KRESSER INSTITUTE
FOR FUNCTIONAL AND EVOLUTIONARY MEDICINE

ADAPT PTP Functional Medicine Q&A with Tracey O'Shea

Thursday, January 7, 2021

1. [I] haven't figured out how to submit cases, labs via the student portal. Sorry if this is obvious and I have missed it. I have a couple of GI-MAP labs that I would love to review, if possible, but [it's] okay to wait until next time if preferable. (2:24)
2. Can we go over a little bit of who to ask for certain questions during the classes? Are you the Functional Medicine answerer? (3:41)
3. For the format, currently, I'm practicing and have a full practice for sports medicine and have integrated about 35 to 40 percent of my schedule to pure Functional Medicine, then everyone else kind of gets the combo package. However, my question is in regard to practice management. Can we ask questions on how to really set up our patient fees, case fee, or fee per hour? And then we can also talk about maybe how to (automize? 7:31). Or when we're really able to talk about that aspect of our practice. I don't want to jump the gun but would really love to amp up my Functional Medicine part of the practice. (7:40)
4. Is it possible to send the lab via the portal for [the] future? (9:17)
5. [I have a] 62-year-old female with a history of [*Helicobacter pylori*] (*H. pylori*). [She was] treated previously but recurring [tests] show [she is] low positive for *H. pylori*. High *Enterococcus*, *Akkermansia* from acuities, *Bacillus*, [*Streptococcus*], low positive *Citrobacter*. Some *Prevotella*, *Fusobacterium*, and high positive for [*Blastocystis*] with low secretory [immunoglobulin A] (IgA). She's having digestive symptoms, mostly diarrhea. (10:29)
6. Have you used Biocidin for biofilm disruption? I have tried it, but it's expensive and [I] didn't see much from the clinical aspect. (20:49)
7. t[We have] a 35-year-old male with recurring [gastroesophageal reflux disease] (GERD) and reflux. [He] previous[ly] test[ed] positive for *H. pylori* and it was treated. Now [he is] post-international travel with recurrence of symptoms. [He has] stomach pain, [was] low positive for enterohemorrhagic [*Escherichia coli*], low positive [for] *H. pylori*, low *Clostridia*, high *Bacillus*, *Morganella*, *Pseudomonas* (structo? 22:37), low positive [*Blastocystis*], *Dientamoeba fragilis*, *Endolimax*, low elastase, [and] high occult blood and secretory IgA at 655. (22:50)
8. [I have a] patient with lactulose, [and the] Arrow Diagnostics test came back zero for methane the whole time and zero for hydrogen to start, then 3 at 20 to 40 minutes, 5, 7, 5, 7, 7. Is this clearly negative, or would you suspect hydrogen sulfide? [The] patient's a 73-year-old with slow motility and [is] having ongoing digestive issues, mostly GERD.

[They have a] long history of taking [proton-pump inhibitors] (PPIs); however, [they have] been off of PPIs for two months. [They were] on a PPI at the time of the test. (33:26)

9. Is relative to protein amounts being potentially dangerous past 35 percent due to ammonia not being converted to urea? How does this affect or explain those that do well on carnivore diets? I specifically know of a very able-bodied, well-rounded athlete, no particular sport but full-time training [who] has been successfully on the carnivore diet long-term. (39:31)
10. [I have a] 15-year-old [patient who is] female, overweight, [and eats a] Standard American Diet. [She has] severe digestive pain, constipation, aches, low positive Shiga-like toxin on *E. coli*, low positive *H. pylori*, high opportunistic bacteria, high staph, high strep, [and] elastase 334. [She] also [has] acne. DUTCH or Cyrex? It's like, where to go from here. (43:59)
11. A lot of the information about [the] gut environment mentions the benefit of things being acidic, which makes sense. What, then, are alkaline diets? Are they as beneficial and do they have a place in health? I'm aware of people choosing bottled water with an alkaline pH, and do these things matter? (55:32)

Tracey O'Shea: All right, good morning, everybody, or afternoon or evening, depending on where you are in the world. I am so happy to be here. I hope that everyone had a good holiday break, if we can call it that. A little different than I think we're all probably used to.

I don't have any presubmitted questions today. So I will let you open the forum on the chat section. And if you have questions, please feel free to start putting those in the chat section. I'll give you just a couple of little updates here and there. We are working on week six, or lesson six now, updating that to be a little bit more current with the stool testing that we are using. So hopefully, that update will be out in the next three to four weeks or so. And I am working on updating the [small intestinal bacterial overgrowth] (SIBO) section, as well, to reflect the Trio-smart test that now includes the hydrogen sulfide testing, and some of the treatment modalities that Pimentel, as of right now, is recommending for hydrogen sulfide-dominant SIBO. We do have updates coming, so keep an eye out for those in the update section. And if you have questions along the way, please don't hesitate to send emails.

