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**Voiceover:** The Cancer Assist Show, hosted by Dr. Bill Evans and brought to you by the Cancer Assistance Program - Help when you really need it.

**Dr. Bill Evans:** Hello, I'm Dr. Bill Evans, professor emeritus in the department of oncology at McMaster University. You're listening to the Cancer Assistance Program podcast from Hamilton, Ontario, Canada. This podcast is meant to provide helpful information about the current management of cancer for patients and family members who have recently received the diagnosis of cancer. It's also meant to help inform the general public about current practices in the treatment of cancer and supportive care and the progress that's being made against cancer.

Before I launch into today's discussion about nutrition in cancer, I do want to say a few things about the Cancer Assistance Program itself. The program which we call CAP for short was founded by volunteers in Hamilton to provide a variety of free services to cancer patients. Prior to the pandemic, CAP provided free rides to and from medical appointments for cancer patients particularly to the Cancer Center in Hamilton called the Juravinski Cancer Center. Since the pandemic, the ride program has been put on hold, and we've replaced it with a food delivery service to help patients through this challenging time and to reduce their need to go out into public places where they might be at greater risk of picking up the virus.

The Cancer Assistance Program also provides a number of personal care items such as nutritional supports, things like Ensure, Glucerna,and Boost. We're going to be talking about those in today's program. Also, provides incontinence supplies and head coverings and importantly, it provides loan of many devices and pieces of equipment like wheelchairs, ambulators, commode chairs, various things to help people manage more safely in their homes.

All of CAP services are provided free of charge so that the Cancer Assistance Program, which doesn't get any funds from government, must raise funds through special events, which is a little hard to do during the pandemic, or from donations from individuals, such as those of you listening. If it moves you, you enjoy this program, maybe you go on to the CAP website and consider making a donation.

Let's dive into it. Today we're focusing on nutrition. I have to tell you a secret, doctors know just about nothing about nutrition. It's a very good thing that I have here with me, well, not really, she's in Montreal, Janna Boloten. Janna is a certified nutritionist. She graduated with a Bachelor of Science in Dietetics and Human Nutrition in 2011, from McGill University. She has focused on adult nutritional care more recently.

During her early work experience, she worked at the Jewish General Hospital and worked with patients both in the outpatient department and on the wards. She's well familiar with providing care, and particularly, nutritional support to cancer patients. Welcome, Janna. It's great to have you here. I really need an expert to help me through all of this issue about nutritional support for cancer patients.

**Janna:** Thank you so much, Dr. Evans. It's great to be here.

**Dr. Evans:** A great place to start is the fact that, first of all, one in two of us can expect to get cancer at some time in our lifetime. As an oncologist, I know that not infrequently, weight loss is one of the first things a person may notice is wrong with their body. That may be the first clue that they've got cancer. A good place to maybe start is what causes patients to lose weight when they have a diagnosis of cancer?

**Janna:** Sure, and absolutely, that is definitely one of the first things that appears when we see people presenting with symptoms who have cancer. There are many factors that contribute to that weight loss. First, there's the, I guess, physiological effects of the cancer itself and having the tumor present really increases a person's metabolism and metabolic requirements, so to speak. Their bodies need more and are basically working harder to fight the disease and have increased calorie needs and increased protein needs. That's coupled with the fact that they're probably not eating more.

They don't necessarily feel hungry or just because they have that higher metabolism. In fact, they're probably less hungry. They're stressed and they also might be experiencing other symptoms like stomach pains, body aches and pains that can also take away their desire to eat. That combination is really what leads to weight loss. Very often the weight that's being lost is actually their lean mass or what we call muscle mass. That can have its own set of consequences as well.

**Dr. Evans:** Sometimes people's tastes changes even with the early phases of cancer even before doctors start treating them with drugs and things that also interfere with taste and smell.

