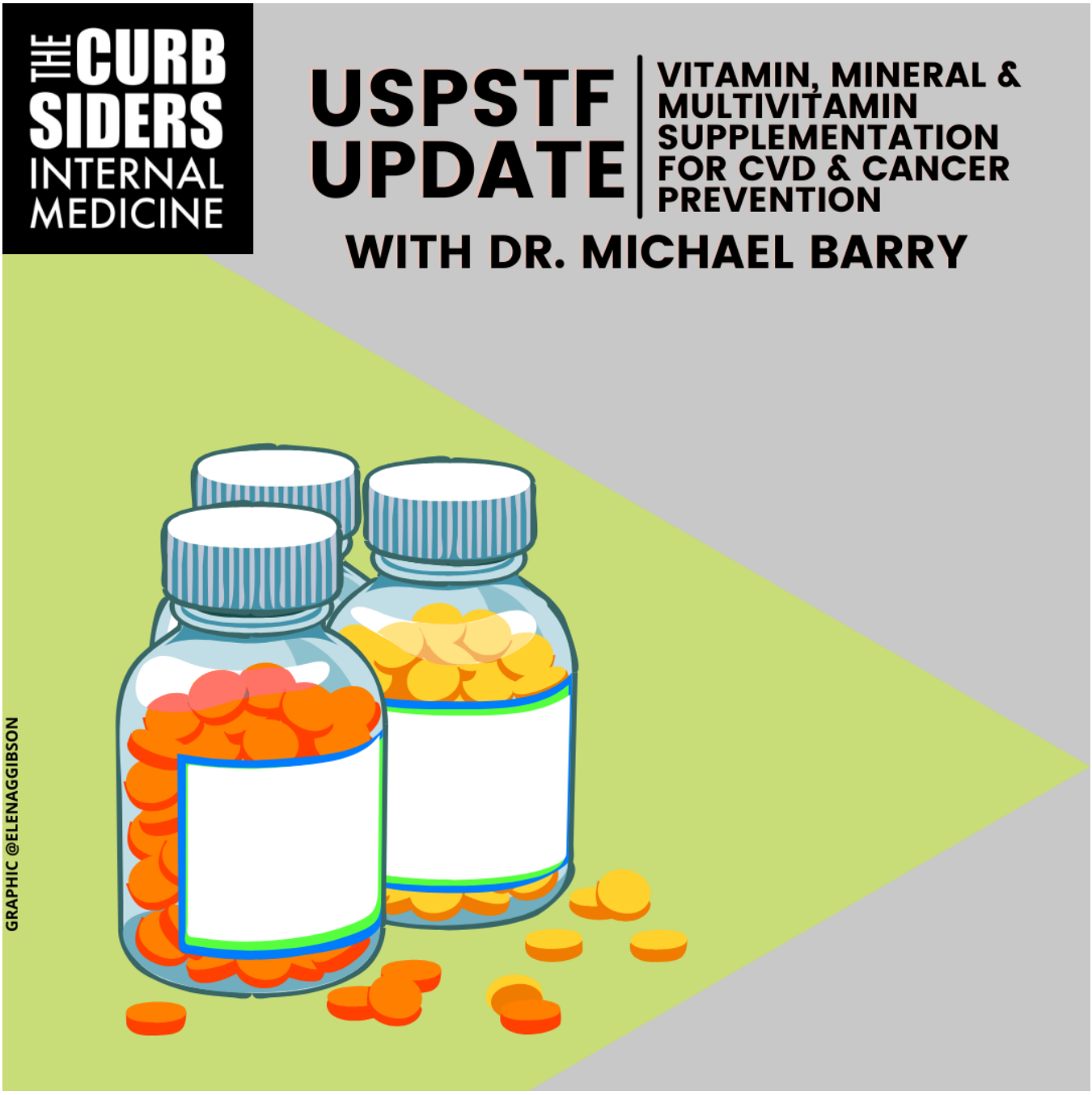
#345 Vitamin and Mineral supplementation: A USPSTF Update with Dr. Michael Barry



[Curbsiders theme]

Paul: Welcome back to The Curbsiders. I am joined by my cohost, Dr. Elena Gibson, the mastermind and driver of the series. Elena, how are you?

Elena: I'm doing well. How are you?

Paul: I'm good. Thank you so much for asking. As a reminder, this is our quick recaps of USPSTF updates that you'll tell us a little bit more about in just a moment. We were joined by Dr. Michael Barry tonight. And before I let you tell us about our guests and our topic, I'm just going to remind you that we are The Internal Medicine Podcast, we use expert interviews to bring you clinical pearls and practice changing knowledge. Elena, tell us what we're doing in this specific episode, who we talked to and what we talked about.

