

Episode #:	2
Guest:	Dr Nancy Cotter & Tessa Thralls
Title:	Diet Diversity & the Gut Microbiome

Sarah Purdue:

Welcome to the Holistic Huddle where two dietitians come together to talk about holistic health and how it is happening at the VA. Today's podcast is brought to you by the Veterans Health Association Employee Education System. I'm Sarah Purdue clinical nutrition manager at the Oklahoma City VA Healthcare System and I'm joined today by my podcast partner Tessa Thralls, a dietitian in Northern California and today we are joined by special guest Dr Nancy Cotter. Today's topic is going to be on digestive health, nutrition, and overall health. Dr Cotter serves as the clinical Director for Whole health at the East Orange VA in New Jersey and is a national clinical champion for the VA office of patient centered Care. Dr Cotter is board certified in physical medicine and rehabilitation, Integrative medicine, and medical acupuncture as well as a certified nutrition specialist in functional medicine practitioner. Tessa Thralls is a registered dietitian nutritionist from northern California who works at the Eureka community-based outpatient clinic which is part of the San Francisco VA Medical Center. Tessa is also certified in Mind body Medicine and is a registered yoga teacher. Tessa has completed training in integrative and functional nutrition through Bastyr University. The Center for Mind Body Medicine, the Academy of nutrition and dietetics in the integrated and functional nutrition academy. She also leads the VA National functional nutrition work which works under the clinical nutrition subcommittee. Thank you for joining us today.

Dr Nancy Cotter:  
Thank you, Sarah.

Sarah Purdue:

All right. In our first two podcast. We alluded to the important concept of digestive health or gut health and today we thought it would be a good idea to dive deeper into that topic. Dr Cotter, in the last podcast you mentioned that gut health is often related to the root cause of disease. Can you say more about that?

Dr Nancy Cotter:

Oh, sure. Um so uh one of the principles that is um that is credited to Hippocrates is that all disease begins in the gut. And I don't know if that's 100% true, but certainly, many of them are so many of the people listening probably do know that over 80% of our immune cell producing tissue is located around the gut in very close proximity. So, our gut and our immune system are in constant conversation and our, you know in a high healthy state. Our work in uh in synergy and so a number of um inflammatory conditions among them, you know, autoimmune conditions. Um so things like rheumatoid arthritis, um uh you know, multiple sclerosis, um all the other rheumatoid conditions Um they are all in some way affected by the gut. So, um in addition to autoimmune conditions, many of the inflammatory conditions such as osteoarthritis, which is an arthritis but doesn't have an autoimmune component. Um you know, irritable bowel syndrome from uh diabetes, cardiovascular disease. All of these chronic conditions have an inflammatory component and thus are in some way affected by our guts.

Sarah Purdue:

So, one concept that I hear a lot about is the gut microbiome um is that part of what you're talking about? Can you tell our listeners more about that and why it's so important?

Dr Nancy Cotter:

Sure. And that's you know that's a really big answer. Uh and so I'm hoping that I can um get a little help from my friend Tessa here.

Tessa Thralls:

So yeah, I can get started with it. So, the gut microbiome is referring to the whole community of microbes that live in the gut and there are um bacteria and other um microbes that live in the rest of our body as well. But um in the gut there's a big concentrate and they have a really big impact on our whole health. And so, um there's really over trillions of bacteria that and yeast. It's not just bacteria um that live in the gut um which is far more probably 10 times more than actual human cells in our body. So that's one reason why they can have such a big impact on us. And um it's really important to try to nourish those bacteria and still learning so much about it. Um there's so many different strains and species and there is a lot of research being done on it but there's so much that we are still trying to find out but we do know that um certain kinds of bacteria are associated with certain conditions. So, we're actually realizing that they've actually, seen in studies that obese patients have a certain makeup of um bacteria in their gut and it's different than um individuals with a healthy way. And so that's really interesting finding that we need to explore more about. Um But and that's been found with other diseases as well.