**Janna:** Yes, that's another thing. Taste and smell are-- Well, taste is, of course, so important in the pleasure of eating and in the eating experience, but smell as well. Once those changes start, foods that were previously favorite foods are very well enjoyed can become off-putting to people with cancer. Once treatment starts, taste and smell can be further compromised. Foods don't taste the way that they used to and this really contributes to people's lack of desire to eat the way that they once did.

**Dr. Evans:** I guess it's important to point out that not all cancers, early on anyway, are associated with weight loss. For example, breast cancer and colon cancer isn't particularly associated with weight loss, whereas lung cancer and particularly pancreatic cancer, these are cancers that really do change the body metabolism. Weight loss is almost a signature for something like pancreatic cancer. There are things about what the tumor is doing and substances it's producing, that are changing, as you said, the metabolism so that the metabolic rate is changing, but also, interfering with other body processes about how you manage the nutrients you're taking in so that some of these cancers are really associated with weight loss, whereas others not so much.

Of course, there's treatment. Once you get into treatment then a whole lot of factors come into play that can impact on your nutritional intake. Let's take surgery, for example. You have a cancer in the head-neck area or in the swallowing tube or upper gastrointestinal tract, that could easily prevent you from eating just because of the mechanics of eating are changed or the difficulty of swallowing. Certainly, when we provide things like radiation treatment and systemic therapies like chemotherapy and biotherapy, and so on, they have a host of the impacts on our digestion, how we feel, when we feel nauseated, and so on. I'm sure you've seen all this when you were working in the hospital.

**Janna:** Yes, absolutely. I think you said something that really helps to explain the characteristic of weight loss. That's really where the cancer is located, right? If it's in a part of the body that's directly linked to the digestive system like the pancreas, you'll see a lot more earlier weight loss versus in a situation like breast cancer where the breast area is not directly linked to digestion, the weight loss could come as a result of the symptoms that come with the treatment for that cancer. I think, either way, very often it does happen that one's ability to eat is often compromised once they're diagnosed and going through cancer treatment, whether it's chemotherapy or radiation, or, of course, surgery or all of the above.

This difficulty eating can actually become quite severe and lead to what we know as malnutrition and what dietitians now diagnosed as malnutrition. We know that up to 50% of people living with cancer can become malnourished. I guess in Canada people don't really think of malnutrition is something that we see here but it is a true condition and it's a condition that can be treated just like other medical conditions. There are things you can do, interventions that have been proven effective, to help combat the malnutrition and reduce that deterioration in body weight and lean mass and loss of nutrients. By doing those things, we know that you can help to improve the treatment outcomes and really compliment the overall medical therapy that patients are receiving.

**Dr. Evans:** There's malnutrition and then there's something else doctors often referred to and may mention to their patients, a medical word called cachexia. Can you just describe the difference between the malnutrition malnourished state and the cachectic state so we could understand that?

**Janna:** That's a great question. Malnutrition really refers to the overall imbalance of nutrients versus a person's requirements. Nutrients include things like protein, vitamins, and minerals, and also, calories, which are every food provides calories. It's an important nutrient. It's our source of energy. Malnutrition is that imbalance, meaning you can have over nutrition, meaning, more nutrients than your body requires, and that results in excess, which has its own consequences.

You could also have undernutrition, which is most typically what we see in hospitalized patients, particularly in cancer patients. That's when a person's food and drink intake is not sufficient to meet their body's requirements. That's called malnutrition. The symptoms that result from malnutrition could be symptoms like nutrient deficiencies, you can have things like brittle nails, frail bones, and you can have something called cachexia.

Cachexia is that state of muscle wasting that can result due to the presence of disease like cancer, which poses those increased stressors on the body, and that increased inflammation and metabolic stress. This will lead to cachexia which is the loss of muscle. Then, of course, if you're also having inadequate nutritional intake that further exacerbates the cachexia. Does that explain? They go hand in hand malnutrition and cachexia. Cachexia can result from or can be worsened by malnutrition.