Elena: All right, happy to, Paul. So, in this episode, we have a great conversation about vitamin use, including multivitamins and more specific vitamins for the prevention of cardiovascular disease and cancer with our guest, Michael Barry from the USPSTF. Overall, they had a lot of new evidence to review and excited to tell you about the updates. So, our guest, Michael Barry is a vice chair of the US Preventive Services Task Force and Director of the Informed Medical Decisions Program in the Health Decision Sciences Center at Massachusetts General Hospital. He was on a previous episode for a USPSTF update on colorectal cancer, so you might recognize him. And he is a professor of medicine at Harvard Medical School as well.

Paul: All right. Without further ado, let's get to it.

[Curbsiders theme ends]

Paul: Michael, thank you so much for coming back and joining us. It's great to see you again.

Michael: Thanks, Paul and Elena. It's good to be back with you.

Elena: Yeah, welcome.

Paul: You notice how Paul just gives you a chance just to say how great it was to be with me. Excellent hosting on my part. So obviously, we invited you back to talk to us about the new USPSTF recommendation for vitamins, minerals and multivitamin supplementation to prevent cardiovascular disease and cancer, which is a mouthful. But before we do, I want to give you a chance to reintroduce yourself and just give us the one liner about who you are and what you do when you're not helping with the recommendation.

Michael: Sure. I'm Dr. Michael Barry. I'm based at Mass General Hospital in Boston. I am an adult primary care doctor who tries to get the best outcomes for my patients by combining evidence and their preferences.

Paul: That is succinct. I love it. Let's not waste any more time. This is a recommendation that actually generated a lot of media buzz and people are going to be curious about. Why don't we start with the case as per usual? And, Elena, why don't I ask you to tell us about our patient James Lind?

Elena: Yeah, I'm happy to, Paul. James Lind is a 46-year-old gentleman, has a past medical history of hypertension, prediabetes, dyslipidemia, and obesity. He's coming in to his primary care physician for routine follow up. He overall feels well. He doesn't have any new concerns. However, he is wondering if he should be taking a multivitamin for his general health. Hopefully, you remember that the USPSTF has released a new guideline on this very topic. Lucky for you. So broadly speaking, Michael, what is the current state of affairs in terms of vitamin use in the United States?

Michael: Well, many people take supplements, perhaps up to a half of Americans will take supplements for their general health, but about a third of folks take multiple vitamins. So, it's pretty common.

Elena: That's a big number. Why might some of those people, almost half of people think there's a role for vitamins and mineral supplementation in the prevention of illness and specifically for these recommendations, cancer and cardiovascular disease?

Michael: Well, our patient tonight is really an excellent case in point. He's got some health issues that can affect, particularly his cardiovascular risk, his blood pressure, lipids, weight. It's good that he's thinking about how to improve his health. And frankly, I think him raising the issue of vitamins is a great entree in a broader discussion about how he could improve his outcomes, reduce his risk, both of cardiovascular disease that he seems to be at increased risk for given those factors and cancer.

Now, I don't know what's behind his question, but popping a vitamin once a day is pretty easy, it costs you something, but compared to say, our recommendations about getting 150 minutes a week of moderate intensity exercise to improve your outcomes, plus strength training two days a week, it's a lot easier. I suppose that's my concern of whether people might decide to take a multivitamin instead of doing the tougher stuff. But stuff that has better evidence of improved outcomes.

Paul: Well, it's not observed, there might be a theoretical basis that it could be helpful. We talked a little bit offline that there's this theoretical antioxidant effect. And if you're reducing inflammation and oxidation, both of which are putative mechanisms in cardiovascular disease and cancer, like it stands to reason they might be helpful, right?

Michael: Well, his question is certainly a very reasonable one. Again, an entree and discussion about discussing other things he could do. But that was the motivation behind the task force taking on once again, the question of individual vitamins or minerals, or combinations, or the ultimate combination and a multiple vitamin to try to reduce the risk of cardiovascular disease, or cancer, which, after all, are our two biggest killers in the United States. So, it would be great if we could find evidence that that were effective, as we'll talk about, we, despite having lots of evidence, lots of trials and lots of people, with few exceptions, we couldn't make a definitive statement for or against taking vitamins either individually

or minerals individually or even combination in terms of reductions in cardiovascular risk or cancer. Again, with a couple of exceptions that we'll get into.

Elena: I know for myself to the idea of taking like a gummy multivitamin seems like the easiest possibility out of supplementation. What out of the recommendation for multivitamin supplementation might apply to Mr. Lind?

