

Program Title: Nutrition for Breast and Ovarian Cancer Care
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Guest Speaker: Francine Blinten, MS, CCN, CNS: Francine Blinten is a Clinical Nutritionist who has worked extensively with patients through all phases of cancer diagnosis, treatment and post-treatment. She holds an MS from the Nutrition Institute at Bridgeport University, and is board certified by the International and American Association of Clinical Nutritionists and the Certification Board of Nutrition Specialists.

For 5 years, Francine was on staff at the Boyd Center for Integrative Health, led by Dr. Barry Boyd, a leading oncologist in Greenwich, CT. She helped patients use diet and lifestyle to minimize treatment side effects and reduce risk of recurrence. Since 2012 she has been a consulting nutritionist for the Connecticut Mental Health Center, a partnership between Yale University School of Medicine and the State of Connecticut. Francine also works with cancer patients in her private practice, monitoring metabolic biomarkers to avoid secondary illness and late effects of cancer treatment. In addition, she assists clients with disease prevention, weight management and food allergies or sensitivities.

Topics:

- What to eat at various phases of treatment to enhance health:
 - Managing side effects during active treatment
 - Nutrition after treatment, caring for the rest of you
 - Common nutritional deficiencies
- Facts and Myths: What is the science behind:
 - Sugar: Does sugar feed cancer?
 - Alkaline diets: Am I too acidic?
 - Must I juice and/or cleanse?
 - Specific diet approaches such as: Vegan, Paleo, Gluten Free
- Supplements:
 - What role if any do supplements play?
 - Should I take a multivitamin?
 - Which supplements are helpful?
 - Can they do harm?

Robin Perlmutter: Thank you, Francine, for sharing your time and expertise with us tonight.

Francine Blinten: Thank you, Robin, and thank you to Support Connection, which has been such a wonderful resource for so many patients and so many women that just tell me that they could not have gone through this whole process without Support Connection. So, I highly regard your profession and the services. So, thank you for having me. And this topic is a very important topic, as you know. There is a food movement going on, and people have so many questions about what to eat, what not to eat, supplements, fad diets. You know, people become paralyzed in the grocery store. I don't want anyone to leave feeling stressed; I want you to feel that you come away with something that you may not have known before. I know this is a very well informed audience, so I'm going to assume some basic level of knowledge. But, again, we're having questions at the end, so please feel free to ask any questions. There are no dumb questions.

I'm going to start with the American Institute for Cancer Research Guidelines for Cancer Survivors, because I think they really hit on some of the big concerns that most of the people present to me. What's a good weight to be? What about physical activity? Vegetables? Do I need to be a vegan? What about supplements? My neighbor gave me this supplement and I think I'm supposed to take it, but they don't know why. So, these are very simple guidelines that I make sure everyone at least gets the basics from this slide, is that to avoid -- obviously, to be as physically active as possible, to be as lean as possible, but

without being underweight. And that's an important factor. The BMI scale, 20 to 25, I think is a little unrealistic. It's really -- 20 would be very low, 26 is really the upper limit, but if someone is African American, they can really go to 30 without having metabolic consequences. If someone is Asian, probably to the lower end. So, it's just a general guideline.

Limit consumption of red meats. I really emphasize here to avoid processed meats, so that would be salami and hot dogs and such, but grass-fed meat is fine. Once a week is usually a guideline that we say at the Boyd Center.

Alcohol consumption, if you do drink already -- I wouldn't start drinking, but moderate consumption is considered safe. That would be one drink a day. People going through treatment don't usually feel like having a drink. I'm talking about this is for people that are post-treatment. If you are going through treatment and you feel like having a glass of wine, we say two 6-ounce glasses a week. Most people don't really want it, but if you do, sometimes it helps people with reducing some stress or stimulating appetite, so that's fine.

More AICR guidelines for cancer survivors. To make most of your plate plants, and then a third animal protein, if you are a meat eater. So, the proportions, it should be a plant-based diet, and there are so many controversies around food, but almost everybody agrees that we need to be eating more plants and well-raised animals. If you're going to have animals, they should really be well raised, eating grass when possible. That's what they want to be, not hormones. If you can afford organic, then that would be optimal, but I would not compromise eating plants because you couldn't afford organic. I know a lot of people are guilted into thinking they can only have organic foods, and that's just not true. If you have to watch the budget, you can always buy regular, conventional produce, and you can just wash it in saltwater -- 1 part salt, 9 parts water. That will get rid of most of the pesticides that would accumulate on the skin.

On this slide, in the top part, the last sentence -- strawberries, blueberries, carrots, cantaloupe, very important for ovarian cancer patients or ovarian cancer survivors. That group, they contain carotenoids and they're very, very powerful in helping ovarian cancer patients on many levels. I have a journal here, but I can't get into too much detail or we'll never finish. But specifically the yellow-orange-red pigmented are associated with good outcomes with women battling ovarian cancer. Also, flaxseeds, flaxseed oil and cilantro contain a phytochemical called stigmaterol. It sounds like cholesterol and it is, it's a sterol compound, so it actually competes with cholesterol for absorption. So, that's a good thing to know. I'm going to insert that here because I don't want to forget it. I think it's that important. Okay, moving on.

And these are some of the ovarian cancer risk factors. And I always say for your daughters, for your sisters, for somebody who -- there are risk factors that we can prevent and there are some that we can't. You can't control your age, you can't control your height, but you certainly can control your weight. And, again, you can't control your family history, but you can eat a very good diet and you can exercise. And these genes don't always, as you know, just having a gene doesn't mean that it will express. So, that is where the environment comes in, and we're going to talk a lot about the microenvironment. It's one of my favorite topics. We have a lot of good things to cover tonight.