**Dr. Evans:** I see it as a continuum. You can have malnutrition, from which you can recover, and which is partly what nutritional support and help of cancer patients aims to do. From my reading, I get the notion that cachexia is at the extreme end, shall we say, and that it reaches a point where interventions are ineffective because there's certain body processes now at play that are essentially eating the body and there is nothing we can do to reverse that process. Is that right?

**Janna:** You can try to feed it as much as possible. Certainly, once you've identified that a person is truly cachectic to a certain degree, the clinical dietitian would be able to calculate based on many different factors that are going on a higher calorie requirement and try to provide that level of calories. It might be triple or quadruple what a healthy individual would require. You can try to feed that cachexia and provide those nutritional ingredients, those substrates, the calories, the protein to counter it, but you're right as well, depending on the progression of the disease and all of the factors that are taking place inside the body, and, of course, with medications, it can be challenging to really fight that cachexia.

Unless you do something like provide a feeding tube because getting the food in by mouth might not be possible but it really all depends on the severity of the disease and the progression that's going on. I would say it's possible to fight it or to at least attenuate it. It's a case by case.

**Dr. Evans:** There's another word we maybe should define for people too. It's the word anorexia because anorexia is also, unfortunately, a common feature of cancer, partly, due to the cancer itself, and probably substances it's releasing into the system that make one not interested in eating. You just don't have an appetite for food. Of course, we know our treatments do that. If you had radiation in a part of your body and many of our drugs make people less interested in eating, and hence, anorexic. If you're anorexic, and you need more calories and more protein, that's a hard thing to put together. It's very difficult.

That brings us to the role of dieticians because I can tell you, doctors really don't know how to put those two things together. Most of us don't even know what the right amount of protein, and minerals, and vitamins should be. Maybe that's a good place to start to. Let's assume I'm a 70-kilo man, [laughs] the ideal man, I wish, what would my energy requirements be, and my need for protein and other key nutritional elements be?

**Janna:** Are we assuming that you are someone who's now going through cancer treatment?

**Dr. Evans:** Well, let's assume I'm still healthy.

[laughter]

**Janna:** I have my calculator handy. Dieticians were really the experts-- Thank you for pointing this out. It's a great point of discussion. Dietitians are trained and specially-skilled to determine individualized nutrition requirements for calories, for protein, for vitamins and minerals based on life stage, based on lifestyle, based on goals, if you're someone who wants to increase their body mass, increase their muscle, if you're someone who wants to lose some body fat, or of course, if you're someone with a health condition and you want to simply stay as healthy as possible or stay as fit to fight that condition as possible. We would calculate requirements based on weight which you provided to me and also based on things like level of activity.

There's something called stress factors. A stress factor can be due to the presence of disease. Activity factors are taken into consideration as well. These are numbers that we learn in school. Of course, they have to be taken with a grain of salt in the real world, but there are rules of thumb to help us calculate. Let's use the example that you shared. A 70-kilogram man is your average example. We would usually go with something like 25 to 30 calories per kilo for maintaining health. That would bring you anywhere between 1,800 and 2,100 calories per day. That was using a rule of thumb equation, not the more sophisticated calculations that take into account your daily level of exercise, and so on, and so forth.

With all these different equations, they usually end up being within 200 calorie ballpark range. We usually stay in general, roughly 2,000 calories for a grown adult, and then those needs would vary, and usually be higher in the presence of a disease and cancer treatment, even if you're not exercising. Often, I think, probably, it might feel counterintuitive that when you're lying in bed, and when you're ill, it might seem you need less calories, but in fact, because of the illness you really need more calories and you need more protein. This is actually where it becomes challenging because of the anorexia, the loss of appetite, the drug, and treatment-related side effects.

I'm deviating a little bit but for an average size male adult, it would be somewhere in the 2,000 calorie range.

