Fuel for Optimal Care: The Role of Nutrition in Home Health Therapy

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- [Callista] Our presenter today is Dr. Patrick Berner. Dr. Berner is a physical therapist and a registered dietitian, a nutritionist, practicing in upstate South Carolina. He is one of only a few individuals in the country who holds this combination of credentials. Dr. Berner received his bachelor of science in dietetics from the University of Louisiana at Lafayette, his doctorate of physical therapy degree from the University of St. Augustine, and completed his dietetic internship through the University of Houston. His company, Fuel Physio, focuses on providing quality education, consulting, and coaching for general health and wellbeing of individuals, with the emphasis on human movement and nutrition, while also facilitating healthier work environments in communities. Dr. Berner is currently adjunct faculty for Anderson and Baylor Universities, the doctor of physical therapy programs there, where he provides content knowledge related to nutrition, digestion, metabolism, and general health promotion and wellbeing. He also currently sits on the steering committee for ABTA's counsel on prevention, health promotion, and wellness in physical therapy, and is an advocate for physical therapist's involvement in population health. Dr. Berner is known to be an engaging and experienced speaker on topics of health promotion and wellness and integrating nutrition and physical therapy practice, so we are so pleased to have you here with us today and part of our series on home health, and at this time I'm gonna turn the microphone over to you, Dr. Berner.

- [Patrick] Awesome, well thank you Callista. I can appreciate the invitation to be a part of this Friday series for the home health therapist. So I guess we'll go ahead and just kind of get started with things. Throughout the presentation you'll notice that I have little pauses just to kinda take some burning questions that you may have, so if time allows I'll kind of address a few before moving on to kinda the next section of material. So the leaning outcomes of today's course are as follows, as you see in front of you, and it's really to define the primary role of the six main nutrients, right, those food

substances that are classified as nutrients, being able to list at least four steps of an appropriate nutritional intervention, identify at least four of the criteria used in defining the presence of malnutrition. As you'll see kind of moving forward, that malnutrition especially with the population you see in home health is extremely important and to be aware of. Being able to accurately select two standardized screening tools used to identify malnutrition, or its risk of malnutrition, and then lastly, being able to identify at least three nutritional education pieces of material. So that's the learning outcomes. Really my goal overall is to provide you with enough information to really be dangerous within your practice and to provide your patients with enough information and to somehow just improve the quality of care overall. So what we'll start with first, and you'll kind of see this throughout the course, and it's a couple things that I see as some home health advantages. I present this material in a lot of different forms to a lot of different clinicians with various backgrounds, but what is unique is that those of you who work in the home health setting, you have a lot of advantages that a lot of other therapists do not have, so throughout the course I'll kind of be highlighting some of these very unique opportunities.

And what it really is, and as you may know as a home health therapist is, you do have an all-access pass to these people's lives because you are in their home, in their home environment where they are most comfortable, but it's important that you be respectful of that place as well. But just know because of that all-access pass you do have additional influence to facilitate their health behaviors, and with today specifically speaking to the health behavior of nutrition. Then as you'll see later on kind of the role of the caseworker, right, that being as we know physical therapists are sometimes one of the primary clinicians that you may see in the home, so because nutrition is of a great deal of importance with your older adults, it may be you as the therapist facilitating other points of contact that may be most beneficial for that patient to have. And then I've got a couple more as you'll see later on. So what I wanna start with is really just setting the table for what we're going to talk about, and in order to set the

table and really speak on nutrition I wanna just go through a basic introduction of what nutrition is and what it means, just to kinda give you a general background, because not every clinician has the same background and the same education, so I wanna just start with just the basics of nutrition. So what nutrition is, and this is a Webster Dictionary definition, is going to be "the act or process of nourishing "or being nourished," and that's specifically "the sum of processes "by which an animal or plant takes in "and utilizes food substances." So it not only includes how food nourishes you, but it's the biochemistry, the organic chemistry, and everything that sits behind metabolism. But what you'll notice here is that the science behind it will affect the maintenance, growth, recovery, health of that human body, but what actually influences that entire science of nutrition are eating patterns and behaviors that individuals may have. In those eating patterns what's important to note is that they're going to be shaped as that individual grows and progresses through their lifespan, and it's gonna be shaped by things like preferences, their emotion towards food, the culture that they've grown up in and they're exposed to, their family, religion, the availability of their food.

Geographically where they live, within the parts of our country or other parts around the world, the foods that are available to them are going to differ. Social economic status plays a significant role in it as well, and especially with your older adults that's going to be something that you'd wanna consider. Basically, is it feasible to purchase foods? So, you have all of those things within that individual and that's going on within that person that influences that science of nutrition, the body's ability to take in food substances and determine what it does with those food substances. And it's that entire science that's going to affect, really, what happens to ourselves, our body's ability to maintain, grow, and recover, but more importantly in this perspective how it affects our patients and our clients. So what's important to note is that nutrition is very complex, and it's complex in a multiple different type of ways, but starting off is going to be the six classes of nutrients. So this is going to be those six main nutrients that I pointed out

as that first objective, and the six main nutrients consist of carbohydrates, proteins, fats, vitamins, minerals, and then water, so those are what are classified as your most important nutrients, your main ones. Now, outside of that you have things that are termed non-nutrient substances, but they are very important and they are essential for consumption, and that's gonna be things like fiber, phytochemicals, antioxidants, additives.

So moving forward I'm gonna dive in just a little bit just to kind of explain some of these nutrients and what their actual benefits are to the human body. I think it's good for a clinician just to have a basic understanding, just in case you were to get a patient that asks a question to you, you know, what is protein, what are the benefits of antioxidants, or what is an additive that's in all of my food products? So it's good for you to just have that knowledge and be equipped to answer those type of questions that may arise. So outside of just the complexity of nutrition itself, what our food is made up of, the complexity continues into the human body. So, the digestive system itself is made up of a lot of different organs.

You think about your oral cavity, your esophagus going into your stomach moving into your small intestines, your large intestines, as far as your main organs that are associated with digestion, but then you also have organs that are accessory organs to digestion, that being your liver, pancreas, gallbladder, organs that help facilitate the breakdown of food by providing some type of enzyme or protein to help facilitate that metabolism. So again, adding to the complexities of nutrition, you not only have the different types of food and what food is made up of, but as that food enters and journeys through your body there are a lot of potential errors that can occur that will affect how your body's able to break down those foods and utilize them. And then going even further to make it even more complex, right, from the foods you eat to your body taking it in, even at the microscopic level looking at the biochemistry and the organic chemistry of it, how your body takes the smallest component of that nutrient

and then utilizes it for some form of energy, or protein, or building block, or maintaining just cell membrane function in general, right, the body has a lot of different pathways, a lot of different metabolic pathways that it can take to break down those nutrients and to utilize them where they are most appropriate. And again, even within these metabolic processes you can have an individual that has some sort of dysfunction or impairment which may disrupt their entire nutrition, which as you saw earlier will affect their maintenance, growth, recovery of their human body. So just a brief run through of those main nutrients, that first one being carbohydrates. The primary use of carbohydrate is going to be its conversion into glucose, and glucose being kind of just that quick energy source that your body can take and utilize for energy, because it'll take the glucose straight out of your bloodstream and be able to utilize it. So that's on your simple carbohydrate side, because you have two distinctive different types of carbohydrates, your simple and your complex.