So when you go in and send questions to me, they come to me. I'm the person that will be screening those questions for you and trying to get all of those answered. I haven't had a whole lot of questions come through just yet in this cohort. Either that means we're doing a great job and you have all the information you need, or you aren't sure exactly how to do that. So I hope that everyone feels pretty confident with being able to find where the questions are, and how to get them to me.

I'll give everyone a few minutes to work through the Q&A section here. Let's see. **So [the] question is, "[I] haven't figured out how to submit cases, labs via the student portal.**

Sorry if this is obvious and I have missed it. I have a couple of GI-MAP labs that I would love to review, if possible, but [it's] okay to wait until next time if preferable."

Yeah, you're welcome if you want to go ahead and ask those questions here if you have an easier way to just give me a quick summary. I'm happy to give you my take. Otherwise, you can do it through the student portal. And I'm trying to see if I can tell you a quick way to do that. Let's see if we can help you find that quickly. But I think when you go to ask a question, I'll let you work on asking your question here and see if I can find the exact steps for that for you. But I think it's the same way that you would submit your question, as if you were going to submit it for this. Let's see here. Eric, I'll let you work on putting together your question, if that's what you'd like to do in relation to some of the GI-MAP results.

I think I see something else here in the chat, "Can we go over a little bit of who to ask for certain questions during the classes? Are you the Functional Medicine answerer?"

Yes. I am your go-to for anything that is curriculum-based or Functional Medicine-based. The questions you're asking are all going to go through the same place and go through the same funnel, and then they will be funneled basically to where they need to go. But when it is Functional Medicine-based or curriculum-oriented, it will come to me. I am the person for that. And anything goes, really, if you have questions about a certain case or a certain patient that you're treating, or if it's something that is missing with the curriculum that you feel would be a great addition, those are all welcomed, because we're all also always learning and figuring out if there [are] additional things that we can.

So I think that you go to Support. Let me just look here. So there's the knowledge base under Tools. That is if you have a question, Eric, you can just type your question out versus verbally. I know that's not as ideal. But the system is a little funky with trying to unmute people. So there's the knowledge base under Tools. And that's a great place if you have a question and it might have already been answered; you can search the knowledge base by typing keywords. So that's one place as one resource to start. [They are] questions that have been answered historically, and they are organized under topics. So that's one resource and place for you to do that. And then under the calendar are the live session events. I'm just trying to see here. If we, sorry I have some babies in the background. So if you hear them being a little excited, that's breakfast time.

So let's see. Okay, here it is, under Calendar, under Live Session Questions, you can go under the live session questions and look through and search through those first. Let me just see here. And then if you type in a keyword under the live session questions, and you search the knowledge base, and it doesn't come up with anything that applies to you, then you click your "Yes, I confirm that I have checked the knowledge base, and that question is not here." And then you can see that it goes to me. And you write your name, your last name, and then you just type your question and any background information and hit "submit." So in order to send me questions that are related directly [to the] curriculum, or a patient that you're struggling

with, or a lab that you'd like a little help with interpreting, you're going to go under Calendar and Live Session Questions.

All right, let's see. "For the format, currently, I'm practicing and have a full practice for sports medicine and have integrated about 35 to 40 percent of my schedule to pure Functional Medicine, then everyone else kind of gets the combo package." That makes sense. "However, my question is in regard to practice management. Can we ask questions on how to really set up our patient fees, case fee, or fee per hour? And then we can also talk about maybe how to (automize? 7:31). Or when we're really able to talk about that aspect of our practice. I don't want to jump the gun but would really love to amp up my Functional Medicine part of the practice."

Yes, you can send me those messages if [they're] about practice management, and at least I can give you perspective about how we have done it at [the California Center for Functional Medicine] and how we're doing it now at Adapt180 Health™. If I don't know the answer, then I can at least reach out to our practice manager and try to get some information for you that way. So if you don't find the information in the practice management tools, then yes, that is also a fair game question that you can send my way and I can try to at least either provide you with resources on how to set that up or I can try to put you in contact with people who can help you with all of that information.

As you can imagine, there's a lot of intricacies and a lot of nuances with how these work and insurance and trying to combine a more conventional practice with a Functional Medicine practice, as you probably are already seeing has its bumps in the road. So, long story short, yes, that is also a very appropriate question if you need a little help with that. And you know, we're only into week 10 or so, 10 or 11. So there will be more of those and there will be more information going from the practice management side about the [electronic health record] and those types of things.

All right, so Eric says, "Is it possible to send the lab via the portal for [the] future?"