**Dr. Evans:** When I see a patient in the clinic, and I think maybe they'd benefit from seeing a registered dietician like yourself, go off to see you, maybe you can work through that example. What do you do? How do you assess a patient to determine what they should have? Then, what are you looking forward to try and get that level of nutrition into them? As you just said, we've been talking about the patients with anorexia or they maybe have some mechanical factors that makes it harder for small or various things that-- You want to get all of this nutrition in that keep them well, and yet, there are so many barriers that are blocking.

Maybe talk a bit about an encounter with a new cancer patient, say, he's a 70-year-old man, 65 kilos who's got lung cancer, as an example. I've sent them along to you to assess them their nutritional status and you're going to do certain things **[unintelligible 00:19:00]**

**Janna:** Yes. It's quite an involved process and we take into consideration so many different things about their physical state, their physiological state, also their social situation, and their mental health state. All of those things affect how someone is eating. It's really a very thorough interview process and discussion with the patient. It's always fantastic if there's somebody else present, a caregiver, a family member, a spouse. That helps a lot because very often when the person is living with others those others are helping with the food and can also often provide some more specific details on the questions that we're asking.

I would need to know everything from their most recent blood tests, I would take their present weight, I would ask them about how their weights changed in the recent weeks, and also, over the longer term to try to get as big a picture as possible of what do they usually look like, and is what I'm seeing right now, very different or similar. What is the level of change that this person has experienced? That will indicate to me the presence of malnutrition, the severity of that malnutrition, and the severity of the weight loss.

I would definitely have to do a lot of probing and a lot of uncovering to understand what's going on and where they are right now. That would help me in addition to their blood work, the level of inflammation that's inside their body, which their blood tests can tell us. Also, by looking at them, by looking at a person's face, by looking at their temples, beside their eyes and looking at their physical features, looking at their clavicle, you can see signs of nutritional status and you can see signs of malnutrition. Again, so that's something that dieticians are trained to do. They're trained to provide a full nutritional assessment before giving their recommendations to that patient.

When people with cancer are consulting a dietician, they can expect a very robust, very complete, and very customized, what we call, nutrition care plan. The recommendations that would come from the dietician-- Usually, the dietician would take the hour with the patient and the caregiver, ask a whole bunch of questions and then take some time to really analyze the information that they've gathered and interpret it before coming up with the proper recommendations. We really want to make sure that what we're telling somebody to do is going to be effective.

Now of course, off the bat, if a gentleman comes in and has started treatment for lung cancer and he's expressed, "Well, the last three or four weeks my appetite's been much lower than usual. I don't feel like eating the things I normally do. My pants are loose." I weigh him, he tells me, "Yes, that's low for me." I'm able to then give a fairly good estimate of the calories that he would need. I would probably do something like a quick rule of thumb, like I did for you, but then add on between 300 and 500 or 600 calories per day to try to counter the weight loss that he's described, even if it's just based on, "My pants are too big now," and I can see in his face, maybe some signs of muscle loss. I would recommend something like a higher calorie diet.

I wouldn't necessarily talk to the patient about numbers. I think that people living with cancer already have a lot of new information they need to process. I think really dieticians, what we'd like to do is provide visual examples or concrete examples of foods, meals, snacks without talking numbers. Just say, "Focus on these foods," and then we would be describing higher-calorie foods, talking about things like higher fat yogurts, cheese, soft cheeses if that's easier to chew and swallow, talking about things like ice cream.

Sometimes the things that we would suggest in the context of cancer care are not what people would expect a dietician to say, but there is that priority of increasing calories. We might suggest pouring like oils or vinegars or gravies over a lot of your foods, adding butter over your mashed potatoes, cooking with cream. Again, I'm naming high-calorie things to increase calories. Then really the protein is so important, just as important as calories as well, giving you examples of foods that provide really good, convenient sources of protein.