Dr Nancy Cotter:

So those are some great points, Tessa. Another thing that we talked about in the you know the importance when we talk about the importance of gut health is um the immune system. So, as we know the um are lining the lining of our gut is intimately associated with the cells that produce a lot of our lymphocyte and other um important um and cells that are important in our immune function. And so, the integrity of the gut is very much um related to um our immune response. Um We've heard the term leaky gut um or a gut that is does not have a completely um of complete integrity um of the you know as a barrier to things that we necessarily don't want to reach our bloodstream. So those could be a number of things that could be food that's not probably broken down could be microbe's um it could be you know um things that we have ingested that have not been broken down. And so, when we don't have a proper gut barrier and those and some of those things uh get true for that we respond appropriately to um to materials that we don't want um in the in our bloodstream and that might cause harm to the body. So, to give you an example um when we don't have a completely intact um intestinal and let's just say some undigested proteins maybe because we have low stomach acids get through. Um and they they're able to penetrate the gut wall that would normally keep them out because of their size. Um So these proteins because they're not broken down into amino acids or very short um segments of amino acids. The body might um the immune system might recognize them not as um friendly nutrients but as foreign materials and might form um antibodies against them in an attempt to shield the body from unrecognized unfamiliar, possibly dangerous um you know materials invaders basically that could possibly harm the body. So, informing such antibodies um they made inadvertently form antibodies that can also attack our own tissues. So, when the immune system is revved up in such a way um that's one of the theories of how um how autoimmune conditions develop. So that's one example of how the immune system and the gut work together.

Tessa Thralls:

Yeah, and I want to add to that since especially since we're talking about the microbiome is that the gut microbiome is actually really um plays a big role in keeping the integrity of the intestinal lining. So, one

thing that happens is when we eat food that has fiber in it. Especially a special type of fiber called resistant starch or prebiotics then those are actually, food for the good bacteria in our gut and when they ferment that um then there, they are releasing byproducts, one of which is short chain fatty acids like butyric acid. Butyric acid is actually the preferred energy source for the epithelial cells in the intestinal wall. So, these short chain fatty acids also reduce inflammation in the gut, healthy microbiome that is in balance is a key factor for maintaining a healthy intestinal lining and preventing intestinal permeability that leaky gut that we were talking about. But sometimes the microbiome can get out of balance, and this is called this by osmosis. It means the types of microbes in the gut are basically, out of balance or even sometimes out of place and when this happens intestinal permeability is likely to result. And it's very interesting that we're starting to see links with a huge variety of diseases and leaky gut or and dysbiosis. So, things like inflammatory bowel disease, food allergies, even diabetes and obesity and even autism are being linked with. Um this despite dysbiosis condition, there are many factors that can cause this dysbiosis for example, like not eating enough fiber like prebiotics and resistant starch to feed the good bacteria in the gut. Um Also the bad bacteria feed more off of sugar and refined carbohydrates. So, a diet low in fiber and high in sugar is the perfect recipe for dysbiosis also I mentioned inflammation can be a result of dysbiosis, but it can also be a cause of it. So, when inflammation is present it can cause blooms of certain bacteria which are normally very scarce in the gut microbiome. And these will crowd out the good ones that are normally there, inflammation in the gut can be caused by a variety of factors including inflammatory bowel disease, infection, colorectal cancer or even food allergies, intolerances, or sensitivities. So many people are actually consuming foods that they don't digest well, and they might not be digesting them for a variety of reasons. Maybe an allergy or intolerance or maybe low stomach acid like Dr Cotter mentioned earlier and this can be a major cause of digestive discomfort, but it can also cause inflammation in the gut and disrupt the gut microbiome. So, what do you think Dr Cotter, do you want to add any other things that can cause gut dysbiosis?