I don't see any place to do a PDF type thing. You might be able to drag and drop it. I think most people will just give me a summary of the findings. But yeah, I'm not sure if you can actually upload a PDF. I'm going to make a little note to myself and see if that is an option. I feel like I have seen it before. Let's see. I'm just going to read your brief summary here from Eric. **"[I have a] 62-year-old female with a history of *H. pylori*. [She was] treated previously but recurring [tests] show [she is] low positive for *H. pylori*."** And this is on GI-MAP, just for reference for everyone. **"High *Enterococcus*, *Akkermansia* from acuities, *Bacillus*, enterococcus [*Streptococcus*], low positive *Citrobacter*. Some *Prevotella*, *Fusobacterium*, and high positive for [*Blastocystis*] with low secretory IgA. She's having digestive symptoms, mostly diarrhea."**

I will say that let's start with *H. pylori* first. I think we have to keep in mind, and this discussion is in the updated lesson six curriculum that's coming your way in about three to four weeks. But just so you have some reference that it will, I'll have more explanation. But we have to remember that GI-MAP is [polymerase chain reaction] (PCR) testing, and it's a little bit different than the antigen testing and the breath test. So I don't think that we're there just yet with PCR testing, where we can always equate the presence of DNA material with disease.

In the perspective of *H. pylori* being consistently positive on GI-MAP, I would agree, I see quite a lot of PCR positive *H. pylori* tests on the GI-MAP. I think if the virulence factors are negative, and if you haven't heard of *H. pylori* virulence factors, that's also because this is probably, I think, the only test that's doing this actively commercially. The virulence factors are looking for genetics within the particular *H. pylori* strain that is being found in the genetics and the PCR testing, that have some association with ulcer formation and gastric cancer and stomach cancer association. So they're testing to say, okay, if it's there, how much is there? And then if it is there, does that particular *H. pylori* contain any virulent strains or virulent factors that may shift your treatment plan?

So if *H. pylori* is really low, virulence factors are negative, elastase looks pretty good, the patient has already been treated [for] *H. pylori* once and we're assuming it was resolved, I think you then have to look at the clinical picture. Is there other stuff going on, which there is for this patient. [They have] high *Blasto[cystis*], a little bit of *Citrobacter*, some significant dysbiosis, low secretory IgA. I'll also look at the elastase level when it comes to deciding how I might treat [for] *H. pylori*. For GI-MAP, anything less than 500 for the elastase is considered pancreatic insufficiency.

So if I'm starting to see that the elastase is also impacted, and on the low end, that might make me lean a little bit more toward treatment. Sometimes I will do a secondary antigen testing to confirm okay, yeah. Elastase was 282, so that's pretty low, in my opinion. It's not like pancreatic, that's more like exocrine pancreatic insufficiency, which is probably more secondary to the infections and whatever else she's doing. [*Blastocystis*] can also impact elastase; I've seen that clinically.

So in this case, I think there's enough here to treat. The high [*Blastocystis*], which I think you got some of that information, the research is mixed. Some people have trace amounts of [*Blastocystis*]. And they're not symptomatic; they have no [gastrointestinal] (GI) issues. In that case, I might not go after it aggressively. But this person does have diarrhea, lots of digestive symptoms, [a] history of *H. pylori*, significant opportunistic overgrowth, low secretory IgA, [and] low elastase. So I think this is definitely, for me, someone that I would treat, and put on probably an antimicrobial protocol with something that was also addressing the [*Blastocystis*]. So maybe something like a *Mimosa pudica*. I would probably add that in here for the *Blastocystis* treatment.

I don't think I would necessarily make this super targeted toward *H. pylori*, but I think it's like a win-win. If we're going to do an antimicrobial protocol, we're going to try to address the *Blastocystis*, try to address some of that low positive *Citrobacter*. I usually find *Citrobacter* lumping more into that opportunistic pathogen section where with these imbalances and the ratios being off, that's often when I'll see the *Citrobacter* come up. And the low secretory IgA is also pretty indicative of that. Whatever it is, we may not know exactly which one is having the biggest impact. But there's enough here I think to warrant treatment. I know you asked would you do any additional testing if recommended. I don't know that I would do any additional testing at this point. I think that the results that you have on this GI-MAP are enough to push me in a direction of treatment.

I'm not so worried about the *Prevotella* and *Fusobacterium* levels that are under the autoimmune section of GI-MAP. I think that section is a little misleading, unfortunately, because I think 99 percent of every person that we have tested with GI-MAP [has] some levels of *Prevotella* and *Fusobacterium*. There's also some research that [shows] certain diets can, as we know, shift [the] microbiome ecosystem. And I think also heavy plant-based Paleo-type diets can also push these [bacteria] in that direction. So, if this were me, I would do an antimicrobial protocol because there's a variety of things here that I would like to treat. So I would probably do something like GI-Synergy, maybe some mastic gum for the *H. pylori*. There's a product that I've just started using called Bio-HPF. I'm trying to remember the brand here. I think it's Biotics Research. But I've started to add that for *H. pylori* pieces.