They can be plant-based like hummus, beans if that's something that the person can tolerate from a digestive standpoint, if not, we would talk more about, again, cheese, yogurt. Greek yogurts are known to be very high in protein. That's definitely a good source. Then of course, chicken fish meat. Those are great sources of protein as well.

We would spend time, we would spend about 45 minutes having an elaborate discussion with the patient, asking them what they like, asking them what their appetite's like, how much food are they eating in a sitting. If it's not a lot, we'll make recommendations accordingly. They would leave the appointment with a tip sheet, some quick instructions, but we would absolutely need to have a prompt follow up to see how it's going after a week's time, and then, really make tailored adjustments to our recommendations.

**Dr. Evans:** One of the things I used to see in the hospital is that patients would receive a tray of food with often a fair amount of food and just the amount of food presented to them was a turn off. They just couldn't face it. It was like seeing all that, and that became a barrier in and of itself. What do you suggest in those situations?

**Janna:** In situations where you're having a hospital stay and you just, you look at--

**Dr. Evans:** At home because maybe the spouse is preparing their favorite food and a lot of it, and they put it down in front of the husband, and then he says, "Oh, I can't begin to eat all of that."

**Janna:** It could be very hard for the caregiver to understand because it's your favorite food, it's your favorite meal. For someone who's, historically, had a really hearty appetite, the caregiver, it's hard to appreciate how off-putting that food might look. Those situations that's very common. Early satiety is actually one of the symptoms that we see in cancer patients. That really is a fancy way of saying gets quickly and more quick than usual.

In that type of situation, "the diet" that we recommend is called small frequent meals. A steak dinner with potatoes and veggies and a side salad, and a piece of steak is definitely not a small meal. A small meal could be simply a bowl of yogurt with some soft, some cut-up berries, sliced strawberries. That's a meal in a small frequent meal-type diet, whereas for someone who's healthy, that would just be considered like a quick snack.

Small frequent meals, it's really where you eat more often and evenly spread throughout the day. You'd have maybe just a few slices of steak and that's your meal. Maybe you have that with some water, another beverage, or just a few vegetables with- they could be cooked with a bit of sauce, or if you have the stomach for it, raw veggies and hummus, that's a meal. Spread throughout the day so that it accumulates and really represents your total daily intake of protein that you would require but really done so in a way that doesn't lead you to feel too full too quickly, it doesn't upset the stomach, and is spread out properly.

We also know from studies on body composition and muscle mass, that muscle synthesis is best when protein intake is distributed throughout the day, rather than concentrated at suppertime or at lunchtime or at any given point in the day. If people do have difficulty with larger meals and they are going towards more like grazing or snacking throughout the day with those smaller meals, at every point in time in those meals, there should be a protein source. That could be cheese and crackers. It could be a bowl of cereal where the milk is providing the protein. It could be yogurt with fruit. It could be just a half sandwich, a slice of bread with some tuna or chicken.

It could also be-- Oh, I had another idea in my mind and now it's escaping me. A smoothie, you can use smoothies, you can add things to the smoothie to increase the protein content there with yogurt and nut butters and protein powders. Every time you are having one of those small meals, protein should be included. Dietitians can certainly help with little tricks on sneaking protein in at every point throughout the day.

**Dr. Evans:** These are all the things you could talk to a patient and their caregiver about nutritional consultation. One thing you didn't mention, and I'm surprised actually, because-- I didn't say it during your introduction, but you work in Abbott Laboratories, in Abbott and others producing nutritional supplements. Where do they fit in and what are their potential benefit?

**Janna:** Nutritional supplements can really be helpful during any period of time where eating is a challenge. Cancer treatment is certainly one of those times. We would certainly like to try to optimize a person's ability to eat whole foods and real foods. This is the richest source of nutrients and the way of really ensuring that you get the most diet variety and all of the different vitamins and minerals. Of course, because eating can be so challenging, and then there's also the added challenge of actually getting groceries all the time, preparing those foods all the time, those things also add work.