Okay. The metabolic syndrome. I don't know how many people have heard of the metabolic syndrome, but if you haven't, you should know about it. It is a series of, a cluster of symptoms of which, if you have three of the five they're considered a platform for some of the modern adult diseases that we're seeing today -- cancer, cardiovascular disease, and DM is diabetes, by the way. And they share overlapping features, all of these, with these diseases.

So, the big one that I always look at is fasting glucose, the top one. I think it's very important, especially for the triple-negative women out there. The big ones for the triple-negative would be the fasting

glucose, the triglycerides and the HDL. Again, it's not a disease, the metabolic syndrome; it's a syndrome. So, even the American Medical Association says there is no drug for the metabolic syndrome. What you want to do is diet and lifestyle. So, this is terrific, because you can control these things; it is something you can do yourself. And we know that sometimes treatment will even raise blood sugar, right? Decadron will raise blood sugar; even certain drugs will raise triglycerides as well. But we want to keep these in range. These are things to target. Like a dashboard. You can think of this as your dashboard. So, if your blood sugar is 99 on a fast, and that would certainly be in range, because the normal range is 70 to 100. And the doctor calls and says everything is fine, or the nurse, it's fine. You really want to get a copy of your blood test, and you want to see, even 150 for triglycerides in someone who is very fit, I really like it under 100. The triglyceride number can't be too low. And when I see the triglycerides and the HDL with the high triglycerides and the low HDL, which is the productive cholesterol that to me is a red flag. Because that is a good -- not a good, but to me it indicates potential for heart disease later on. That's a later effect.

We're always concerned about wiping out the tumor and killing the tumor and getting any place where it might have advanced to, but I'm really looking at the whole person, not just the tumor. And when you get through treatment and you're transitioning to survivorship, so when you're transitioning out of active treatment and then extended survivors, then we really need to be talking about the other organs that may have taken a hit -- the heart, the nerves, the bones -- there is so much, right -- the kidneys. The oncologists want to just keep this thing out of you, and of course we do, that's what we want. But we also want to make sure the rest of us is healthy. So, that's why I focus on the metabolic syndrome a lot. You'll hear me talk about that.

Physical activity. After any cancer diagnosis, but specifically breast cancer, this is a *JAMA* article really associated with reduced risk of death and also reduced risk of recurrence. And it's not a lot of exercise; it's the equivalent of walking three to five hours per week at an average pace. And it could be -- you know, I tell people 30 minutes a day, four to six days a week of walking. And it doesn't have to be 30 minutes all at once. It could be two 15-minute walks, it could be three 10-minute bursts of running up a hill. Whatever gets you going, and why is that? Why is this so associated? This is powerful. This is like Herceptin or Tamoxifen. It lowers all the hormones. And we're going to get, in a little while, to the microenvironment. You're going to see why that's so important.

Weight control. Again, this goes back to the American Institute for Cancer Research Guidelines, and people that have features of metabolic syndrome should reduce. Even modest weight loss, 5% to 7% of baseline weight produces improvement in these parameters. If somebody is overweight without evidence of the metabolic syndrome, similar weight loss may still have beneficial impact. People who are metabolically obese but normal weight, and I don't know if anybody knows about sarcopenia, but it's basically core body composition. Somebody who would look to you to be normal weight or maybe even underweight, but that would have a lot of fat tissue in their body. So, for people like that, we want to make sure they also exercise but without the intent -- but not restricting calories. But they do want to do some weight exercise, strength.

I want to mention here in case I forget later, if you have a neuropathy, which is one of the very common side effects of treatment, be careful with loose weights. Because if it's severe neuropathy in your hands, you don't want to further injure yourself by dropping a weight. So, for people that have neuropathy or people that just don't feel comfortable using weights, you can get those Thera-Bands, and they are very, very effective. And it's just using your own weight, and they're usually -- they come in lots of colors and sizes, but you could do any part of your body with the Thera-Bands, and I highly recommend them.

Moving on to some of the side effects. These are pretty much for people that are in active treatment. I don't know the breakdown of my audience tonight, so I don't want to spend too much time on this. But I have found that the infusion nurses are very good at helping people navigate these side effects. If you are

in active treatment and you're having them, please do tell your nurse or your doctor that you're experiencing -- weight loss would be, again, 5% of your baseline weight. And there are ways to get around this, and I do have some strategies here.

So, for nausea and vomiting, I think the biggest -- the drugs work really well, okay? Don't be shy about taking them; that's what they're there for. Zofran, Compazine, and there are others. And when you feel nauseous, you really just can't be well. There are people that say pain is -- they'll take pain any day over nausea. Just try to eat foods at room temperature. I find that people like cold foods a lot, they are very soothing, especially if they have mouth sores. Ginger can also reduce the nausea. These are mouth sores. I've found straws really help people to be able to stay hydrated and to just, again, even though I always advocate nuts, they can be a little irritating to a mouth that has sores. So, just try just get through it. Stews, soups, things like that can help.

Constipation, especially with pain medications that people are on, it's awful; they really do back people up. So, again, it's always fiber, fluids and exercise. And my little mixture on the bottom, which is water, flaxseeds and lemon juice, seems to help some patients as well.

Fatigue, I find people tend to -- if they are fatigued, and this really comes with almost any of the chemotherapy drugs that I've had experience working with patients on, is that they tend to feel better in the morning. It may not be you, but they tend to feel more energy in the morning and then it sort of decreases as the day moves on. So, instead of making your major meal in the evening, try to have dinner for breakfast, if that's when you feel like you have the most energy. Nothing wrong with having leftover dinner that you couldn't eat the night before for breakfast. And that's the way to get some vegetables in; that's another way for you to get the protein in. Sometimes you can push yourself and take a walk and sometimes people just feel that it's just asking too much. So, it is good to do it, but there are times that you have to know your own limits.