I would probably add *Mimosa pudica*, for the *Blastocystis*, maybe *Saccharomyces boulardii* for the *H. pylori* and parasites, as well, and probably Mega IgG2000, something, so I'm giving her some immunoglobulins to support this impaired gut immune system. And I would probably also add pancreatic enzymes in the meantime to help support digestive function. So I think this result is pretty self-explanatory; I think that there's a good amount of positive results here to warrant treatment without really necessarily needing to do any additional testing. And then I would do that treatment for probably about 60 days. It might end up being a little longer than that, if we're going to give them a couple [of] weeks to titrate up on the protocol, because the 60 days really is from the time that they're on the full dose of everything. So that's important to consider, too, is that when we're recommending the 60-day protocols, we're saying 60 days from the time that you're on the full dose. And there have been times where I have been, three to four months sometimes because they're really sensitive, it takes us a while to get up to the full dose. I'm pretty comfortable with that amount of time because of what the particular herb and botanical blends that we choose. So I would do 60 days of the protocol. Four weeks. Four-week break between the end of the protocol and the retesting of the GI-MAP.

Oh yeah, biofilms. Thanks, Eric. So I will usually put a biofilm disruptor in here. Right now, we're using either InterFase Plus or Biofilm Defense. MCBF1 is also another option from Beyond Balance, I see. Let me just confirm. But yes, I would add a biofilm disruptor here. I think it really can't hurt in these particular cases. And I think we've seen enough evidence that it could actually help. Yeah, so I hope that was helpful. I think you've got enough here to treat.

And let's see. Just going to look for other questions here. I think Gabriel asked, sorry, I got kicked off. I asked my question. Oh yeah, Gabriel, I just was saying you had asked a question about practice management and those questions are fine to come to me through the student portal, like I said, through the live session questions section. And if I don't have the answer, then I can at least try to give you resources and information that can help you start to integrate your practice a little bit faster. There will be more practice management sections within the curriculum. So I have a feeling probably some of what you need may be released or maybe further out. But if I know what question you're looking for in the particular guidance, then we can at least help guide you a little bit or give you some expectation of when that might come.

There's a question of, "Have you used Biocidin for biofilm disruption? I have tried it, but it's expensive and [I] didn't see much from the clinical aspect."

I agree. We have used Biocidin for sure, but I don't, I'm not using it on a regular basis for biofilm disruption on its own. I tend to use Biocidin a little bit more as an antimicrobial, in particular, and honestly, I use it a lot more in my pediatric patients because it's drops, and I can titrate and find appropriate dosing based [on] weight. And I will often also use Biocidin in my really sensitive patients who I know are probably going to have trouble tolerating a full antimicrobial protocol with five or six different supplements and they just have historically been really sensitive. That's probably when I'll start to use Biocidin. And again, primarily because of the drops and the fact that I can titrate that up from a really slow dose.

Okay, so we've got another question here from Eric. Let's see, I think this is, I'm assuming, Eric, this is a GI-MAP as well. "[We have] a 35-year-old male with recurring GERD and reflux. [He previously tested] positive for *H. pylori* and it was treated. Now [he is] post-international travel with recurrence of symptoms. [He has] stomach pain, [was] low positive for enterohemorrhagic *E. coli*, low positive [for] *H. pylori*, low *Clostridia*, high *Bacillus*, *Morganella*, *Pseudomonas* (structo? 22:37), low positive [*Blastocystis*], *Dientamoeba fragilis*, *Endolimax*, low elastase, [and] high occult blood and secretory IgA at 655."

So, this is interesting, right? We've got three different parasites here, [*Blastocystis*], *Dientamoeba fragilis*, [and] *Endolimax*, as you guys likely know, and low positive, right? Okay, on the *Dientamoeba*, *Endolimax*. So on that parasite section, I think we mentioned this in the curriculum, not surprising, that *Endolimax nana* and *Dientamoeba fragilis* often come along with [*Blastocystis*] infections, or vice versa, like they're all kind of grouped together. Whatever environment that one of them like[s], the rest of them tend to follow. So it's not totally surprising to see all three of them there together.

Then you've got the occult blood and low elastase. I think this is a case where the parasite infection is likely what's happening. There's also a little bit of the enterohemorrhagic *E. coli*, which, in theory, for most people is self-limiting and transient. But I would probably guess that

whatever he got ahold of, whatever this person got ahold of, was probably some sort of foodborne illness. And I think [they] picked up a lot of things with this post-international travel. And the question is, which one of these [is] causing primary symptoms? And can we figure it out systematically? Either way, I think it's pretty obvious that they're not feeling well and they have symptoms. They have enterohemorrhagic *E. coli*, they have three different parasites, they have positive occult blood, which I think is present with parasite infection as well as infectious bacterial foodborne illnesses.

You have a couple of options here [for treating this patient]. The *H. pylori* being low positive, this might, again, just still be, this PCR testing phenomenon that we're seeing in these really low levels of *H. pylori*. The elastase is pretty low, but I think that can also be impacted by the parasites and the foodborne illness. So my intuition here would be to go after the parasites, help with elastase, [and] I would follow up with an occult blood [test]. So just as a CYA, anytime that I get an occult blood [test] on GI-MAP, or one of these kind[s] of third-party comprehensive stool tests, I will often always follow up with occult blood testing through LabCorp or Quest. And the recommendation is to do three separate stool samples, because we know that there's variability between stool samples. So I will order three different tests. Sometimes I'll do two, if I'm really suspect of the occult blood that I'm seeing on the GI-MAP. Here, the occult blood on this GI-MAP feels appropriate; it feels like it makes sense based [on] what else we're seeing on the test.