Nutritional supplements are really designed to help with those times and they're complete balanced nutrition. They contain full range of vitamins and minerals. They contain all of the different macronutrients so that's protein and carbohydrates and fats. It's really all packaged together in a concentrated, ready to drink bottle so that really helps with the convenience of it. It goes down fairly easy. People with cancer take well to those types of nutritional drinks and can actually add them as part of their distributing the protein throughout the day, have that with some fruit or with their yogurt.

A lot of studies have been done to show the role of these types of nutritional supplements, a lot of clinical trials. There's really good scientific evidence behind the Ensure products and all of the Abbott nutrition products, that show that when they are used in conjunction with overall dietary therapy, through the guidance of a dietician to help with malnutrition, people who are using the supplements, in addition to their usual diet are getting higher levels of calorie and protein and vitamin and mineral intake versus people who aren't complimenting their diet.

What we see from a lot of the research is that people get closer to meeting their calorie requirements and their vitamin and mineral requirements when they're taking supplements, meaning the supplements are not replacing any of their other food. In fact, they're just adding and helping to increase total intake during a time when meeting your needs is difficult. I know there are some-- When I worked in the hospital, especially I heard this, I heard family members say, "We don't want him to fill up on Ensure because we want to save room for his lunch or his supper." We know from the research that when you take the supplements they usually don't replace other food. They're really taken in compliment, which is what they're intended to do, and that's what we see.

Maybe it's a question of providing it after a meal, so let them eat the meal, but then pour some of the supplement into a small cup so they just drink half of it at the end of their meal like a drink or a dessert, or leave it as a between meals. Adding it to the overall day can really help increase total nutrient intake and help fight that weight loss as well.

**Dr. Evans:** You’re hoping to take those nutrients and build muscle too, whereas, muscle cannot just be built passively by pouring nutrients into the body. One thing, I think, we don't put enough emphasis on the cancer world and maybe it's true elsewhere, is exercise, which is hard with you're going through treatment, with fatigue by having the disease, you're probably fatigued from going to and from the cancer center, et cetera, but I think it's terribly important also to emphasize the importance of getting some exercise. Taking in these nutrients, if you want to build up strength and stamina, lean body mass, muscle mass, you've got to be using the muscles, otherwise, they will simply waste away.

Lie in bed, have all these nutrients poured into you and expect you to get off the couch as a strong person, it just doesn't act that way.

**Janna:** Absolutely. I think also that exercise takes on a new meaning in the context of cancer care versus a healthy person living without any cancer. What I mean by that is it might feel like exercise needs to be something a little bit intense, rigorous where you break a sweat but for someone with cancer, exercise can simply be pacing around the home, walking up and down the stairs a couple of times. It's really movement and keeping mobile. We as dietitians can certainly enhance one's ability to exercise by providing the right nutrients but, I would say, that a physiotherapist and maybe a kinesiologist could really help with special exercise programs or physical activity programs that are really tailored to somebody who does have this overall sense of fatigue and who is more weak than usual.

I know for someone who gets newly diagnosed with cancer, but who was previously an active individual they might feel like they need to stay at that level of activity but really simple movements that can even be done from the bed where you're lifting your legs or you're simply standing up can actually contribute to just keeping the muscles working and keeping that mobility and that functionality that comes with the mobility. Again, physical therapist, kinesiologist would be the best people to address that.

**Dr. Evans:** Now we've been talking about nutritional supplements but we lump them all together. You actually have a series of different products that suit all the needs of patients. We have the patient who's diet that **[unintelligible 00:35:35]**, but also has cancer. We certainly see that and see people who have heart failure that have other problems. Maybe you just quickly describe some of the types of products so that you can better match the product to the need of the patient.