Dr Nancy Cotter:

Sure. Um So um one of the things just to um tag onto that excellent um summary of nutritional causes. Um Just lack of variety. Uh So we know that um one of the principles of health in the microbiome is um is variety. Okay, is diversity. And when we eat few foods, we decrease that diversity. So, there have been studies done with looking at tribes in Africa that eat a wide variety of foods and when a westerner with a standard American diet changes over to this wider variety diet and high fiber diet then there the diversity of their microbiome um increases and when they switch back to their standard diet their standard American diet the diversity shrinks so more diversity more health and a diet that is devoid of fiber and um uh Tessa just said you know earlier that fiber is really important and its devoid a variety is actually going to affect the health of the microbiome and the health in general of the gut lining and our ability to respond appropriately with the immune system. Another element um or another um aggravating factor is Stress, stress and really um have a significant impact on the microbiome and um and just on the um on the gut in general and we know you know this this um you know the saying I have a gut feeling um really our thoughts and emotions really do affect our gut um affect our nervous system and you know there is the enteric nervous system that is part of the gut um which um stress can affect in a significant way. And so, all of those things can really have um such a great effect on our again our gut health and therefore, our microbiome.

Sarah Purdue:

Thank you, Tessa. Is there anything else that you would like to add? Um I think that's serious.

Tessa Thralls:

We touched on a lot of the main topics. Okay just one more thing that we could add is um antibiotics.

Dr Nancy Cotter:

Yeah, I was gonna mention something about that.

Tessa Thralls:

Yeah, so just the word antibiotics can kind of help us understand what's happening is that it's anti all the bacteria in our gut. And so, um it can be important and necessary to take a round of antibiotics. But even just one um full dose of the antibiotics has a really significant impact on our gut microbiome not only for the short term but even for the long term. So, um it's important to if we are gonna have it's important to really be um careful with using antibiotics and when we do use them when we do have to then to really counteract that with building back up to the microbiome.

Sarah Purdue:

Well that you just lead me right into my next question was we just learned some things that lead to imbalance in the gut microbiome. But how can we restore that balance? Are there things we can do with our diet or lifestyle factors that we can do to improve and restore that balance in our gut?

Tessa Thralls:

Yeah so, it's like this antibiotic is also probiotic. Probiotics are um back they actually are bacteria. So, you can consume bacteria either in the form of a supplement or they can be present in some foods. And the foods that have bacteria in them are basically fermented foods like yogurt is the most common one that Americans eat. Um However we have to be careful with yogurt because they can have a lot of sugar which can negatively impact the gut. We gotta really be careful on what kind of yogurt you're eating but yogurt does have bacteria and it does benefit the gut microbiome. And then other foods would be like Kefir is another type of fermented dairy. There's um fermented vegetables like um kimchi and Sauerkraut which I really like because then you're getting all the nutrients from the vegetables as well. Um There's some fermented drinks like Kombucha probably the most popular one. And so, any of these um foods probiotics and can really start to nourish the guy and this really gentle way to do it because you don't have you don't take a supplement oftentimes are getting a really large dose but in the food it's a little bit um smaller and so and you, but you don't need a lot either so just a little bit of food each day can start to make a big impact over time. And then like I mentioned earlier there's also prebiotics and prebiotics are the foods that feed the good bacteria in our gut. They feed the probiotics. And so those are fiber and um resistant starch. So, some of the ones that have the best the most fiber in them are gonna be Jerusalem artichokes which is not actually an artichoke and it's not from Jerusalem But it is a good root vegetable it looks like a ginger root um it tastes more like a potato. So, it's really plain tasting and it's really easy to eat if you cook it and has it's the food with the most prebiotic fiber that I know of. Um And then other ones that are more common are like radishes, garlic and onions, asparagus has a lot um jicama has a lot of prebiotics. Um And then like then the reason that starts that I mentioned is um it's in some food naturally like unripe bananas that the bananas, it's really green. You'll get some of it, but you can also create it in food, and this is really cool. So, if you cook rice or potatoes and then you let them cool down then it starts to form resistance starts. So, if you think of like that texture that occurs when you let the rice cool it's like a little bit gummy that is resistant starch forming. And so, then if you eat it later even if you really heat it, you're still saving that resistant starch in there and the resistance starch cannot be absorbed anymore. And it gets all the way to the colon where the good bacteria eat it and then they replenish and benefit so and then you're not absorbing as many carbohydrates from that rice either in your blood sugar is not going to die.