So I would first start definitely with just double-checking that occult blood through LabCorp [or] Quest and just making sure that you have a confirmatory test. Because we know that there are more serious things that can contribute to occult blood in the stool, and you just want to CYA here. But I would treat, depending on lots of variables, I would probably still like to start with an antimicrobial, but I would really probably focus more on the parasites. So I would still probably do a nice comprehensive, like a nice antimicrobial. You could do Biocidin, but I really like GI-Synergy. I think that that has worked pretty well for us consistently. I would add the *Mimosa pudica* here, as well.

There's Para-Gard, [and] there's a couple of other supplements that we can use, like herbal treatments of parasites. I'm just looking at the Para-Gard, right here, from Integrative Therapeutics. So it's a combination. So Para-Gard might be one option, and with *Mimosa pudica*, and GI-Synergy. And then I would support the elastase. Secretory IgA isn't, it's just borderline. So I would treat this. I would go after [it] with an antimicrobial protocol focusing on the parasites themselves, and probably some symptomatic support and retest.

The other option might be something that's more prescription based. We've had some success, and I have used Alinia for parasites that are pretty persistent, like a 30-day treatment of Alinia. But I think it makes sense to start with an antimicrobial protocol if they haven't really done one. We don't know what kind of response they'll have. I would imagine that enterohemorrhagic *E. coli* is kind of transient and self-limiting. But we do know that there are still long-term impacts and effects from even transiently getting ahold of a foodborne illness or

pathogenic bacteria. So that's my recommendation, I think, you might want to try some GastroMend or mastic gum wafers if they're really symptomatic with GERD and reflux. So I would start there. I think that that feels like it makes the most sense. You could always, if you really wanted, have them do a follow-up *H. pylori* breath test. When you do follow-up testing, after you've done the antimicrobial protocol or an antigen *H. pylori* stool test. Just when you do that second round of follow-up testing, just to have some more confirmatory information as far as the *H. pylori* goes. But I think there's a lot going on here that you could definitely target.

Let's see. Yeah, 30-day treatment from, sorry while I'm just on this same topic, 30-day treatment with Alinia. I don't order from Canada,actually. I prescribe it directly to the patient and we use a pharmacy, let me try to see if I can remember. It's in La Jolla[, California]. I think it's a Walgreens in La Jolla that will work with the patient to try to get [it]. Let me just see if I can find that. Yeah, it's Walgreens in La Jolla, 4130 La Jolla Village Drive. So that's a pharmacy that we often will use with the patients, because they really work well with insurance and they try to get it covered. And if it's not covered by insurance, then they do have a cheaper cash price for the patient. So that's where I'll usually start.

And then I think you could get it from Canada. I think we all have maybe just questions about are we getting the products that we want? I think it's probably okay, if I really had trouble getting it covered, it was super expensive, then I probably would go to Canada if I really needed a 30-day treatment. So yeah, 30-day treatment for [*Blastocystis*] is what I'm using. Depending on the sensitivity of the patient, I will either do one like a 500 milligram three times a day for 30 days, or I may start with one pill twice a day for four to five days, and then we'll increase to two pills twice a day. So there's some variability with how I use the Alinia prescription. And then I think I did, just say for reflux right now, I'm using GastroMend-HP, like I mentioned, or mastic gum wafers more for a board-emergent treatment. I think if they're already responding to Chinese formula or bitters or something like that, I'm open. I really haven't found one thing to work super well for the reflux or GERD. It's usually a trial and error, unfortunately.

Okay, so let's see. Next question is a breath test question. So "[I have a] patient with lactulose, [and the] Arrow Diagnostics test came back zero for methane the whole time and zero for hydrogen to start, then 3 at 20 to 40 minutes, 5, 7, 5, 7, 7." Okay, so you never had this post-90-minute peak that we would normally suspect might happen once that lactulose reaches into the lower colon. **"Is this clearly negative? Or would you suspect hydrogen sulfide? [The] patient's a 73-year-old with slow motility and [is] having ongoing digestive issues, mostly GERD. [They have a] long history of taking PPIs; however, [they have] been off of PPIs for two months. [They were] on a PPI at the time of the test."**

Yeah, that's a little tricky. I think that if they did the preparation of the test correctly. You know what? I think I would probably suspect that this is hydrogen sulfide. I think there's not a hard and fast rule, unfortunately. Let's say we didn't have the hydrogen sulfide testing at this point and we were, let's say, old school, kind of like going back and using this interpretive,

interpreting our data to try to decide if we suspect hydrogen sulfide. I think the numbers here look like hydrogen sulfide. We have to think that hydrogen sulfide-producing organisms and methane-producing organisms are both competing for the food substrate of hydrogen. So that's the theory behind seeing zero methane across the board is that they have been outcompeted by hydrogen sulfide organisms, and the hydrogen levels are also really low because they're being gobbled up and eaten by the hydrogen sulfide-producing organisms.