**Janna:** With the Ensure family of products, there are several different types of Ensure and they range in level of protein, also level of calories. In terms of protein we have, without getting into too many details because all of those details can be easily found on our ensure.ca website, but you have your Ensure regular, which contains about 9.4 grams of protein to be exact. Then we go all the way up until 20 grams of protein with something called Ensure Protein Max. Ensure Protein Max is a high calorie and high protein nutritional supplement. It packs a lot of punch I would say.

All of the Ensure products contain full range of vitamins and minerals. That stays consistent throughout, which is a really nice feature to have when the intake of other foods that are often the sources of those vitamins and minerals can be challenging. We have ensure products that contain fiber. We have Ensure products that don't contain fiber. It's really a question of that person's needs, that person's digestive ability. I would say with cancer, usually, there is that need for more calories and more protein as well so we would definitely want to go to something like Ensure Protein Max, which is our most recent Ensure products here in Canada.

It also contains a unique ingredient called HMB. HMB is something that's been studied initially in sports nutrition with athletes in the '90s who were trying to increase their muscle mass for simply bodybuilding purposes. The ingredient which comes from protein, it comes from an amino acid that's found in proteins, has been shown to really help reduce muscle protein breakdown and can even help promote muscle protein synthesis or muscle building. Ensure Protein Max is unique in the sense that it has the high calories, the high protein, and the ingredient HMB. I would say this would be something that can really help patients who are facing cachexia, who are facing malnutrition, anorexia, all of the things that we've discussed.

**Dr. Evans:** Great. Now somebody might ask, is there a risk that having all this nutrition is going to feed the cancer and maybe make things worse? I've actually heard that. What's the response to that?

**Janna:** It's a fair question. I mean food and nutrients feed cells, whether you have a disease, a chronic condition, nutrients feed yourself. That's the role of eating. When we eat, those foods get broken down into energy and that's what makes cells work. Now, our food, when someone has cancer, doesn't discriminate against which types of cells that it feeds. This idea that food feeds cancer cells, while foods provide us with energy that feed all cells there's no evidence, however, that eating in a certain way or following a specific diet, does anything to aggravate cancer cells specifically.

If anything, I would say, the negative effects of lacking food and the effects that has on muscle loss and overall energy and overall ability to fight the cancer or to fight the fight whatever's going on in your body, not eating is far more negative than nourishing yourself to be able to feed the body, help to support your muscle mass as best as possible, and essentially have the strength to fight the overall disease and actually withstand the treatment of that disease, because that can be very taxing as well. Like I said, I haven't come across any evidence that says these particular foods aggravate or contribute to the spread of cancer cells.

**Dr. Evans:** Good to hear. One of the biggest problems in society these days is just over nutrition, overeating and this results in obesity. I think we should probably just touch on that because it may not be so relevant to some of the people listening to the podcast, namely those who are coping with cancer now, but it may be relevant to those around them or spouse or family members and so on and the importance of trying to get to the appropriate body mass for your height and so on. Would you comment a little bit about how obesity contributes to the development of cancer cells?

**Janna:** Obesity definitely characterized by excess body weight often around the abdomen and the waist area, the middle of your body. This is where a lot of your vital organs are living. Having that extra bodyweight around the middle really most likely means that the person has a lot of visceral fat, fat that's actually surrounding your organs like the liver, your intestines, your pancreas. That layer of extra fat can really affect the function of those organs. It can also bring overall inflammation in the body. Often that inflammation is what can be associated with cancer.

There's also the idea of what's contributing to this obesity. What types of foods is the person consuming on a regular basis? How much, meaning, are they very nutritionally poor foods? In regular terms, junk foods, very sugary foods, very salty, greasy foods that don't have a lot of vitamins and minerals, that don't have fiber or protein. Those are your classic fast foods drive-thru. Eating a lot of those foods coupled with the fact that a person might be more or less sedentary, not making time for, let's say 30 minutes a day of exercise, that also contribute.