Now, it's your complex carbohydrates that can ultimately break down into your glucose, into your smaller monosaccharides, but it's your complex carbohydrates that you wanna be consuming day to day, and that is primarily because of the added benefit of fiber that you get from those foods. But carbohydrates' primary source is going to be for energy, even immediate to use of energy or storage of energy for later use. The next nutrient being protein. So what's interesting about protein is that a lot of individuals always, you know, immediately go to protein being something that is important for muscle growth, and it is important for, you know, as a building block within skeletal muscle and other tissues, but protein plays a lot of other different roles within the human body, that being it can play a role as an enzyme and transport different nutrients, it can play the role as a hormone or an antibody, and it can also provide energy. But what's important to note is that the human body does not always, well, the majority does not like to use protein for energy because it has so many other different jobs that it needs to carry out. What you'll typically see with protein is that they're broken into different amino acids, and that's gonna be what you see on your

slide, those 20 different amino acids. You have nine that are listed as essential, seven that are conditional, and then four that are non-essential. What it means to be an essential amino acid essentially states that you need to consume those types of proteins, those type of amino acids in your food, because your body cannot make them on its own. Versus the conditionally essential, if your body has two of two different types of amino acids in some cases they can conjoin and actually produce that third, but it's those non-essential that you need to consume, not on a daily basis, but on a good frequency to provide your body with what it needs. Next macronutrient is gonna be your fats, your lipids is what it's actually termed, and again, fats and lipids play a lot of different roles within the human body.

Fats are broken up into your triglycerides, your phospholipids, and your sterols. When most people think of fats it's usually immediately those types of triglycerides, those fats and those oils, right, when you think about items that are saturated fat, like butter for instance, that's solid at room temperature, or you think about your unsaturated fats, like your avocado, or your olive oil, or the fats that are found in nuts. The real difference between saturated and unsaturated, again, increasing into the complexity has to do with the chemistry behind the molecular structure of these molecules and the saturation of carbon bonds. But aside from that, your body will take in those fats and it will again metabolize them in various different ways, but primarily fat, interesting enough, is what your body uses for energy at rest.

About 60% of your body's energy at rest comes from the burning of fat that you have, whether or not it's foods that you had recently eaten or whether or not it's stored. Next up would be vitamins, so within your vitamins you have a fat soluble vitamin and a water soluble vitamin. What that means is that a fat soluble vitamin are going to be vitamins that are stored in the liver, meaning that if you were taking a supplement of one of these vitamins you do have the potential of going into a toxic state and overloading it and being in a toxicity state if you consume in excess these vitamins,

because your body will actually store them in the liver, so it is able to cause adverse effects and different signs and symptoms that may be associated. Versus your water soluble vitamins, all of your B vitamins as you see listed, and then vitamin C are water soluble in that if you were to consume them in an abundance or take them through a supplement, or most commonly some type of energy drink, right, usually has a lot of B vitamins in it, with the excess your body will traditionally just excrete it in the urine and won't hold onto it, it'll just get rid of it if it's not needed. And most of those B vitamins are involved in energy metabolism, so if you think back to basic biology your Krebs cycle, and you look at all those different molecules and nutrients that are kind of spinning that Krebs cycle, a lot of that is going to be B vitamins. But they're also involved in a lot of other different things as well.

Next up being calcium. Oh, sorry, next up being minerals, sorry, and the various different types of minerals. So what you see here are just going to be your main minerals as far as when you think of a mineral what comes to mind. What's not seen in front of you is going to be things that are considered to be trace minerals, but other things like iron, zinc, copper, fluoride, but each of these different types of minerals play a different role within the human body. Most notably that comes to mind we probably think of calcium having to do with bone health, but also remember calcium is important for electrolyte balance, nerve transmission, muscle contraction, and also playing a role in immune function.

So again, minerals have a lot of added benefits to the human body. And the last of those six main nutrients, right, carbohydrates, protein, fat, vitamins and mineral, and that sixth one here being water, and the reason water is a main nutrient is because it plays a big primary role within our body, making up really upwards of 60% of our adult body weight is made of water, so appropriate hydration is of significant importance because water does do a lot of different things. Water actually helps facilitate proper metabolism, so if an individual is dehydrated when that person took in those foods and

tried to break 'em down, metabolize 'em, and utilize those nutrients, that person may have difficulty getting the most benefit from their food if they are dehydrated, because that water is necessary for metabolism. And then kind of going into your non-nutrient substances kind of briefly here, you have your phytochemicals, and I just wanted to share with you kind of just the terminology behind it, just in case you were to ever see the words you would know that it is a phytochemical. It's really the things that give food its rich color.

When you look at your different fruits and vegetables, right, there's a certain type of phytochemical that makes blueberries blue, that makes eggplant purple, that makes carrots orange, and each of those different phytochemicals has an added benefit to the human body, traditionally in an antioxidant type of way. Fiber, again, being one of those non-nutrient substances, has a lot of different functions within the human body, and it does depend on what type of fiber it is, whether it's soluble or insoluble, but the biggest function that you'll see with fiber is going to be, as you see listed, right, delaying that stomach emptying. If you eat a meal that is higher in fiber that is full of those complex carbohydrates, whole grains, something that is with a higher fiber quantity you will feel fuller longer. Fiber also is important as far as affecting enzymatic function, and what that primarily correlates to is the role it plays in mitigating the rise of blood glucose levels.

So essentially that is if you were to consume a food that is higher in fiber that has a lower glycemic index your body is going to take a little bit longer to break it down. So what you'll see is that individual that consumes that meal, their blood sugar will not spike as significantly as if it were a simple carbohydrate with no fiber, you would see the blood sugar increase a little bit more dramatically. So that fiber kind of mitigates the diffusion rate, and what it'll do is reduce that blood glucose response. And then as you can see, again, listed in front of you some other things that fiber does, and probably one of the most known that you can think of as far as fiber that immediately comes to

mind is fecal bulk, and kind of regulating stool, but fiber is also important for feeding the intestinal bacteria, acting as really a pre-biotic, because a lot of individuals now take supplements as far as your probiotics to kinda help fuel that intestinal bacteria, but fiber is good because it actually acts as a pre-biotic and it's that type of fiber that's not digested throughout the digestive system that'll actually help fuel that microbiome and fuel that bacteria in the large intestine.