Low blood counts is something that is pretty much given, right? It depends on the drug, but low white counts, anemia, and we know that the white cells fight infection and the red cells deliver hemoglobin and iron throughout the body, and oxygen, and platelets are for clotting. So, there are various drugs that counteract these counts. We get shots of Neupogen; I'm sure you've all experienced that. But what can you do with diet? Well, walking, first of all, is the best way to increase your platelets. It can be enough to sometimes get you to the point where you don't have to miss a treatment. Dietary iron. Cooking with a cast-iron pot can help a lot. People don't believe that sometimes, but it can make the difference, especially if you're just borderline. And I don't see anyone who isn't anemic. Almost all of the patients I see are anemic. Sometimes they're even anemic before they start treatment, and then you know it's only going in one direction after that.

For low white cells, it's less nutritionally relevant, but what I do tell patients is make sure they're getting enough protein, because you need to make the raw materials to make those white blood cells. And then you also want to be very careful about safe food handling and not getting any infections. Now we're going into flu season, so bags of cut lettuce tend to just be breeding grounds for bacteria, so I don't recommend them. There is also a lot of waste with those.

The tumor microenvironment. Okay, so this is what we were getting back to before. And the tumor microenvironment, so you've got the tumor, and then you've got the cells around it. And you know if you've had surgery, they have to get clean margins. So, they need to get the tumor and then sort of clean perimeter around it to make sure that those cells have not migrated, that they didn't go right to the edge. Well, I'm always very curious about, what about the healthy normal tissue that surrounds the tumor? What role does that play in this, what we call this microenvironment? And it's been an area of research for myself and some of my colleagues. And what I have been fascinated to learn is that -- so, there is cellular dialogue between all cells in the body, and cancer cells are your own cells, and they also

communicate with other cells surrounding tissue. And there are molecular mediators that interfere with this dialogue, and that would be hormones, inflammation, vasculature which is our blood vessels, environmental carcinogens, certain mutations, like the BRCA1 and 2 and the Lynch mutations. So, there is a whole -- mechanisms that the tumor itself can recruit the stroma cells, which are the healthy cells next to it, to help it grow, to serve its cause. So, we can discourage that with food, and by eliminating some foods, too, some minerals which you would think would be healthy and normally healthy. But someone who is trying to slow down the growth, they wouldn't maybe not be as appropriate.

So, I'm going to get back to what those are, but here is just a summary of the WHEL study dietary pattern, again, are more important. So, again, we're not looking at specific foods; we're looking at dietary patterns. The WHEL study showed incredible, 46% reduced risk of death with just diet and exercise, and that was just five servings of fruits and vegetables a day, and, again, the equivalent of walking 30 minutes a day for six days a week. And then when you add in the cruciferous vegetables, it bumped up even -- it was 35% just from the cruciferous vegetable family. And for those of you that may not know what they are, its broccoli, cauliflower, cabbage, kale, and brussel sprouts. Very powerful family. Everyone should get to know them, if you don't already. They are your drug, okay? And they don't make your hair fall out. Again, for women that went above the five servings of fruits and vegetables a day, they saw an even bigger benefit, which to me is -- this study blew my mind.

Now we've got the Mediterranean diet. So, let's talk about dietary patterns. Dietary patterns are -- you know, Americans want to know, so what it is about the Mediterranean diet? Should I supplement those cruciferous vegetables? Should I take an omega-3 fatty acid pill? What is it about it? Wine has resveratrol; maybe I should take a resveratrol supplement. No. I just say eat it. Eat these foods. We all like them, they are -- it's a plant-based diet with high quality animal protein, but it's not the main event, going back to that first slide, which was the two-thirds on your plate vegetables and the one-third animal protein. The Mediterranean diet is a diet that almost everybody agrees. And guess what? There is fat in it. There is fat from the nuts, there's fat from the olive oil, and you'll see coming up how important olive oil is in some of the drugs that many of you are on right now.

Okay, so a big part of the Mediterranean diet is olive oil, and we know that it's an unsaturated fat, and we know it has so many health benefits. But when I found out that it actually enhances the action of Herceptin and it actually decreases Herceptin resistance, and some people do become resistant to drugs, unfortunately, olive oil helps the body to stay sensitive to the action of this drug, which to me is incredible. So, anyone who takes Herceptin and sees me knows that you have to have your olive oil. And it doesn't have to be expensive, but it really should be unrefined. It doesn't have to be the \$30 bottle, okay? So, that is something that -- and it also potentiates Taxol, and Herceptin and some aromatase inhibitors. So, I thought that was a really good thing to know about, and here is some of the data that you can see. So, very powerful of the Mediterranean diet. People like eating it. I know I do. I cook with it.

And then we also talked about estrogen, and that's another part of that tumor microenvironment that we were talking about before, how cells talk to each other. And, again, we want to talk nicely to our cells. We don't want them to go divide and mutate; we want them to pay attention and divide as they're supposed to, and be well behaved. And estrogen is one of those parts of the microenvironment. It's one of the hormones that can, as you know, fuel tumor growth. Well, there are foods that, besides drugs like Tamoxifen and aromatase inhibitors, there are foods that can actually convert the active form of estrogen, estradiol, to a less active form, which is 2-estradiol, which is turmeric, chili pepper, garlic, green tea, ginger, tomatoes and grapes. And you'll see that this list overlaps with so many of the other lists that we're going to go through tonight, that it would be so clear to me as a patient to just -- why don't I just eat these foods? This seems to me to be such a delicious way to improve my health.