So, the Win, Win situation.

Sarah Purdue:

Well, I did not know that that's really that's really interesting Dr. Cotter. Do you have anything to that you'd like to say about how we can restore balance to our gut.

Dr Nancy Cotter:

Um The only thing that I would add to that um excellent summary is um I'll just repeat what I said before and that variety, variety, variety. Um We tend to get comfortable with a few foods that we like and I think it's really important for us to um you know if there's a new source of fiber you know go out and try it because fiber is so very important. You know we know that probiotics last only so long when we you know when we take probiotics, they don't necessarily take up residence and reproduce unless um you know we create the right conditions and so important to creating the right um conditions is um in just in that fiber because that serves as the food board that serves as the prebiotic as uh Tessa was referring to. So that's but I encourage my patients you know they are definitely heroes if they you know eat some broccoli every day. But you know try the try the cauliflower and the cabbage and the lettuces and you know all the vegetables and the variety of vegetables that are available to us.

Sarah Purdue:

Variety variety is the spice of life.

Dr Nancy Cotter:

So is the spice of life and it is the source of diversity in our microbiome. So, um yeah, I can't encourage it enough.

Sarah Purdue:

The variety, variety, variety. So, Dr Cotter you did mention when we were talking about factors that can lead to imbalance in the gut. You mentioned stress. So do things that help us relieve stress like yoga meditation. Just do things like that. Have any impact on restoring the balance.

Dr Nancy Cotter:

Oh, my goodness. Yes. And um the best evidence we have is actually looking at um mind body programs meditation and mindfulness in patients with irritable bowel syndrome. There's a fairly um robust literature looking at those mind body interventions that help to calm the symptoms of IBS which is you know sort of and that's an example of you know significant imbalance in the gut. Okay that's and that's you know um a very common everyday example, but we know that decreasing stress through such means as meditation yoga um you know mindfulness um that can decrease those symptoms and thus you know um that's a symbol of improving uh balance in our gut. But Tessa knows that much better than me because she's a yoga teacher.

Sarah Purdue:

So, it sounds like balance is vital and just the importance of it can't be stressed enough. So not only when it comes to good and bad So not only when it comes to good and bad bacteria but with exercise work and play and just life in general. So maybe balance is something that we need to focus on just in our life in all areas in all aspects.

Tessa Thralls:

Yeah, it really is. I think that any time we take things to the extreme where you start running into problems and so, balance is important and it's also super hard. I think that's one of the hardest things for me and for my patients to really grasp that concept of being able to stay balanced and not take anything to the two extremes. And that's one of the reasons why I love teaching yoga and doing yoga. Um it's really a physical expression of the balance that we seek to achieve in all ethics of our life. And I love just reminding myself of that as I'm doing it and teaching it well.

Sarah Purdue:

I know that you make a big impact on your patients' lives and like you said, I for me I know that achieving balance in a lot of different areas is really difficult. So, I think it's really wonderful that the VA is really leading the way and on the whole health concept and integrating concepts like Integrative and functional medicine and nutrition into the care that we give our veterans. So, you know, we've got the resources at hand to help our veterans you know reach that balance and improve their health and lives. And I think both of you for joining us today and we're about out of time. So, we'll go ahead and close. But I did want to thank again VHA Employee Education System for bringing the podcast to you today. And Dr Cotter and Tessa thank you so much for your wisdom and your expertise and your information on such an interesting topic and thank you as well to you, our Holistic Huddle listeners. We hope you've enjoyed listening today. And if you did enjoy the podcast, please go onto iTunes or Spotify and rate us and leave us some feedback. We also would like to know what integrative and functional medicine or integrative and functional nutrition topics you're interested in learning more about. So just let us know by leaving a comment when you rate us if you like the series and want to learn more about holistic health in the VA and the holistic health in general. You can subscribe to our podcast, Holistic Huddle in iTunes or on Spotify. So, you don't miss any future episodes. One final thanks to Dr Cotter and Tessa for joining us today and to VHA Employee Education System for your support in producing this Holistic Huddle podcast series. Thank you until next time.