We see that when people exhibit those lifestyle habits, there's more of an association that cancer will develop. As well, we know that it might not be obesity but it might-- Well, it can be but it can also be the lack of good fruits and vegetables that are being consumed. Fruits and vegetables, everybody knows that they're healthy but I think the extent to which they actually serve us, serve our health is definitely underappreciated.

Fruits and vegetables are so rich in antioxidants. These bright colors that they have are because of these again, antioxidants, things like lycopene and things like, the fancy words, anthocyanins that would make blueberries blue. These nutrients are anti-inflammatory and they can fight any oxidative stress that happens inside the body that may come from, well, environmental factors, sun exposure, things like that, pollution.

Oftentimes when people have obesity, it's a result of a nutritionally poor diet, a diet that's lacking in fruits and vegetables, a diet that's lacking in vitamins and minerals and so they're missing out on important nutrients that may actually could have helped them fight that oxidative stress and fight the inflammation. It's a bit of a complicated answer but I think that with obesity, we're always learning more and more about what causes it and what obesity causes as a result.

I think my main message would be try to eat whole foods as much as possible. Definitely be mindful of the amount of food that you're eating, maintain a healthy body weight, exercise, fruits and vegetables, and overall healthy lifestyle.

**Dr. Evans:** I'm going to try and keep it simple particularly for people like me. I think one of the reasons that I find nutrition challenging and reading about it challenging is it is so multifactorial. There are so many things going on. It does make it somewhat more complicated, which is why we have dietitians to help us out to see our patients. I think one of the messages I would want to leave with anyone listening and if you got a **[unintelligible 00:45:27]** cancer patient is actually to be a bit assertive of asking for dietary consultation because it's not top of mind for most oncologists. I'm one so I can say that.

We're not thinking about nutrition as much as we're thinking about maybe the tumor, how far it's spread, is it getting better, is it getting worse, what's the right kind of drug, radiation to be used against it, that sort of thing? That's what we're fussing about in our minds, and we're thinking less of some of the other points in the person's life, including how they're eating, how much they're exercising, what's their emotional state. That's partly why we do this podcast is to heighten people's awareness of the importance of these other factors.

We will be talking about different cancers over time so that you'll hear about the latest new treatments for all of the common cancers. It is important to keep in mind that we are complex human beings. We need optimal nutrition, we need to maintain to be active, to keep our bodies healthy, we need to be healthy in our minds and spirit.

This has been really helpful. It's educated me **[unintelligible 00:46:45]** educating our listening audience here. Janna, any last-minute messages you want to leave with our listeners?

**Janna:** Well, I found it really interesting how you started. You said doctors typically or generally don't know very much about nutrition but yet, something that you do notice, and I think this is usually the doctor who makes this observation in patients with cancer, is the fact that we see some weight loss happening, depending on the type of cancer but you would see that right away. I think a great and a very helpful question to that observation to asking the patient is simply, how's your appetite been in the last few weeks? That can signal a clue for doctors that nutrition support should be warranted and that this patient would benefit from a consult with a registered dietitian.

I really appreciate-- It's wonderful to hear the acknowledgment of the role that a dietitian plays in cancer care. Thank you for that. It's been a pleasure to be able to offer this information. There's lots to share. I'm sure we can chat for hours about the topic, but I guess my parting word would be, for people who are living with cancer, asked about a dietitian. Ask if you can see one. Are there dietitians in the area? Google Search can help but the clinic that you're going to would probably be the best resource for that type of support. It can really help complement the overall therapy that you're going through.

**Dr. Evans:** Janna, I want to thank you again for chatting with me on our podcast. Janna Boloten is a nutrition science advisor at Abbott Laboratories doing adult nutrition and we've been talking about the supportive cancer patients today with me, Bill Evans. I hope you've enjoyed this podcast. We'll be doing another podcast next month, so look for it in your favorite source of podcasts.

Take care. Bye for now.

[music]

**Voiceover:** This has been the Cancer Assist Show brought to you by the Cancer Assistance Program.

**[00:49:01] [END OF AUDIO]**