And then the other part is that broccoli sprouts and red cabbage target cancer stem cells. Now, there was also a recent study that came out that showed that there is a mechanism that tumors can be used to

recruit stem cells from bone and convert them into cancer-associated fibroblasts that facilitate tumor progression. So, by eating broccoli sprouts and red cabbage, you can target those cancer stem cells, and that's pretty incredible. So, get the red cabbage, wash it, cut it up, and make it easy for yourself. Next time you make a salad, throw it on top. Broccoli sprouts, cauliflower -- the whole family, but these are the ones I highlighted that are specifically potent, but enjoy them all. Have a different one every day. Drink it with green tea. Ginger also helps the nausea. It is anti-inflammatory. Nature is incredible. Tomatoes, you're going to see in a little while, we're going to get to angiogenesis, which is right now vasculature, another part of the tumor microenvironment.

How does cancer spread? Well it needs -- any living thing needs a network, right? So, tumors have the power to stimulate the growth of new blood vessels, and this provides convincing evidence that tumorigenesis could not proceed without active cooperation from nonmalignant cells. Again, it's communication and cooperation. So, you can actually eat foods that you probably like, they're on this list. Again, there is a lot of overlap -- the grapes and the dark berries. You'll notice green tea. I would add to this green tea with jasmine. That has an even more potent effect than the green tea alone and the jasmine alone. You put them together and new blood vessels are basically choked off. And I saw this in a lab, I couldn't believe what I was seeing. This is basically what Avastin does, by the way. If anyone is on Avastin, I know it used to be approved for breast cancer and then the FDA rescinded that approval based on not showing enough of its survival benefit over the standard of care. There were a lot of women that felt that this was something that was really helpful for them in their health and were very upset about the FDA's ruling. What I tell them is eat these foods and, again, you don't get the nosebleeds from Avastin and you don't have any of the other side effects. And again, what's in there -- olive oil, my favorite oil, and garlic, and all of these other healthy foods that have the red pigment and orange pigment, and they taste good.

What don't I want you to have is copper in your diet, because that is the opposite of antiangiogenic; that's angiogenic that helps blood vessels grow and, again, support that network of the tumor. So, if you have metastatic disease, this is something you do not -- and nobody wants copper in their diet that has had a diagnosis or has advanced disease, because this is, again, going to support that vasculature, and you don't need that. So, copper is bound to ceruloplasmin and, again, it is an angiogenic switch for certain cytokines that are listed there. That is interleukin-1, tumor necrosis factor, and VEGF, which is what Avastin targets and down-regulates.

There are -- where is copper? By the way, copper also leads to zinc -- increased copper can lead to a zinc deficiency, and zinc is something that you want in your diet. You don't necessarily need to supplement that, but zinc competes with copper. So, increased copper will antagonize zinc status, and that's not a good thing. So, here are some high sources of copper. And the biggest one is multivitamins, and that's a big problem. I don't think that in well-nourished populations we need multivitamins. They have a lot in that little pill. Except the things that you need the most, like the magnesium -- there is never enough magnesium. There is never enough of the things we don't get enough of in our diet. But there is so much of the copper, the B1, the vitamin A. Again, easy things to get.

Lower copper foods, don't worry about these as much. There's trace amounts in there. You do need some copper in your diet, but you don't need anything close to 50% of the RDA of that nutrient.

Okay, sugar, these are myths, okay, and I'm sure you've all heard them. What is the truth about sugar and cancer? Basically, sugar feeds cancer the way it feeds every other cell in the body. And the body can also turn anything into glucose because it's a critical chemical, so the body, the human body has found a way to turn anything into glucose, because humans didn't always have food available to us. So, we had to -- to survive, we had to be able to be very good and resourceful at turning other fuel sources into glucose. But we don't want to give ourselves the simple sugars and the refined carbohydrates, because, again insulin is

part of that microenvironment that can be used as a growth factor. So, we want to keep things quiet. We don't need the insulin, we don't need the extra estrogen. It's, again, one of those growth factors.

Low glycemic carbohydrates, like whole grains, legumes, whole vegetables, all these that are listed are associated with lower risk of the metabolic syndrome and cancer. They are nutrient-dense and it's not just the carbohydrates that are in them; they have minerals, they have that magnesium that I was talking about. So, they are something that you -- you don't want to go crazy with them, but you want to have the quinoa, the brown rice. Cereals are a big trap. I would be careful with cereals because to me most of them are candy, but it depends on the person and what their habits are. But, again, if your energy is highest in the morning and it diminishes as the day goes by with your appetite, you don't want to have cereal be your only meal of the day, okay? And then avoiding sugar-sweetened beverages to me are the worst of all possible sugars, because they are liquid and we are liquid, so the uptake is very fast. The opposite of that is the good liquids, so the healthy soups and the broths and the healthy drinks and the green tea, also taken up very quickly, because they're good liquids. And the worst -- the big thing to avoid is sucrose and high fructose corn syrup, and please avoid the artificial sweeteners, too. They do confuse the body. They tend to increase preference for sweet foods, and every five years we find out that the one we've been using for the last five years causes cancer in rats. So, let's just avoid them altogether.

Alkaline diet, that has become another very trendy thing. People keep asking about, should I have alkaline water? I think I'm too acidic, I can't have an orange. You know, again, the body -- blood pH is so tightly regulated. The blood has to be between 7.34 and 7.44. It's that tight of a range. If you went below 7.1, you would have acidosis, and if you went above 7.5, you would have alkalosis, and that is serious. But the body has many, many systems to maintain homeostasis. So, it's doing it for you. You don't want to overwhelm the buffer systems, but basically you don't really have to worry about it. Your urine is going to be more acidic than your blood. Obviously, it's a waste product. Your blood is the circulatory system of the body. Tissue acidity, however, can -- you know, cancer can cause, because it is a high turnover thing. It can cause waste which can be acidic, but a diet high in plants will naturally alkalize that tissue. So, that's why I also recommend a plant-based diet.