Your additives, I just wanted to kinda throw this in here just so that you're aware that not all additives are bad, or, well, I guess you could say bad just for a lack of a better term, but sometimes additives are necessary within foods, and that being the benefit it has in reducing any type of food-borne illness, right, putting different types of additives in canned foods so that you'll reduce the risk of botulism, things like that but also as preservatives to help things last a little bit longer on the shelf. Within the United States there is a list that's called the GRAS list, and it's an FDA list that identifies the additives that are acceptable and generally recognized as safe within our country. So that's kind of like the crash course, right, as far as setting the table and just giving you a little bit of essential information on nutrition, what the different nutrients do, the role that they play within the human body.

If for any reason you wanna dive into this information, you want a bit more information as far as what the nutrients may do and where you can find them, the last resource that you'll see in front of you, the one at the bottom, the NIH Office of Dietary Supplements, if you just Google that it'll pop it up probably as the first result, but what interesting about that website and extremely beneficial is it actually provides you with fact sheets for the general public, but also for health care providers, and it'll go into detail on the different vitamins and minerals, their benefit, and their sources as far as where you can get them in your foods. So if you have a patient that inquires about calcium because they're concerned about their bone health, right, it's kind of a nice resource to share with them so that they can get to all that information, and you don't necessarily need to

know everything about calcium off the top of your head, you can just share them with a good resource. That first one at the top is another good one, that comes from the USDA, and that's going to be a tool that health care providers can utilize to come up with estimated intake for the various different nutrients based on a person's height and weight and their activity level. It'll just give you a general recommendation as far as how many calories they should be getting from X, Y, and Z. So real quick, if anyone has any burning questions kind of on the information as far as setting the table, anything, you know, nutrition complexities, anything on the nutrient classifications and kind of the role that those main nutrients play, I'll give just kind of a little quick pause to see if anything pops up.

All right, so we're gonna go ahead and move forward. So, one of the things I wanna stress going forward is that nutrition is not a toolbox item, it's not a skill or a technique that we sometimes learn as a clinician or a therapist and we put it in our toolbox and we might pop it out later and use on that patient that we think it's most appropriate. Nutrition should really be seen as an integral part of patient-centered care, and it should be considered for all of our patients regardless of the setting that you're in, regardless of the population, and regardless of that person's diagnosing. What I come across a lot sometimes is that clinicians, and throughout most of this I'm going to speak on mainly from the point of view as a physical therapist just because it's my background, but this is applicable to any therapist and any discipline that's in the home health setting.

I sometimes feel that clinicians are a little fearful in integrating nutrition, just because they aren't aware of when it is appropriate and what they should be doing, so I hope that going forward you kind of see that it's not a toolbox item, and it's something that can be easily implemented to some degree within your patient care so that you can provide that patient with the best outcomes and facilitate the best outcomes. So first up, we're looking at nutrition's relevancy to our patient population, right, why as

therapists should we care about nutrition, and how does it apply to our patients? So what I wanna go through is just kind of a brief little list that really highlights and gets you thinking about nutrition and the role that it can play in various different patient populations. The first one being that nutrition, you know, it provides us and our patients and our clients with energy throughout the day. If your patient isn't eating enough, they're going to feel fatigued, then they're not going to feel like performing within their therapy session or doing their exercises, or their body may not be physically able to do things if they're not providing it with the energy to do so.

You can look at our patient population that is at a risk for osteoporosis, or that has osteoporosis, and their risk of falling, and the potential effect that calcium and vitamin D play within osteoporosis development. More importantly looking at the calcium and making sure that the intake is adequate so that the body doesn't pull calcium out of the bone, so that it actually utilizes the calcium that you're taking in from the foods. Vitamin D was recently, I wanna say maybe under two years ago was removed as a nutrient that they really pushed for management of osteoporosis. One of the big national organizations had come out and said that for osteoporosis management that exercise and weight bearing activity was more important than stressing the intake of vitamin D, so you may see that in practice, that some of the vitamin D push has scaled back a little bit but the calcium importance still remains.

If we look at our patients who are post-surgical or just coming off of some type of injury they are in a state of healing, so they are going to have an increased need for protein and calories to help facilitate that healing so that their body can build new muscle, and regrow tissue, and be in the best state that it can be, it needs to have an adequate amount of protein and calories. We can look at our patients that have, you know, poorly managed diabetes, and as we know, a lot of individuals in our country do have diabetes, and what's important to know with nutrition in this aspect is that if that patient is in a state of poorly controlled diabetes, how that can affect their healing and

delay their healing, so that whether it is post-surgical or post-injury, right, that's going to play an additional role whether or not their blood sugars are controlled. The risk of pressure injuries. You know, again, pointing to the importance for protein and caloric intake, and some studies have actually come out and shown that the current care in the current patient management of pressure ulcers is really sub-optimal, and that it doesn't actually take care of what is needed for that patient when it comes to nutritional intake. You can look at your patients with congestive heart failure and those that may be under some type of fluid restriction.

What's sometimes difficult, I find, is that you have a patient who you're putting through your therapy sessions and you're trying to get more physically active, and you want to promote proper and adequate hydration but you have to be concerned if that patient is on a fluid restriction, right, because you don't want to overload their system and potentially lead to adverse complications. So it's just one of those things that it's important to consider, especially if they're on some type of fluid restriction. Pain and inflammation can be something that kind of links to our patient care. Some of the studies, and there are no studies, to my knowledge, that link inflammatory processed foods directly to pain.

What a lot of the studies point out is that when they look at an individual that has high complaints or high reports of pain they usually have high biomarkers of interleukin 6, and then in separate studies when you look at an individual who reports a high intake of processed foods they also have high biomarkers of interleukin 6, so that's kind of where the correlation between pain and processed foods has come about, but there are no studies that directly link the two together. Athletic performance. You know, you may see this in your home health setting, because home health nowadays is not always geriatric, even though it is primary more of your population, but you should be treating your older adults sometimes like athletes, especially if they're trying to get back to an active lifestyle, so their needs are going to be different, they may need more

calories and more protein to facilitate their day to day. One of the hallmarks that I'll get into, especially because we're talking about a lot of older adults is going to be that risk of malnutrition, and then including changing needs that older adults have, and then some of the circumstances that they endure. And then something that really applies to all of our patients, right, is the evidence behind nutritional intake being linked to the development and the risk of many chronic lifestyle diseases, whether it be diabetes, cardiovascular disease, obesity, stroke, cancer, there's going to be some type of risk that is involved with nutritional intake, so even if it's not something that you directly link to those patient population examples I gave in the previous slide, nutrition in general will affect everyone in some shape or fashion.