Michael: Well, the evidence for multivitamins is copious. We found about nine trials with over 50,000 people, including a relatively new trial, the COSMOS Trial, which added another 20,000 people to the N. And that evidence looking at it all together, was not enough to recommend for or against multivitamin supplements. We call that an 'I statement.' And it's important to emphasize that an 'I statement' means we don't have enough evidence to recommend for or against the intervention, in this case, a multivitamin, we just can't say. We're not saying not to do it. We're not saying to do it. And, and Mr. Lind is doing the right thing talking to his trusted clinician about it.

Paul: It's a nice framing. And I think a true one like that that sounds condescending. But, yeah, I'm glad that you're invested in your health and let's have a conversation about that, I think is a nice way to have to have that discussion. But just to be absolutely explicit, because this is the main takeaway that has been out there in the media is that the conclusion that the current evidence is insufficient to assess the benefits and harms for multivitamins for the prevention of cardiovascular disease and cancer. We're saying we just don't know enough just to recap what you'd said.

Michael: Right. Despite a fair amount of evidence in lots of people, but the studies have gone in both directions. When you look at them all together, there's just not enough evidence to say do it or not do it.

Elena: Are there any specific groups of people that weren't included in these studies? Or that these recommendations don't apply to?

Michael: Well, it's very important to stress two things. One is that we focused on cardiovascular disease and cancer, two important problems, but there are other outcomes that could be considered. In fact, I'll emphasize that for people who might become pregnant or who are pregnant, these recommendations wouldn't apply because we have a separate, A recommendation that those people should take a folic acid supplement either alone or in combination in a multiple vitamin to prevent the risk of neural tube defects, which can be disastrous in babies. So that would be a group that this clearly wouldn't apply to. And then people who have chronic illnesses have known vitamin deficiencies, have an illness that could affect a vitamin absorption. I might think of celiac disease or something like that. Those would be conditions that we're not talking about. This is for asymptomatic people or at least asymptomatic in terms of risk of having a vitamin deficiency.

Paul: Specifically, we're talking about primary prevention, not the treatment of specific illnesses is what I'm--[crosstalk]

Michael: Exactly right.

Paul: The idea of multivitamins, it's always funny to me, because it really does feel like a shotgun approach. I guess it's satisfying, better safe than sorry, if I just take all the vitamins, that means I'll be the healthiest. But if we're a little bit more selective in what we look at, are there any vitamins that had a signal that they might be helpful? It sounds like you guys pored through just tons and tons of data. Does anything stand out as potentially helpful that we might consider, a little bit more strongly?

Michael: Well, let me start on the flipside, because there were two supplements that we actually recommend against. One is Vitamin E supplementation. The evidence there was enough to say there's just not enough signal of benefit here, we recommend that people don't take it. The other is a supplement called beta-carotene that had been studied in terms of trying to reduce lung cancer risk. And paradoxically, the many trials that were done, actually suggested in higher risk people, the risk of lung cancer might be higher with beta-carotene rather than lower. We recommend against beta-carotene supplements. Otherwise, we have an 'I statement' for the other vitamins and minerals we looked at, for this general purpose.

Well, if we look at an occasional individual outcome may go one way or the other, but the overall picture is no consistent evidence of benefit. For example, in the multivitamin studies, there was some suggestion of a-- what I would say would be a tiny reduction in cancer incidence, about a half a percent, but no evidence or effect on cancer mortality or overall mortality. And you have to be cautious, as you all know, that when you do what we did, which was look at multiple outcomes, the chance that one or two things are going to turn up just by chance is always very real. But to really get down to the bottom of your question, no consistent signal that that would let us get off, if you will, off the 'I statement.'

Paul: If you're comfortable talking about can I ask you to expand a little bit more on the harms, specifically on the ones that are coming in the recommendation? I feel that's actually probably one of the more helpful things when having a conversation with patients as to why you would not recommend strongly for those? Can I ask you to talk about some of the specific harms that we're seeing in the studies that you looked at?

Michael: Well, again, in in the beta-carotene study, it was a higher risk of lung cancer, and people already at risk of lung cancer from smoking or asbestos exposures, or other things. At the usual doses of vitamin C and multivitamin supplement, the harms seem relatively small. But as for all things, moderation is important because large doses of vitamins can cause specific problems. For example, vitamin D, taking at a higher dose over long time can be related to kidney stones, large doses of vitamin A, can cause problems with headaches and liver problems. But again, those would be the sort of mega dose levels some people occasionally take.

Elena: Within each study too, it did seem like you guys specified like the doses that were higher, those were more harmful on average.

Michael: Right. Many of the studies did not use very large doses, but we did consider the doses in fact in responding to the public comments on our draft recommendation statements. There was a call for us to be more explicit about the doses that were used in the studies and our report has that information.

Elena: The previous guidelines on vitamin supplementation that we're now being updated, how did this compare?