Going on to the fats. The fats are critical for the body. Just be very picky about the ones that you will bring into your body. You want the olive oil, as I mentioned; you want the cold water fish, flaxseeds and walnuts are excellent plant sources of omega-3. Even in some studies low fat dairy has been associated with good outcomes and cancer survival. We're not sure if it's because of the proteins, the amino acid mix, the calcium, or even the CLA, which is conjugated linoleic acid in other fat. But in any case, it is something that you don't have to be afraid of. Again, yogurt is way better than cheese, and that would be better than milk. There are many milk alternatives out there. Almond milk, I would encourage rice milk. I would not have soymilk, though. I'm not recommending that.

Trans fats are a fat that is a man-made fat. There is no place for them in the body. And, again, avoiding processed meats, which would be salami, hot dogs and bacon.

Coffee is fine, tea is fine. You don't have to be worried about your coffee. Coffee is -- even independent of the caffeine it's the chlorogenic acid, which has been associated with improved insulin resistance and potential anti-tumor effects. It's one of the big things people come to me and ask. They think they have to give up their coffee and start drinking green drinks, and that's simply not true. I would rather you drink a cup of coffee and have a whole fruit than juicing. Green tea has also been associated with a reduction in obesity and diabetes. It has potential chemo-protective activity. And, again, it is also an antiangiogenic agent, so you cannot go wrong with it.

I think we're finishing up here, but gluten is something that if you are sensitive to gluten, if you have celiac disease, you really need to eliminate it from your diet, but very few people have established celiac disease. If you think you have it, you can get tested. If you have non-celiac sensitivity, which many

people seem to have, you will know and you will see reduction of symptoms within a week of removing it. And the symptoms are usually bloating, gassiness, and frequent trips to the bathroom after having a meal with wheat in it. Most people know if they need to cut this out, but there is nothing wrong with -- don't fall into the gluten-free trap, however, which is the gluten-free brownies, gluten-free pancakes. A gluten-free diet should really be a plant-based diet.

And supplements, everyone's favorite subject. We don't have much time, but I just wanted to go through, if I stress nothing else, please don't supplement B vitamins unless you have a deficiency, and that would be a tested deficiency. And the reason is, and I know they're natural and I know people like -- they think they give them energy. But B1, B12 and folic acid, those are the specific ones that I don't want to see more than 100% of the RDA of these nutrients in your formulas. And that's another reason why multivitamins scare me, because many people are taking a multivitamin and a B-complex. And if I add up the numbers, they're getting more than a lactating woman would need, and they have just had a lump removed or a breast removed, and this is just something that is fertilizer. So, B1 is thiamine and it -- and in carbohydrate metabolism, cancer tissue uses a different kind of energy production, and thiamine is the first step necessary for that enzyme process. So, again, you don't need -- I saw a supplement in Trader Joe's that had 6,777% of the RDA of thiamine. And I wanted to go and tell the store manager, but I knew it would be a very long conversation. But you're not really helping anybody by selling a product that has that much unless you have a B1 deficiency. The only people I've ever seen that have a B1 deficiency are people that have eating disorders and they are deficient in everything.

B12 is a little different. B12 can easily, as we age, it is harder to absorb. So, if you think you have a deficiency, if you have tingling and numbness independent of the neuropathic pain and numbness associated with platin therapies and such, or the taxanes, ask your doctor to do a test. And it's easy to do that, a serum level. And if you're in the normal range, you really don't need to be supplementing it. Folic acid, I have seen almost nobody deficient in folic acid in well-nourished populations. And, again, this is another one that is -- B12 and folic acid are necessary for cell division. So, many of the chemotherapeutic agents actually attack DNA so that it has rapidly been dividing tissues. So, by supplementing these you are actually counteracting the efforts of your drug. So, please, again, even though they're natural, these are very potent.

Vitamin D is another one that is, it is fat soluble, so it can be stored, and where we live -- I live in the Northeast and I know that many of you do as well, it's hard to get in the fall and winter enough vitamin D from the sun. So, have your serum level checked. Have it checked twice a year. Have it checked in the summer and the winter. The level that we like is 35 to 45. That's a safe level. And if you do find yourself in the 20s or the teens, you can take a supplement. Make it D3, 1,000 to 2,000 is safe, depending on where you are, and you want to take that with a meal that contains some fat, because it's a fat soluble vitamin. Again, I talked about multivitamins.

Magnesium is a very common deficiency, especially with carboplatin and some of the other platins. It is easy to find in the diet; however, not if you have a refined diet of processed foods. But if you have a plant-based diet, such as the one I am discussing tonight, it's really not hard to find it. But it does tend to get dumped with vomiting, diarrhea, stress even. So, that is something that you might want to supplement, again, if you're having cramps in the bottom of your calves or just extreme fatigue, magnesium could be the cause.

Careful with vitamin C and E, especially high doses during treatment, because, again, they can actually preferentially fuel tumor growth. Omega-3s can be very helpful for people with cachectic weight loss, which is the muscle-wasting weight loss associated with a person even getting enough calories but not using the calories. And you see that a lot with advanced cancers.

Probiotic is always a good idea if someone, especially if you don't have an appendix, it would be important to take one. Or if you're going to chemotherapy or on any antibiotic therapies, probiotics are a good thing to take. And it's good to rotate your brands so you're getting different strains.

CoQ10 for anybody on Adriamycin, Herceptin, because they can be toxic to the heart, but you don't have to be on it for the rest of your life, just for the course of therapy.