All right, so like I just said, whether it's directly correlated to the traditional muscle building, tissue healing, or affecting that risk of chronic disease which can affect their quality of life, longevity, nutritional intake is ultimately going to influence your patient's health and rehab outcomes. So diving in, like I alluded to, at the home health population, you're looking at a greater number of older adults, traditionally, and with that you're looking at a greater number of individuals that are at greater risk of malnutrition. And then also looking at a greater number of those, right, with a recent hospitalization.

Most of your patients you may be seeing in a home health setting, you know, just got released from the hospital or some sort of post-acute setting, and traditionally what they have going on is going to be multifactorial, it's going to be multiple diagnoses, it's going to be multiple complications, it's not going to be that single impairment, it's not going to be that, you know, the patient that just wants to see you for their shoulder tendinopathy or something, it's going to be multifactorial. So because of all of this going on, you really do within your home health population have a great influence over your patients' risk of malnutrition, but also a significant influence over their potential hospital readmission. So again, kind of being another home health advantage, that you

can really influence what's going on in this patient's life during your plan of care. So looking older adult population specific, and that being kind of your older adult, 65 and older, that patient population is projected to increase by 20 to 25 million individuals over the next 20 years. So whether or not you specifically work in geriatrics or specifically work with that population, over the next 10, 20 years you're bound to come in contact with these individuals, so looking at how malnutrition, and the risk of it, and the changes in older adults occurs, it's essential to know this type of information. So it's interesting in our older adults and really all of us as we kind of age and mature and grow through our lifespan is that we come across biological changes that just have a tendency to happen naturally.

Some disease states may expediate these type of changes, but these are things that you will see happen in your older adult, you know, that being delayed, altered digestion metabolism, potential GI complications, those enzymes and other factors, they're just not working as efficiently as they used to. Aging will naturally come with a decrease in appetite. Essentially you'll have a change in taste or smell and your attraction to food just may not be the same as it used to. You could see a decrease in chewing or swallowing abilities just because of a change in dentition, and then a decrease in mobility and functional limitations that may affect an individual's ability to shop for food and even prepare food. So these are all things that you may see happen within older adults as their body just ages.

So older adults also have a change in nutritional needs, so what you'll see generally across the board is that they'll have a decrease in total energy intake, and that's going to be primarily due to a decline in their level of physical activity. But what you may also see, on the flip side, is an increased metabolic need, and it may be because of some sort of disease state that their body may actually need more of a certain nutrient, or needing more protein for wound healing or maintenance of skeletal muscle mass, which is why within your older adults their protein needs actually increase, and the

premise behind that is it's for the maintenance of skeletal muscle mass. What studies have shown is that if you have a poor protein intake as an older adult, you have the potential of a loss of skeletal muscle mass which can lead to loss of function, and then your loss of independence and quality of life. A lot of the latest research as far as protein intake actually calls for an increase in recommendation. So the current recommendation for the general population is that .8 to one kilogram per body weight, but older adults, they're actually calling for a 1.2 gram per kilogram of body weight to increase those needs throughout the day, and then they've also shown benefits of having that protein consumed not all at once, but kind of periodically throughout the day, breaking it up into 20, 30 grams a meal. And then your fluid needs, just to kind of provide those as what's recommended for your older adults, 1.6 liters for women and 2.0 liters for men. And again, those recommendations may change if you're dealing with a patient with some type of congestive heart failure.

So what malnutrition is essentially is it's an inadequate intake of food, an inadequate intake of nutrients. And there's a lot of various things that can cause it, but essentially the inadequate intake may come from a poor selection, that individual just not choosing the most appropriate foods to eat, it could be poor access, just not being able to get the foods for some sort of reason whether it be financial or mobility reasons, and then poor utilization, and that's due because of the biological changes in that older adult, they may take in a food substance but their body just isn't able to utilize those nutrients as it one was. So those are the three main reasons that can lead to an inadequate intake. What that malnutrition can actually lead to are medical complications, rehospitalization, your delayed healing, frailty, muscle loss. So a lot of detrimental things, especially to your home health population. Looking on the other side of this slide here at your risk factors, these essentially are things that would correlate to your poor selection, access, and utilization, but it does get a little bit more direct, so your poor appetite, your chewing, swallowing difficulties, your altered

metabolic needs, your disease states, financial hardship with your older adults is traditionally a big one because they sometimes have to make the decision as to whether they're going to purchase their medications or if they're going to purchase a quality food, or enough food to fill their needs. Polypharmacy is another thing you'll see in our older adults. Multiple medications and how different medications can interact with each other, but then also how some medications can reduce the absorption of nutrients, right, or different nutrients affecting the absorption and the effectiveness of a medication.

So for that one it's kind of a two-way street there in its effect, but if an individual's got multiple medications that's definitely something to be concerned of. Cognition deficits, dementia, and what that really alludes to is that older adult, that individual, you know, may forget to eat or they may not be able to safely prepare foods, they're unable to cook or make their meals, but traditionally it's those older adults who just forget to eat. And then poor or moderate self-reported health, actually they've found in some studies that older adults who tend to report a lower state of health tend to be at a greater risk of malnutrition. One of the important things to note is that malnutrition, it's not something that occurs only to older adults. Though there is a greater risk of malnutrition in older adults, it can occur in a lot of other different patient populations and it can occur in individuals that are overweight or obese as well.

But just to throw a patient population out there, if you think of your stroke patient, right, who may not be an older adult but it may just be an individual that suffered from a stroke, their chewing and swallowing abilities may be affected, right, they may have cognitive deficits, they may have mobility deficits that influence their ability to feed and to cook, et cetera. So it does occur outside of just older adults. And then the unfortunately thing about malnutrition is it can turn into an unfortunately cycle of reduced nutritional intake leading to that sarcopenia muscle loss which may lead to that reduced strength, physical activity, reduced mobility, causing that frailty and that

debility, which can in turn affect their ability to obtain and prepare foods, which will, again, reduce their nutritional intake and it just kind of starts to cycle and progressively gets worse and worse if not addressed appropriately. So some things to kind of think of as a home health therapist, right. Think of the environment that that patient was in prior to being sent home. If they were in a hospital or even a skilled nursing facility they had some sort of higher level of monitoring and a level of care that was offered. It was most likely a single dietitian or a team of dietitians in the hospital that were overseeing their nutritional intake.

But really, once that patient's discharged who's addressing that nutritional intake after that discharge? And it opens up doors for you as a home health therapist because of your increased time that you spend with patients to really influence their nutritional behaviors, but kind of take what was given in the acute or post-acute setting and continue it on and facilitate education carryover, and at that time it's really now the time to step up as kind of that caseworker role that you may play. So again, kind of just a little pause here to take any questions pertaining to that second set of information, how nutritional intake ultimately in some way or another is essential to our patient's health and rehab, and then that greater risk of malnutrition within the home health population specifically due to the prevalence of older adults. All right, so I'm gonna go ahead and move on now.