So I would probably lean a little bit more toward hydrogen sulfide here, depending on financials, and it sounds like if this person's been off of PPIs for two months that this test might be a little older. So if you can convince them to maybe do the Trio-smart test, that might be one way to confirm or know if you're down the right alley. Also looking for other symptoms that they're correlating with hydrogen sulfide. The really foul-smelling gas, loose stool or diarrhea, looking at their diet to see if they're eating a lot of high-sulfur foods. So it's not clear-cut. I think there's still a lot of interpretation that we're having to do at this point. But if I could convince my patient, I probably would ask them to [do a] Trio-smart breath test that includes the hydrogen sulfide, and I would try to let them know that, I think it would be important to try to do that, because it might change a little bit of the direction of how we would treat. Because if we're interpreting this as negative, then you're not treating at all, and that I think is a little bit more worrisome to me than if it were barely positive and still deciding to test.

So the Trio-smart test is the breath test that Dr. Pimentel came up with, and if you just type in "Trio-smart breath test," it will come up and you can hit "how to order" and you can create an account with Trio-smart test. This will be updated in the SIBO curriculum pretty soon. I think I have updated at least the interpretation of the hydrogen sulfide in one of the SIBO interpretation handouts. But either way, the Trio-smart test is the newest and only one at this point that also tests for hydrogen sulfide. The only kind of caveat I don't love about this is that you do have to send a lactulose prescription to the pharmacy. The lactulose does not come in the kit. So that's a little tricky if you don't have prescriptive authority. Hopefully, you have someone that might be able to send a lactulose over. I'm assuming you need it. I'm assuming you have to have prescriptive authority. I don't think it would be considered an over-the-counter that would come, but either way, that's the newest test that has been out in the last few months that can test for hydrogen sulfide. So that's what I would do.

If you can set up an account with them and get that going, then that would be my recommendation. That is the SIBO breath test that we are starting to use more consistently now over the Genova. We'll still use both, but I think we were starting, at least in the last month or two, trialing this new lab. And with the hydrogen sulfide, the treatments are still pretty similar, actually, to SIBO as of right now. I think they're doing some trials and trying to figure out [if there are] any medications or supplements. We are adding molybdenum into the protocol for hydrogen sulfide; we're adding bismuth into the protocol for hydrogen sulfide SIBO. I think as of right now, prescription rifaximin is still being used, if you're going to use an antibiotic. And also experimenting with a low-sulfur diet during treatment to see if that also helps. So I don't

have as much to report just yet about the effectiveness of these protocols, because we've just started using them. So I think more to come in that information.

Let's see. Another question, "Is relative to protein amounts being potentially dangerous past 35 percent due to ammonia not being converted to urea? How does this affect or explain those that do well on carnivore diets? I specifically know of a very able-bodied, well-rounded athlete, no particular sport but full-time training [who] has been successfully on the carnivore diet long-term."

That's a good question. My suspicion would be I think that we all are different. We're all unique, individually, [with] different genetics, different profiles, how we metabolize and digest, and what's the word I'm trying to look for and detoxify and metabolize our proteins I think has something to do with it. I think that Chris, just actually, I don't know, I think Chris just did a podcast on this or had some information on the carnivore diet not too long ago. You may want to look [up] "Chris Kresser carnivore diet" and see. I think he also talked to, trying to remember, who did he talk to? I think he just, Paul Saladino? No, that was, maybe yeah, that was August 4. So you might want to look up that podcast and talk about, we can all have different views. Paul Saladino, I think, is pro-carnivore diet and discusses the pieces of why that has worked for him. And I think it may work for people.

The concern is if it doesn't work for you, what could be the long-term disadvantages to being on a purely carnivore diet without fiber, vegetables, [and] all these other kind[s] of macronutrient ratios? I think there are ways to probably do the carnivore diet long-term in a safer, more efficient way. So I think that we also have to consider how people are doing the carnivore diet. Is it really a well-rounded carnivore diet where you're getting a lot of organ meats, you're eating snout to tail, and you're really, very much aware of all the nutrient needs that you might be missing from that carnivore diet? So I don't know much about this particular person that is successful on the carnivore diet. But that would be my guess that it really depends on how it's done, and who you are, and what your needs are.