And I think I've covered just about everything I wanted to say. I also wanted to acknowledge Dr. Barry Boyd, my colleague and mentor, who has been such an inspiration to me and a source of a lot of my knowledge and research has been driven by him. And I get to talk about all these things that nobody else ever wants to talk about with me, so I thank him. And I thank Robin.

Robin Perlmutter: Thank you, Francine. This is really wonderful and plenty of information to take in. And I hope now we can now we can --

Caller # 1: Thank you for a great evening. What about coconut oil?

Francine Blinten: I like coconut oil a lot, and it is actually -- it's a saturated fat, so a lot of people are confused about that, but it is a short chain saturated fat. So, it actually gets used for fuel. It is fuel for the gut. It doesn't usually get stored. It's not the kind of fat that would make someone gain weight. Again, it is a fat that always has more calories, but it's a good one to use for baking, because it can withstand high heat without destabilizing. And coconut is also good if anyone has thyroid issues. It's very good for the thyroid gland. And it's also very good for people who have metabolic syndrome. So, between olive oil and coconut oil, those would be my two top choices. Oh, that should absolutely be unrefined, by the way.

Caller # 1: Okay, thank you.

Robin Perlmutter: *[Robin Perlmutter reads a question from the chat].* Okay. We have a question from a woman in the chat, Francine. She is asking what about bottled water and storing food in plastic containers?

Francine Blinten: Okay. Bottled water, first of all, what I would do is get a water filter. You don't have to spend a lot of money on it. I use a Brita. And I would avoid using hot water bottles for water and especially reusing them and leaving them in your car, because they can get hot, and you don't need BPA in addition to all the other chemicals we have out there. But, again, you need to be hydrated, that's the most important thing. So, you always have to think about what's the risk of being dehydrated, if that's the only thing available. I do drink from water bottles if I have to. And then the other thing you asked was about -- oh, plastic containers.

Robin Perlmutter: Yes, storing food in plastic containers.

Francine Blinten: Storing food. If you have glass, that would be better. If you have to store them in plastics, do so. I mean, I have both, but don't heat up food in the microwave in plastic. That would be my recommendation.

Robin Perlmutter: *[Robin Perlmutter reads a question from the chat].* And another woman is asking in the chat, is eating foods in particular combinations healthful?

Francine Blinten: Yes. I would always -- one specific thing, carbohydrates should really not be eaten alone. So, any starch, like toast or cereal or pasta, always have them with some fat or with some protein, and that lowers the glycemic response and insulin release. It's always about the insulin, right? So, a bad thing to have would be cereal and toast for breakfast. A better thing would be to have the toast with peanut butter or almond butter. And if you're having pasta, and people always have that question about how much -- do I have to avoid pasta? Isn't that part of the Mediterranean diet? Well, the way it's supposed to be is a very small

portion of pasta with the vegetables being the main event, or the protein being the main event, right? So, then you're balancing out and you're not going to get that huge spike in sugar with the accompanying insulin that has to chase the sugar back into the cells, and that up and down, up and down, is what makes cravings and it's what causes inflammation.

Robin Perlmutter: *[Robin Perlmutter reads a question from the chat].* Okay, thank you. And we have another woman in the chat asking, do you recommend tofu and soy? I wonder since you mentioned no soymilk, and I'm wondering about the estrogen level.

Francine Blinten: Yeah, if you have an estrogen-sensitive disease or hormone-sensitive disease, there are two camps. Some people say it actually is protective and some people say it can fuel tumor growth. What we have finally agreed to, my colleagues and I, is not processed soy. So, soybeans, if they're not GMO, of course. But in Asia, for instance, they have low levels of breast cancer, but within one or two generations of coming to this country, they catch right up with us. Welcome to America. So, is it that their habits change? We don't know, but I would say it's safe to have the tofu if it's not processed, but you don't want to have soy bologna, soy cheese, and soymilk. I don't think it's going to help serve the cause. But there are so many milk alternatives besides that.

Robin Perlmutter: Thanks. (Inaudible)

Caller # 2: Yes, I do. I'd like to know if there are any special diet recommendations for someone undergoing radiation treatment.

Francine Blinten: Yes. It depends on where the radiation is directed.

Caller # 2: It's breast.

Francine Blinten: Yes. So, to the breast, a lot of people get reflux, just because it's really -- as targeted as it is, a lot of people get reflux. Not everybody does, but that's one thing that can happen.

Caller # 2: Yeah, actually, I have had some episodes of that.

Francine Blinten: Okay. So, definitely soda really can make it worse. Anything carbonated. Even club soda. Avoid it when you're getting reflux -- I'm sorry, when you're getting radiation. The thing with radiation is -- is it the stereotactic ration or the six-week, five days on, two days --

Caller # 2: No, this is the shorter program.

Francine Blinten: Okay. So, usually there is a cumulative effect towards the end of the course. People usually feel fine in the beginning and then it kind of hits them and they get -- sometimes their balance is off, sometimes they're just incredibly fatigued. So, again, it's temporary. One thing you might want to check, while you're going through radiation, you are stimulating inflammation, and that's okay. You don't want to -- people want to get this stuff out of them as quick as possible, but 10 days after you're done it should be out of your body, and then you might want to take some melatonin. Not for sleeping, just a very low dose, 3 milligrams, because it can offset some of that radiation, some of the inflammation from the radiation.

Caller # 2: So, 3 milligrams per day?

Francine Blinten: Yeah, at night. And, again, it's not for sleeping, because that's not enough for sleep. But then you also want to protect your skin, because sometimes people can get a very tight, like almost cardboard feeling in the breast area. So, you can put Calendula Cream there.

Caller # 2: Okay.

Francine Blinten: Not the gel, cream.

Caller # 2: The cream, okay.

Francine Blinten: Yeah. Every day that you're getting the treatment and on the days off, too.