So next up is going to be what I term kind of the steps to identifying a nutritional intervention, essentially what will you do as a therapist? What are going to be your next steps? And the steps to identifying what your next steps are going to be, it's gonna start with some type of nutritional screen, it's gonna look at a review of your patient's medical history, you're going to wanna consider the professional practice act and your own personal professional scope of practice being your practitioner knowledge and your level of comfort in dealing with nutritional information. So starting with nutritional screening, it's essentially the point in time to identify that patient's needs. So

regardless of their medical status, regardless of your state's practice acts, your knowledge, this is something that I firmly believe must be done at the bare minimum, because if it's not being inquired upon or asked about it may go unnoticed. And traditionally nutritional screening is something that can easily be added to your intake forms as far as a few questions, or could just be a simple conversation with your patient. And just to kinda support, again, looking at it from a physical therapist perspective because of my background as a PT, the APTA does support diet and nutrition as key components of our patient care, that being the role of the physical therapist to screen for and provide information on diet and nutritional issues. Now this was the older House of Delegates statement on the role of the physical therapist in diet and nutrition, and what actually happened this year is that there was an alteration to that statement, in that it now specifically highlights, as you can see, if I can get my pointer to work here.

So starting here at, "This includes appropriate consultation "or co-management with or referral "specifically to a registered dietitian "when seeking the expert opinion of another provider "with specialized knowledge or skill." So that was the alteration that was made to that statement as far as the role of the physical therapist in diet and nutrition, that it now specifically speaks to the co-management or referral to a registered dietitian. And then what they also added is kind of the role of the association as well. So this statement within our profession was nonexistent before this past House of Delegates, and what they basically came out and said is that "The APTA supports collaboration "at the association and membership levels "to promote education, research, "and practice between physical therapists "and registered dietitians "to promote the health and wellbeing of society." So the APTA supports it, right, from a physical therapy perspective, and then now looking at nutritional screening, some examples of assessment tools that you can easily implement right into your intake forms. Each of these are a quick Google search away and will traditionally directly link you to the original research file, especially if you're looking at Google Scholar, and then

provide you with the PDF. All of these questionnaires are traditionally going to look at frequency of foods that are taken in, so what's your frequency of fruits and vegetables, your frequency of processed foods, and each type of screening tool words it in a different way. And then the last two, Eat 10. Eat 10 is interesting in that it looks at swallowing, and whether or not that patient may have swallowing complications, so if you're in a home health setting and you may be the only clinician, maybe you and an OT that's initially there, and you think that the patient may have some type of swallowing complications, the Eat 10 would be a good one to provide to see whether or not that patient deserves some sort of referral to a speech pathologist. And then outside of your screening tools, right, that are standardized, you could just collect a simple 24 hour food log, or a multi-day log, right, just having that conversation with your patient.

And then looking at a couple other screening tools, and these three here being specifically focused on malnutrition of older adults. So the DETERMINE, the Mini Nutrition Assessment, the short form, has been found to be the most appropriate tool in identifying malnutrition, and then your MST. The MST is essentially what most nurses use in hospitals across the country, and it's two simple questions, have you had any significant weight loss, and they put in the weight loss into different categories, and if it's greater than 10% within a certain time period, et cetera, it's classified as significant. So have you had a significant weight loss, and then have you had a decrease or change in your appetite?

So those are just kind of the big ones as far as identifying the risk of malnutrition. The other two assessment tools we'll look at ask things about mobility, you know, whether or not the patient is mobile or if they're bed-bound, or if they are taking multiple medications, or if they have any cognitive deficits. It'll look into all of those risk factors that we identified for malnutrition. And then something unique to the home health therapist, right, is OASIS, and the additional information that you need to look at when

you do your initial intakes, and these being things that are highlighting potential risk of malnutrition. Has there been unintentional weight loss, under or over as far as their BMI, right, do they have a low BMI, are they in a frail state? Pressure ulcer assessment, is there a presence of pressure ulcers? Especially in a later stage, you're going to meet an increased need of calories and proteins. And their ability to self feed, right, whether or not it's cognitive or whether or not it's physical, you know, mobility related, can they feed themself? And then their ability to prepare light meals, right, physically or cognitively can they prepare those foods? And then something that's actually kind of a home health benefit to you is kind of in an informal nutritional screening, and what that could kind of include as an example is identifying sanitation hazards that can potentially prevent food-borne illness.

Do you notice if they properly store or handle their foods, are they reheating their foods or cooking something when you're around, do you think it's to an appropriate temperature that would prevent any type of food-borne illness? Looking at their food environment, the type of equipment that they may have available, and then just knowing their physical and cognitive abilities to be able to prepare meals. So it's kind of just some informal things. Again, another added benefit of you being a home health therapist and having that all-access pass, you can actually look at more than an outpatient therapist would generally be able to.

And then again, malnutrition, outside of your screening tools there's no real gold standard in identifying malnutrition, but what there is is kind of a consensus of what could be identified as malnutrition or risk of malnutrition, and that being the presence of two or more of the following items that are listed. So whether or not there is unintentional weight loss, insufficient energy intake, loss of muscle mass, loss of subcutaneous fat, edema, and then a diminished functional status which in this research and evidence points to a reduced handgrip strength. So if you look at these, right, these six criteria, I would say that at least five of them, five of the six, are

traditionally a part of a therapist's care. We'd be able to notice a loss of muscle mass or loss of subcutaneous fat, right, we'd be able to identify that, we'd be able to see edema, we'd be able to measure handgrip strength, and the other two are just simply a conversation, whether or not their getting enough food in or if they've reported an unintentional weight loss that may be significant. So this criteria in and of itself could be a go-to instead of using one of the screening tools. And then something that's kind of interesting, looking at from a registered dietitian perspective is the Nutrition Focused Physical Exam, and what's interesting enough is that the physical attributes are so important as far as when you have some type of deficit, whether or not it is protein, whether or not it's calories, whether or not it is a micronutrient deficit, right, the body will portray them in a different number of ways.

You may have that fat loss and that muscle loss if you're not getting enough nutrition in, but what you're not able to see on this slide here is that there are other components of this that it's a micronutrient exam, and that being that, you know, if a patient is deficit in certain vitamins and minerals their hair may look a different way, there might be discolorations around the eyes or crustings around the mouth, so there's different physical attributes that an individual can identify if they are deficit in a nutrient. But what's interesting is that, you know, registered dietitians across the country within the past five years this has kind of been real hallmark of practice, this looking more at the physical attributes of a person to identify nutritional deficits.