I do find a lot of people feel pretty good on the carnivore diet in the first three months. That's not abnormal. I think most people do that. But in my experience, most of our patients who are pretty sick, or not doing well, or have a chronic inflammatory illness, really struggle with that carnivore diet long-term, because of the reasons that we've mentioned, of nutrient deficiencies, and I suspect, like you've mentioned, is this conversion and build-up of how we're digesting those proteins. So, this isn't something I have looked deeply into. I think that there's probably a lot more research out there that you might be able to find. But take a look at Chris's websites about the carnivore diet. He does have a lot of information on that. Chris Masterjohn might have some as a nutritional scientist and PhD; he may have a little bit more information, too, that you can find, or you may just be curious, and don't feel super invested in it to where you don't want to do the extra research there. I get that. But that would be my guess of why some people do well on this long-term. I think that's probably more of a rarity. And it's definitely not

something that I'm necessarily recommending to my patients who are in the midst of chronic illness.

All right, so we've got another case here, "[I have a] 15-year-old [patient who is] female, overweight, [and eats a] Standard American Diet. [She has] severe digestive pain, constipation, aches, low positive Shiga-like toxin on *E. coli*, low positive *H. pylor*i, high opportunistic bacteria, high staph, high strep, [and] elastase 334. [She] also [has] acne. DUTCH or Cyrex? It's like where to go from here."

This is tough, when we have teenagers who might be a little bit more tricky to get them to be compliant. So I think it just depends on the patient. I think we could probably all agree that starting with a diet change and transition would make a lot of sense here. When I see the Shiga-like toxin *E. coli*, so it's important to note that on the GI-MAP, PCR like I've said, PCR DNA testing, it's not testing for the toxin; it's just testing for DNA material of the organism that might produce the toxin. So that's always important to keep in mind that just because there's a little bit of organic material, DNA material, doesn't mean that that particular organism is causing disease. And that's, I think, one of the limitations of the PCR testing.

So this Shiga-like toxin, I've seen this quite often, honestly, where it feels like it's transient; it doesn't feel like it's a piece of the puzzle. It could be. But if they've had these issues long term, like a year or more, then I doubt that this Shiga-like toxin result is the smoking gun, right? Because generally, these are transient, self-limiting infections. I think it could speak to the susceptibility of this person's gut and the low resilience and low tolerance of coming in contact with these things. But I don't know that I would go chasing that particular finding. Again, the low positive *H. pylori*? Her lactase is a little on the low end. She's got opportunistic bacteria. There is an anti-gliadin IgA stool marker in the GI-MAP. It's hit or miss. Sometimes I have it come back with really high positive anti-gliadin IgA and the person swears they're gluten free. Although, as we know, I was just listening to Dr. Tom O'Bryan, recently, and there were some studies where they were testing. They did this gigantic study for celiac [disease], and I think it was like 10,000, or something, food items in various restaurants. And I think it was like 30 to 40 percent of all the food items tested had gluten in them. And these are gluten-free items.

So I think it's quite possible that even if people are gluten-free, they are being exposed. That was a tangent on gliadin IgA. But I think in this case, doing a Cyrex Array 3 would probably be helpful. If she's eating gluten and wheat, I think that that's a nice way to kind of have a confirmatory test. And I often find in the younger population, it might be a little harder to get compliance and sometimes having a lab result that shows that there is an autoimmune or immune response to wheat protein, or gluten or gliadin, or glutinen, that that might help with compliance. So I would, I think doing a Cyrex [Array] 3 makes sense. You're going to need her to be eating gluten or wheat in order for that test to be valid. So it's probably a good time to do it before you have them start doing elimination diets. So I think a Cyrex [Array] 3 makes sense.

A DUTCH test might also not be a bad idea. I think the acne piece is there. Probably menstruating at this point. I don't know what that looks like. If it's irregular like signs of [polycystic ovary syndrome]. But I think the DUTCH test can be helpful. I think the question for me sometimes with doing the DUTCH test early on is will it change anything that I'm going to do at this point. Because most of the time, unless that's the reason the person came here for, like very irregular cycles, really painful menstrual cycles, really heavy bleeding, dysmenorrhea, if that's their primary reason for coming to see me, of course, I'm going to do [the] DUTCH. I'm going to go down the hormone pathway while I'm doing other things, looking for food intolerances, gut infections, heavy metals, those types of things. But if it's not their primary concern, I might wait a little bit on the DUTCH because you really want to ask yourself, how is this DUTCH test going to change what I'm going to do right now? Because I still think that addressing the diet, addressing weight, addressing inflammation, looking at food intolerance, those things all make a lot of sense for doing first, and then circling back and [doing] the DUTCH test.

If finances are not a problem and they're open to it, then sure, you could do the DUTCHtest if they're interested, and we all want to know. It might be nice to have a baseline to be able to see are we seeing estrogen dominance? Are we seeing high testosterone that might lead you to do some serum testosterone testing? Or you may just decide to do serum testing first. I really like the DUTCH test. I use it all the time. But if finances are an issue and you're not 100 percent going to do anything about the hormones initially, you might want to just do some serum testing for estrogen, progesterone, testosterone, [and] sex hormone binding globulin. We want that 19, day 19 to 22 of her cycle if she's having a regular cycle. So that might be one way to try to get insurance to cover the hormones first, do the Cyrex [Array] 3. I would probably start her on, this is a little tough because I really would suspect on a Standard American Diet that the diet would probably really help her feel a lot better and might actually be a catalyst for improving the gut.