Caller # 2: Okay. And food-wise, diet-wise?

Francine Blinten: The Mediterranean diet would be -- and no supplements during radiation.

Caller # 2: Yeah, they told me to cut all that out. Okay, thank you very much.

Robin Perlmutter: Questions?

Caller # 3: I do.

Robin Perlmutter: Okay, go ahead.

Caller # 3: Okay. You mentioned Jasmine tea, and in my research I bought Sencha and Matcha. Is Jasmine better than those two?

Francine Blinten: No. It's combined -- the best is the Sencha and the Jasmine, but when they're combined they have an even more synergistic effect with down-regulating angiogenesis, so you want to have both.

Caller # 3: Okay. What about Beta Glucan?

Francine Blinten: Beta --

Caller # 3: Glucan?

Francine Blinten: Beta Glucan, I don't know what that is.

Caller # 3: Okay. All right.

Francine Blinten: Do you know what it is? Can you tell me what class it is?

Caller # 3: It's called Beta Glucan 1-3. There are a lot of articles about ovarian cancer. I'm taking it, for whatever it's worth.

Francine Blinten: Who recommended -- I mean, you just -- the first thing, when I always check something that I'm not familiar with, I want to make sure it's not, first of all, what drug am I getting? Is it contraindicated with that drug? How does it get detoxified in the body? So, the reason that a lot of things like St. John's wort is a very reactive kind of -- it's very good for sleep but it gets detoxified by the same pathway that many of the taxanes do. And so that's a no-no. Sometimes they basically have no effect on the drug, so then I would say if it makes you feel better, if you think it's having a positive effect, that's fine. But (a) it has to be safe and it can't -- sometimes certain supplements and certain plants are very powerful and they will cause the active ingredient of a drug to stay in the body longer. And that's harder for the liver to break down and to detoxify. So, you don't want to tax organs anymore, but I think this sounds like something that is a plant sterol that you're describing.

- Caller # 3:** I know it's in mushrooms and it's in oatmeal.
- Francine Blinten:** Okay.
- Caller # 3:** Specifically, I've read a lot of studies on PubMed and this and that about Beta Glucan eliminating ovarian tumors.
- Francine Blinten:** Oh, wow. So, that sounds worth looking into. So, I'll have to take a look at it.
- Caller # 3:** Okay. And one other quick question. Dr. -- I notice that the chart that you put up, the blue chart with the foods was taken from Dr. William Lee's. Would you recommend to everyone who is listening to just watch his video? Because to me it's amazing.
- Francine Blinten:** It is. I really do. I mean, I could keep you guys watching videos until next Sunday.
- Caller # 3:** But that's my favorite video, because he talks about angiogenesis.
- Francine Blinten:** It is. And Robin and I have talked about this, about the fact that if cancer can't get bigger than the tip of a pen, you know, the point of your pen without a blood supply, and there are foods that you can eat that down-regulate the factors that would cause that blood supply. And they are foods that most people like, I mean, I can't see why you wouldn't do that. I don't have cancer and I eat those foods all the time, and I like them even better now because I know that they're serving the cause. So, yeah, I did get that, and I think I did credit him, didn't I?
- Robin Perlmutter:** Can you go back to that slide, Francine, so people can take down that information if they'd like? I mean, it will be made available later.
- Francine Blinten:** Yeah, source: Angiogenesis Foundation. Now, one thing I would say, it's William Li, L-I, and I think he is at MD Anderson. I'm pretty sure he's at MD Anderson.
- Caller # 3:** Well, the name of the video on YouTube is Can We Eat to Starve Cancer? And if anybody clicks that on YouTube they'll get that. It's about 20 minutes long. It's great.
- Francine Blinten:** It's really worth looking at. And then somebody asked this question, wrote in about why is height associated with ovarian cancer, and it said it's more cells. Cancer is a disease of cells, so the taller you are and the larger you are, and that's why I said you can't control your height but you can -- weight is something that we can control. It's not easy, but we can do it. Just less sites for carcinogenesis. And that's why muscle is so important, too, because I always tell women that are tall, being tall is also protective against heart disease, by the way. So, it's protective against heart disease; it's a bad thing for cancer. I'm tall. You know, I am tall and there is nothing I can do about that. But the amount of the body composition, so the more muscle you have, the less site for carcinogenesis. You notice cancer doesn't go to muscle, right? It goes to epithelial tissue. So, you almost never hear of cancer of the heart, right? The heart is a muscle, so the more lean tissue you have, the better you are. And I'm not saying this about looking good; I'm talking about from the inside.
- (Inaudible) hormones with diet and exercise and those foods that modulate estrogen. Eating the foods that down-regulate angiogenesis, controlling the estrogen levels, exercising. All of this crosstalk. Wouldn't you love to hear what they're saying? What are they saying to each other? And why aren't they playing by the rules? That's something, you know, normal cells don't leave their home and go to another site. It's just not done. A liver cell knows it belongs in the liver and a bone cell knows it belongs in the

bone. But when a breast cell or an ovarian cell take a ride on the circulation system and go somewhere else. That's breaking all the rules. Again, how does it do it? It needs a blood supply.

Caller # 4: May I ask a question about grilled foods, you know, like an outdoor grill? Some people say that that is not safe and has carcinogens. I don't know if that's accurate or not.

Francine Blinten: Yeah, actually, the HCA, the heterocyclic amines are usually present in meat that is grilled. And the problem is, again, it's the high flame with the meat that is charred, you know, very charred on the outside and undercooked in the middle. That combination is especially, we have found, associated with colon cancers. But I always tell cancer patients, avoid that if you can. It's really not the best way to cook -- you know, broiling, steaming, those are much safer, poaching, much safer. Don't fry, whatever you do. That is probably worse than grilling. But if you must grill, if it's Fourth of July and you're at a barbeque and that's the only thing, the meat should be marinated. If you're going to have -- marinating tends to down-regulate those carcinogens.