And then this here is just kind of, just to give a general idea, so this is the nutritional screening form that I use for my patients, and what you may be able to see a little bit clearer on your handouts or on your screen is what the arrow is pointing to, and that is aside from the frequency intake of different foods, right, whether or not their eating pattern is primarily processed foods or primarily fruits and vegetables, whether or not they're hydrated, what really facilitates a lot that you'll see later on in the patient case studies is that individual's readiness to change, right, whether or not they think that

consuming a healthy eating pattern is important, and whether or not they're ready to make changes if necessary. So just something to kinda put back in your mind and think on later. So we looked at nutritional screening, right, as that first step, the next one being evaluation of the patient's medical history. And then right off the bat, a referral may be indicated if it's a poorly controlled condition of cancer, or cardiovascular disease, hypertension, diabetes, and not specifically saying the presence of these conditions but more so a poorly controlled presence of diabetes, right, an individual who has type 2 diabetes and their numbers are always in the 300s or 400s, and it's trying to be medically managed and it's just not working. That referral to a registered dietitian at that point would be most appropriate, because they need a deeper skilled intervention.

What else you wanna look out for is individuals that may have disorders of the GI tract, the liver, pancreas, just because their needs are going to be altered, and their needs may be more quantitative in nature. So it may be, again, more appropriate for a skilled professional to address those once you get into needing more quantitative, detailed nutritional information, or specific meal planning. And then what's important to note is that you're never giving nutritional recommendations to treat some sort of medical diagnosis, okay, 'cause that's when you kind of cross outside of your scope of practice as a therapist.

And then speaking on scope of practice, right, and again, speaking specifically to physical therapy in my example, just because of being a PT, but again, this all can apply to any home health therapist, you just wanna check your state practice acts. Most state practice acts from a physical therapy standpoint, they do not explicitly state diet and nutrition, but they will sometimes allude to health promotion, wellness, but most of them will not, none of them I've encountered have stated specifically diet and nutrition. Outside of the PT practice act world, you wanna always check your dietetics and your nutrition practice act, and a great website to kind of look into that is gonna be

nutritionadvocacy.org. It gives you a nice little picture of the United States and you just click on it, kind of give you a brief synopsis of what those state statutes look like in terms of diet and nutrition, but my recommendation is to always read into the statutes because you may find something beneficial to you as a clinician. So I'll give you an example, and this is going to be looking at the Kansas statute for dietetics and nutrition. And what you'll notice in their statute is it really identifies what dietetics practice is, you know, in including the assessing of nutritional needs, establishing those priorities, goals, objectives to meet those needs, and then kind of going through what a nutritional assessment consists of.

So Kansas is very specific in their terminology, which is nice, and that's why I use it as an example. But the other thing to note about Kansas, reading more into their statutes, is that they are a very strict state when it comes to who can provide those type of nutritional services, and they do state that only a person licensed under this act shall use the title of dietitian or licensed dietitian. I think I got ahead of myself, I apologize. So, basically how their statutes read is that, and it may have been in a slide that's missing here and I apologize, but it states that, you know, an individual can only call themselves a dietitian or a licensed dietitian, but what the act also states is that, you know, only a dietitian can practice, only a licensed dietitian can practice what dietetics is, so it makes it really restrictive within the state of Kansas but what's beneficial is if you read into the statutes is that they have exemptions, and a lot of states have exemptions, and what their exemption states is that so long as the following persons, the following exemptions that are listed do not hold themselves out to be a dietitian then the restriction really doesn't apply.

Kansas actually specifically lists that a licensed physical therapist who makes dietetic and nutritional assessments or gives dietetic and nutritional advice in the normal practice of such person's profession. So basically stating that a physical therapist is exempt from the restrictions of the dietetic and the nutrition statutes if they are in fact

practicing within their scope. And just to let you know, within Kansas's PT practice act there's nothing that prevents integration or use of nutrition in practice, so if you're in Kansas you're lookin' pretty good. But that's just one of 50 states, and I imagine most of you are from all over the country, so you want to make sure you look into the details if you do have any restrictions that would prevent you professionally. And then that last step, really knowing your own knowledge and level of comfort, right, whether or not you have that baseline knowledge, which I hope just that general intro of nutrition and setting the table kinda made you feel a little bit comfortable to at least be a little dangerous in your practice and to at least have that conversation. One of the most important things is, really within this component of identifying what you're going to do is you always, always need to avoid your own personal bias and beliefs towards food and towards nutrition. You wanna always remain evidence-informed, because really what applies to you or what may work for you or a coworker or friend, right, that doesn't apply to everyone.

So you wanna leave those type of biases and beliefs out of the picture. And then you want to be sensitive to that person, to that patient that you're dealing with because they may have their different, various nutritional determinants, you know, their social economic status, their own beliefs towards food, their culture, their religion, all of those things that influence their science of nutrition. They have all of that going on, so you wanna be aware of that, and you wanna recognize whether or not you're comfortable in dealing with that. It's okay if you're not comfortable, right, it's just to know a referral may be indicated, but you just gotta realize whether or not your knowledge as a clinician is there and whether or not you're comfortable in taking the next step if appropriate. So, we looked through the four main steps, so looking at nutritional screening, looking at the medical history, looking at the practice acts, and then your knowledge and comfort as a practitioner. So first, right, your screening, is there a need? Because that patient may only require some type of positive reinforcement. They may be eating what they need, they may not need to change anything. But then if there

is a need, are you as the home health therapist, are you able to fulfill that need? Does the medical history say that it's something you can deal with, because they're not in some type of uncontrolled chronic disease state? Are you able to deal with or educate based on their different nutritional determinants? Does your practice act allow you to do so? So if all that checks out, you essentially would move into the next step, that being information coming up in a couple minutes, being the basic nutritional education that is most appropriate to provide. Though remember, a referral may be most appropriate, and that's okay, especially if you're taking on that caseworker role as a home health therapist, referring them to the most appropriate provider may be the next best step. So that referral partner, right, and in my professional recommendation, and though just a little biased, it should be a registered dietitian, registered dietitian nutritionist.

You may see these designations used synonymously, really. RD is the same thing as an RDN. About five years ago the Academy of Nutrition and Dietetics, which is essentially identical to the APTA in a different field, they added the N and the nutritionist component more so for increased public awareness, because not many individuals knew what a dietitian meant. So the registered dietitian should be the first thought right, when you're looking at a referral partner, and that now being something that is supported by the APTA.