So it might be a little tricky to decide [if] you want to, do you feel like this patient is compliant, motivated? Do they seem like the family's all on board? If they're seeing you, I'm assuming there's some motivation there. So if they feel like they're into it, and they'll do the Cyrex Array 3, they'll change the diet, you might want to do [a] Paleo reset 30 days, check back in at that 30-day mark. If you're not really making a lot of shifting and changing in the digestive pain and constipation and symptoms, then maybe at that point, you could do a gentle antimicrobial protocol. And that usually, for me, means just like not five or six things, maybe just like the Biocidin, a biofilm disruptor, and maybe some digestive enzymes, and maybe a probiotic, or a Mega IgG, or something [like] MegaMucosa. And do that for 30 to 45 days.

She doesn't have a whole lot here, but she is pretty symptomatic. But I still have a lot of suspicions when it comes to diet for this person, especially at this age. And I don't, with the overweight, I'm assuming maybe you've also checked metabolic function with blood sugar. You may want to consider glucometer testing, if you haven't done serum glucose, A1C, fasting insulin, those types of things. Maybe even a cholesterol panel. I know she's a little young, but

with metabolic issues, we know that they are happening younger and younger. So you may want to also look at the metabolic piece. Make sure that she isn't experiencing extreme sugar cravings and having issues on that and that you might be able to step in and help with even some herbs that might help with sugar cravings, or at least doing the glucometer testing with a carbohydrate cap challenge.

So how I'm doing that, three days of glucometer testing, fasting glucose each day, and then we're doing pre-meal, 45 minutes after the meal, an hour, an hour after that, and then another hour after that. So we're getting almost every hour, basically lab results or glucometer tracking. On one of those three days with one of their meals, we have them eat one cup of white rice. So that's like a home glucose tolerance test. Not eating rice by itself, but with a meal, and then we really see how the body is managing the carbohydrate load [and if] their blood sugar [is] staying below 140. So, just some ideas. Blood sugar regulation, diet changes, gluten intolerance, and then maybe a little bit of a gut support or a little mini-gut treatment to see if that also helps.

All right, let's see. Menses is very irregular. Okay. Hers is 106. I'm sorry, Eric, I missed what the 106 was in relationship to. Can you just tell me what the 106 value was in relationship to? So, yeah. If menses is, yeah, that makes a lot of sense with a 15-year-old female, overweight, lots of GI issues, Standard American Diet, I would definitely look at blood sugar regulation. Again, you could maybe start with the serum testing. That may be a little tricky. Oh, the anti-gliadin was 106. Okay. Yeah. And GI-MAP would say that a 106 is, even though it's not marked high, that it's still on the higher end. When I've spoken with them and done consults, they prefer it under 75, I think, or even 50.

So if their cycle is irregular, I would maybe do some serum testing. It's a little tricky because if she's irregular, if she can track her ovulation, then you might be okay with being able to time that nicely. But if not, it might still be a little tricky to figure out the hormones. But again, you may want to do some of those other things first and then circle back to the hormones.

Let's see another diet question here. "A lot of the information about [the] gut environment mentions the benefit of things being acidic, which makes sense. What, then, are alkaline diets? Are they as beneficial and do they have a place in health? I'm aware of people choosing bottled water with an alkaline pH, and do these things matter?"

Chris and I have talked about this briefly a couple [of] times, and every time we chat about it, I think we come to the same consensus that we just really haven't seen any data or research to support the benefit of going down that route. I will be honest, I haven't really dove deep into the research. So I don't want to speak out of turn, because I'm just not sure that I know enough about that. You're welcome to send me that message through the student portal and I can try to ask our nutritionists if they have any thoughts or ideas about the alkaline diet movement, and how that might change or be applied or used. But again, I haven't really come across anything that was pretty convincing to me to really focus on this alkaline diet or alkaline water.

I almost wonder more if people already have imbalances and the acidity of the GI ecosystem is off. That might be what's happening in that they feel better because they're shifting the paradigm. But I don't know that I know enough. I'm sorry. I wish I had a little bit more information about that for you. But it's just not something I've looked into deeply. But if you want to send me that question through the portal, I'd be happy to poll our nutritionists and see if they have a feeling about it.

All right, so we just have a couple minutes left before I need to go and start my day with my patients. [I'll] just give everyone one second [to] make sure they don't have anything else. Great questions today, you guys. I thought we had a really great discussion. It's nice to have everyone here and participating. So hopefully, I answered your question about where to submit those questions to me. Remember under Calendar, Live Session Questions, and they will come directly to me and I will see what I can do in [to help] answer those for you. All right, guys. Have a great rest of your day. Thanks again, and let us know if you need anything.