Robin Perlmutter: *[Robin Perlmutter reads a question from the chat].* We have a couple of questions in the chat that I just want to address. We only have a minute or two left. One woman is asking about what was -- how do you feel about packaged but all natural oatmeal for breakfast?

Francine Blinten: That's fine. It's a whole grain.

Robin Perlmutter: Okay, great.

Francine Blinten: Just don't add sugar to it, brown sugar. People like to do all sorts of weird things to oatmeal. Cinnamon lowers blood sugar. Excellent to put in the water before you add the oatmeal. The instant ones are good because they're fast. You can put chopped apples in there and get a serving of fruit in there. You can add almond milk to it. I make a baked oatmeal that is delicious. I'd be happy to send the recipe to Robin for her to distribute. Or you can email me. You have my email on the last slide. I'll go back to that.

Robin Perlmutter: *[Robin Perlmutter reads a question from the chat].* We have a woman asking, what was your magic potion to remove pesticides from meat?

Francine Blinten: I don't have a magic potion to remove them, because it's unfortunately the animals, what they eat is the problem. So, when they eat corn, because we have so much corn, we have an over-production of corn, and the corn farmers are subsidizing. Don't get me started. So, there are animals that want to be eating grass, are eating corn and grains, and so we're eating now an animal that has omega-6s in them. And what we need is more omega-3s, right? Our ancestors had many more -- there was a much closer proportion of 3 to 6. Now it's harder to get 3. But eating a grass-fed animal that is really grass-fed, right? That is free range, like in Brazil, for instance, they're not even allowed to feed them corn; they're only allowed to be grass-fed. Those are omega-3s, so you're eating a steak but you're getting an omega-3 fat. So, there is no magic potion, unfortunately. Again, have a relationship with the butcher, with the person in the meat counter and just say, you know, I'm really very concerned about this. And it is expensive, unfortunately. It is more expensive to eat well-raised animals, but just get a little bit and have more plants and have legumes. Beans are a very good source of protein. They lower blood sugar. They're your multivitamin but without the copper. They also clear cholesterol, the red kidney beans do. Lentils are an excellent -- some people can't tolerate some of those gassy beans, they feel like they're very gassy. That doesn't seem to be the issue with some, but some people experience that. Lentils tend to be very well tolerated.

- Robin Perlmutter:** *[Robin Perlmutter reads a question from the chat].* Someone asked about bone broth and collagen.
- Francine Blinten:** (Inaudible) Again, you don't have to spend a lot of money. There are people that package it and sell it. Make it yourself. Just make sure it came from an animal that was well raised. You cook it in water, boiling water with vegetables, especially the cruciferous vegetables, because now we all know that they are our friends. And then you want to squeeze a little bit of lemon at the end to demineralize the bone, and then you're getting the matrix. You're getting the collagen, you're getting the magnesium, you're getting the calcium.
- Robin Perlmutter:** *[Robin Perlmutter reads a question from the chat].* Okay, and quickly, a woman is asking about edamame and soy sauce.
- Francine Blinten:** Yeah, as far as soy goes, you want it as close to its original form as possible. So, the bean and the bean curd are fine. And I know there is a lot of conflicting information about soy, because every time I read an article, again, sometimes I change my mind. But for prostate cancer, for breast and ovarian cancer, any hormone-sensitive tissue, I say just don't get the soy snacks. Again, the curd is fine, miso is fine.
- Robin Perlmutter:** *[Robin Perlmutter reads a question from the chat].* And speaking of snacks, one woman is writing, what can she do to substitute the sweet-salty craving in terms of snack food?
- Francine Blinten:** First of all, when somebody is craving, craving, I have to think if you're craving sweet, are you getting enough vitamin C? The reason is because vitamin C and glucose are very similar, and humans used to be able to make their own vitamin C. It was something we made in the body from glucose. It's very similar. But then we mutated and chimps can make their own, but we can't. So, if somebody is craving a lot of sugar, make sure you're getting enough vitamin C. That would be broccoli, tomatoes, bell peppers, citrus, berries, all those foods on the angiogenic list. And if you're craving a lot of salt, then I wonder if you're getting enough potassium, and that would be the yellow-orange fruits, sweet potatoes, the cantaloupe, potassium from bananas and such. So, then if that's all ruled out and you are getting all those and you just want something to crunch, I always tell people, make kale chips. They're so good. You just roast them on a high heat. They shrivel up. You can salt them; you can put your seasonings on them. You can do that with any vegetable. If you want to get some popcorn and throw it into a trail mix, that's sort of satisfying. You can pick the kind of nuts you like. In my house we like almonds and walnuts. I'll throw in some popcorn and I'll throw in some coconut flakes. And if you want to throw in some dark chocolate in there, too. I mean, nobody said anything about the dark chocolate that was in the slide. Usually that's the first thing everybody brings up. That's the one everybody remembers, the dark chocolate. Again, it comes from the cocoa bean. So, again, but you don't to process -- again, a little bit of dark chocolate twice a week is not going to kill anybody.
- Robin Perlmutter:** Okay. Well, thank you so much, folks. We're going to have to wrap it up. Like I said, this is going to be made available in about four to six weeks on our website. I just want to thank Francine. You did a wonderful job, and thank you for your passion, dedication and commitment, on behalf of the community. And thank you all for coming out tonight. Have a good night, everyone.
- Francine Blinten:** Well, you were a great audience. Very, very well informed. I even heard of something I didn't know -- the Beta Glucan. Thank you.