Their education and their clinical experience have met standards, competency standards, that are set forth by ACEND, and ACEND is our accreditation body for dietetic programs and dietetic internships, and ACEND is very identical to CAPTE. Registered dietitian, note, will specialize in everything regarding nutrition, but they do specialize a little bit more in the medically complex conditions. Something else that is good to know about dietitians is just like us in the therapist world dietitians do have to follow continuing ed standards as well, so it's 75, 75 continuing ed hours every five years. And looking a little deeper, your dietitian's assessment, right, is going to be a bit

more comprehensive and it's gonna go beyond the limitations that may exist with just screening. So they're looking at nutritional intake on a short term and a long term, and they may get a little bit more specific to food groups and to nutrients. Looking at intake status, right, whether or not there's a poor appetite or there's any type of medical restrictions, looking at GI function, actually with the ability to take lab values and see if there's anything that they are deficient in. Looking at that physical exam that we looked at, and then also taking into consideration their activity level, so that's just kind of a little bit of a window into what a dietitian may look at when they're dealing with their patients. So finding a registered dietitian is super easy.

Eatright.org, the top right hand corner, you just click on Find an Expert and it'll actually just bring you up to another window where you punch in a zip code, and it'll actually identify dietitians that are within your area within a certain mile radius, and it's nice because it'll actually put in different various credentials, because dietitians, just like therapists, have specializations as well, so you have dietitians who specialize in diabetes, who specialize in kidney disorders, cancer, sports, pediatrics, so traditionally most of the search will identify their specialties as well. So, on that little kind of part, do we have any questions on that? I've got something that's popping up that I'm having difficulty reading, and I do apologize for that. So Karen, I do see that you have a question pertaining to the quiz. My window's having it cut off, I can't read all of it, but I'll definitely address it at the end.

Okay, so she's askin' for quiz question number seven, is the dietetic practice act or the PT act? Sounded like it was both. Okay, I'll verify it Karen, I'll have to pull the question up just to confirm it with you. Outside of that, do we have any questions on anything pertaining to nutritional screening? So Kathleen asks, "Do you take food allergies "into account for malnutrition?" I would absolutely take into account food allergies. So within my own intake forms I use with my clients and my screening forms I do ask about food allergies, just to make sure, because even if you are just providing general

recommendations as far as increasing fruits and vegetable intake or increasing protein intake, you do wanna be aware if they do have any type of food allergies, so that is a very good point to bring up, Kathleen, and I thank you. Awesome, so moving on to the next little section here, nutritional education. Right, so you've gone through your steps of identifying what it is you're going to do as a clinician, right, what's next? And if you do decide you're going to provide that nutritional education, the goal is to really get that patient as close to a quote unquote normal, healthy intake as you can, which will ultimately, you know, you're trying to improve their metabolic efficiency, which will facilitate their physical recovery and their health, and then lowering their risk of developing chronic disease.

Again, remember with your nutritional education you're not trying to cure any disease or condition, that's not your target. Your target is to just improve their health overall so that it can facilitate better recovery and better outcomes. So just to share with you just a little bit of research behind what is considered to be a healthy eating pattern. What this study found was, you know, really identifying the importance of fruits and vegetables and that they do consumption of a multitude of different types of fruits and vegetables, you're gonna get an array of nutrients, and phytochemicals, and fiber, and a lot of added benefit, and what they found looking quantitatively at fruits and vegetable intake is that the recommendation sits around 600 to 800 grams a day, which really sits about, you know, five to nine, the traditional recommendation of five to nine, and this study specifically looked at, you know, lowering risk of cancer, but then also stroke, cardiovascular disease, and all-cause mortality.

This next study here, again, supporting very similar information, but it looks at a higher intake of fruits, vegetables, but also legumes, which are found to be a really great protein source and also a complex carbohydrate, and what they found was that just a lower, associated with a lower risk of non-cardiovascular mortality and total mortality, and this study looked at intake globally. I believe it was 18 different countries, so they

looked at intake all over the world, and again found that the perfect number is somewhere between 400 to 800 grams a day, right, that five to nine, but even a small reduction in that recommendation, you know, dropping it to 375 grams, which may only be four servings a day, still showed benefit. What was interesting, and the reason they pointed that out in this study, is that even a modest or more of a reduced consumption can still be beneficial, but then may also be affordable for some people. And then this next study really highlighted that an eating pattern overall that prioritized plants and less of animal sourced foods was actually linked with a 20% risk reduction of diabetes. And then looking at plants compared to plants, the healthier plant options you had a 34% versus a 16% in your less healthy plant options. What that really looks at is your healthier versus your less healthy. Your healthier is going to be your fruits and vegetables, right, your whole grains. Your less healthy plant options are going to be more of your processed grains. Because technically they're still a plant, but you're looking at a processed carbohydrate, right, cakes, cookies, crackers, stuff like that is made from wheat so technically it can still be plant, so just kind of differentiating between the two for that particular study.

Now the important thing to consider with research, and especially with nutritional research, is it is very, very, very difficult to perform. It relies heavily on self-reporting. A lot of the studies look at quantitative data as far as frequency, questionnaires, like I had mentioned earlier, so it's just an individual reporting what they've been eating, so it depends on whether or not they're accurately reporting or if they remember exactly what they ate. The other thing to consider is that it's very hard to tease out some other variables, whether or not the person is getting adequate sleep, whether or not they're physically active, those things may actually play a role in the outcomes that some studies find, so it's sometimes hard to tease those out. You wanna always, in looking at nutritional research and things you wanna look at the study contributions. I come across a lot of different, various nutritional research, and you'll read a study that really promotes one type of food group. Even if it's the latest benefit on consuming a handful

of walnuts a day, that study, you know, most likely the contributions and what paid for that study was the Association of Walnuts, right, so you just wanna watch out for those different types of things, so I usually when looking at nutritional research look at more big picture, or even worldwide studies that have a better indication of accuracy sometimes. And then nutrition is always evolving and it's always ever-changing. So eggs were bad, eggs were good, bad, eggs are good. I think earlier this year if you ate two eggs a day or more it was bad, so it's very difficult sometimes to keep up with, but consistently across the board the general recommendation for eating more plant-based fruits and vegetables, et cetera has kind of remained as the best way to go. So taking that, looking at other avenues of education, right, if it's not just sharing research information with your patients just like you would share research information within the therapy world, you can look at the USDA's Dietary Guidelines. So these are updated every five years.