Michael: Right. Well, as it turned out, it lined up pretty much exactly with our 2014 recommendations, which might come as a surprise because actually, there were 52 new studies. You'd say, "Gosh, you looked at 84 studies all together in almost over 700,000 folks, how come you're still uncertain?" We just didn't think there was enough confidence in the result to say, "You should or shouldn't take vitamin D for that purpose." So, it's not just the amount of evidence, it's the variability in the evidence. And that's a good illustration of the difference.

Paul: And just so I'm understanding process here. It sounds like there's a lot more data since the 2014 recommendation, which prompted the re-review, which is the data did not actually move the needle in one direction or the other for any of the recommendations from before, is that right?

Michael: That's right. We really try to review our recommendations periodically, often every five years or so. We also keep an eye out for new data that was coming along and we were aware of that with the vitamin and mineral supplement studies. In fact, we even held up a little bit at the end waiting for that COSMOS Trial multivitamins with another 20,000 folks, hoping that might help us move in one direction or another. But we're still waiting for [unintelligible [00:16:05], I fear with most of these.

Paul: [laughs] All right, so good news for researchers, that vitamin field is wide open for you still. So, keep trying.

Michael: We do have recommendations for further research, despite all the research that's been done. One is, for example, the COSMOS Trial, which was a really well-done trial, in a lot of folks only had 3.6 years of follow up. Certainly, when you're counting cardiovascular outcomes or cancer outcomes, a longer follow up may be really important. We're also interested in whether there are subgroups of our population that might stand more to gain, say, because of issues of food insecurity or other things, and we need more work there.

Elena: That's a great point. I was thinking that the industry for vitamin supplementation seems to be huge, was there a consideration for the harm of the cost of supplementation to patients?

Michael: Well, the [unintelligible [00:17:08] actually doesn't consider cost in our deliberations around recommendations, so we look strictly at the benefits and harms and make recommendations on that basis. There are certainly broader issues like that you mentioned gummies, a lot of people like those but cost wasn't part of the consideration.

Paul: I think in the background, I believe in the evidence review, the supplementation is a $30 billion a year with a B industry. I think I saw on that may be a couple years old at this point. So, it's remarkable that so much money is being made on something for which the evidence is still not all that compelling.

Michael: Again, important to emphasize that while we don't recommend for it, we don't recommend against it either for all the reasons we've been talking about. Getting back to our case for the evening,

my one concern would be maybe more than the side effects would be the potential for distraction from other health behaviors or interventions that that can make a bigger difference. So, for example, I don't know if Mr. Lind is taking a statin for his dyslipidemia and hypertension. The benefit of statins in general on cardiovascular disease outcomes are roughly 30%. For vitamins we're debating, gee, might there still be a few percent decrease if we did more studies. We do have more effective interventions that we don't want to forget.

Paul: All right. Well, Michael, this has been extraordinarily helpful. It's always exciting when there's new evidence, even if it doesn't change the recommendations so much. Before we let you go, could you let our listeners know what you'd like them to take away from this episode or take away from the updated recommendation?

Michael: Sure. Just to update our recommendation for most mineral and vitamin supplements including multiple vitamins, we didn't find enough evidence, despite there being lots of studies to recommend for or against those supplements with the exception of beta-carotene and vitamin E, which we recommend people not take. Maybe the important thing is to not let the seem too negative in that there are plenty of things people can do to reduce their risk of cardiovascular disease and cancer, whether that be a healthy lifestyle, that's a good diverse diet, adequate exercise. As far as cancer, we have many cancer screening recommendations that are quite effective. So, people can think of all these interventions as things they could do to be healthier and live longer.

[Curbsiders theme]

Paul: This has been another episode of the Curbsiders, bringing you a little knowledge food for your brain hole.

Elena: Yummy.

Paul: [laughs] It's the exact [crosstalk] enthusiasm.

Elena: It’s better.

Paul: Get your show notes at the *curbsiders.com*. And while you're there, sign up for our mailing list to get our weekly show notes in your inbox, plus twice each month, you'll get our new Curbsiders' digest, recapping the latest practice changing articles, guidelines and news in internal medicine. We are committed to providing you with high value practice changing knowledge. And to do that, we need your feedback, so please subscribe, rate, and review the show on Apple Podcasts or contact us at the *thecurbsiders@gmail.com.*

Elena: And a special thanks to our writer and producer for this episode Paul Williams, and to our whole team, here at the Curbsiders. This episode was produced and edited by the team at Pod Paste. Elizabeth Proto runs our social media, and Stuart Brigham composed our theme music. Until next time, Elena Gibson here.

Paul: And as always, I remain Dr. Paul Nelson Williams. Thank you, and goodbye.

[Curbsiders theme ends]

[Transcript provided by SpeechDocs Podcast Transcription]