They're actually working on the 2020, 2025 right now, but generally it promotes these five main things that you see in front of you. As far as following a healthy plan across your entire lifespan, focusing on that variety, looking at more nutrient dense foods, but then also just being mindful of your portions. The Dietary Guidelines do get specific in that they give limitation recommendations for things like sugar, saturated fat, and sodium. What's also interesting and important to know for your sodium intake, if your individual is diagnosed as pre-hypertensive or hypertensive, which we know with those latest changes in those blood pressure values that really included a large majority of us, the recommendation for sodium intake is actually less than 1,500 milligrams per day. And then looking at the last two for the Dietary Guidelines here, shifting healthier food and beverage choices, right, kinda making swaps, changing out different foods for something that may be healthier throughout the day, swapping out one of those Colas for a water, et cetera, and then supporting healthy eating patterns for all, just being supportive of individuals who are trying to eat healthy, so trying to accommodate to them when appropriate. Outside of the USDA recommendation, Canada's Food Guide,

and this is an updated Food Guide as of earlier this year. The previous Food Guide from Canada was 2007, so they don't do it as frequently as the States does, but I have been using Canada's Food Guide a little bit more frequently with my patients, because if you do check out their resources they are very, very consumer friendly. And what they essentially state is, again, to eat plenty of fruits and vegetables, whole grains, protein foods, but then choosing protein foods that come from plants more often, so your beans, legumes, your nuts, in opposition to your meats, et cetera. Limiting how they process foods, but if you do choose to eat them, which is completely fine, right, just so you eat 'em less often and in smaller amounts.

A bold move that Canada made earlier this year as well is they completely got rid of milk as a food group. As it still is here in the States, milk and dairy is kind of its own food group. Canada actually got rid of milk out of its recommendations and they push for more water as a drink of choice. They also emphasize utilizing food labels, being aware of what is in food, but then also being aware that food marketing can influence your choices, right, that marketing and advertising is set up in a way to facilitate a purchase. So just because something is said about a particular product doesn't necessarily make it the best product, so just being aware of that fact.

So in summary, when looking at healthy eating you wanna consume an eating pattern that is mostly plant-based, you wanna choose more plant-based proteins, like I said, your beans, legumes, nuts, seeds, choosing a variety of fruits and vegetables so that you get a different variety of phytochemicals, antioxidants, vitamins and minerals, for a lot of different added benefit, lessen the consumption of processed foods. And then what I like to tell my clients, really eat mindfully, right, just being aware where your food comes from, but then also try and eat seasonally. So traditionally the benefit of that is that the food is going to taste better, but also it's going to be cheaper, so if some individuals do have a financial difficulty in getting fruits and vegetables, if you buy things in season it will traditionally be cheaper, or if you have the ability to grow them,

which has kind of been my own personal thing that I've been doing this year. I've probably eaten more tomatoes within the past month than I have in my entire life, but that's just a side note. But then lastly, you know, the best fuel choice are those that really make your patient happy, healthy, and feel good. You always want to cater educational recommendation to their own personal needs and preferences, again, removing any type of personal bias that you may have. And then some kind of good to know diet types, because you may have a patient that comes back home from an acute or post-acute setting and they may have been on some type of diet type, just to kind of be aware really what that may mean.

So you may have a patient who's end stage renal failure, or post-kidney transplant, et cetera, so they may be on a renal diet, and really what that is is an eating pattern that's looking out for sodium intake, but then also looking at phosphorus which coincides with protein. So those individuals that are in a later stage of renal disease, their recommendation for protein is actually reduced to not overload the kidneys when they're in that late stage 4 kidney disease. Your cardiac really is just kind of a low sodium, right, the best thing for that is really reducing processed food intake because that's where a majority of individuals get their sodium intake is from processed foods and what's already in the food, and not the added salt that may be added at the table, that's not the big contributor, it's what's already in the food.

CCD really just means carbohydrate controlled, or you may see it written as ADA, standing for American Diabetes Association, and that's just kind of the old school way of controlling carbohydrates, controlling the gram intake in association with what their glucose levels are reading and what their insulin dosage is, et cetera. But as you saw earlier, the best recommendation for diabetes, for risk reduction of diabetes but then also management, more of a plant-based pattern. Your NDDs are your national dysphagia diets, so it's one, two, and three going from the puree, mechanical soft, to your advanced, which is near regular but traditionally will avoid anything like nuts and

seeds that are easily choked on. Then your nutritional supplementation as far as your tube feedings, your enteral. What's important to note, and you may see this in the home health setting if your patient does come back home and they're on a tube feeding, 'cause I know I primarily work in some skilled nursing facilities, so I see 'em more often, that we try and tailor 'em off before they go home, but we do have patients that leave the facility and go home with a tube feeding. You wanna be mindful that, if they're on a tube feeding or even times surrounding that tube feeding, even though that feeding may be going into their stomach or any other port of entry, the head of the bed or their body should be elevated just to reduce that risk of aspiration, 'cause if they are to go fully supine during that feeding or even 30 minutes to an hour after you do have the risk of that fluid back flowing into the esophagus and then aspirating, so just be mindful of that.

And then your parental is just those patients who may be on an IV to receive nutrition in that manner if their stomach or their gut is not working. Some other tips for nutritional intake, and these come from the National Counsel on Aging, and these are things that, you know, traditionally recommended to patients when they return home from the hospital, and that's what this list is specifically for, so it's good for a home health therapist to have this 'cause this is beneficial to them. So we know when first going home, recommending patients to reach out for help with meal planning, whether that be snacks or small meals, it's more beneficial to try and choose something that's calorie dense and full of protein. Recommending to them to eat their favorite foods, because that may kind of incline the patient a little bit more to eat something if they actually enjoy it. If foods are bland because of dietary restrictions for some reason, right, try to improve the flavor with some type of appropriate herb or spice, just making sure that it doesn't combat with any medications that they're taking. Recommending to be physically active, right, just physical activity in general kinda helps get the metabolism going and will help increase appetite. And then lastly, try to eat in a social environment, and that has a lot of different benefits and more of the greatest benefit,

you know, being reducing some of those effects that social isolation has on older adults, so just being a proponent of that. And then some hydration tips as well, recommending high hydrating foods such as your crispy vegetables, fruits like watermelon, cucumber, or even consuming smoothies where you get some fluid and some calories as well just to reduce that risk that may be present with dehydration, et cetera. Then some other things to look at as far as access solutions. So food security, in general the definition is having access to sufficient foods for healthy living. So you may be able to influence this as well, so your intervention that you choose, or your education, may include tapping into local community initiatives or resources, or helping that patient join some type of government program that would help facilitate adequate intake.

So the two big ones, you know, the older adults, Older American's Act, the Title III specifically, is geared towards your older adults that are 60 and older, or adults that are less than 60 that are disabled and living in an older adult housing environment, and that's going to be traditionally what qualifies them for things like Meals on Wheels, congregate meal sites, right, to provide them with those foods. And then of course, you know, the congregate meal site would be something, if possible transportation-wise, would be something I would recommend because of that social isolation component. Outside of the Title III you have the Senior Farmers Market Nutrition Program, so what that is is individuals that qualify for that, they get vouchers, and you just wanna verify that your food market or your farmers market accepts those vouchers and they can use those vouchers to go get fresh fruits and vegetables.

And then I shared with you the qualifying income levels for the Seniors Farmers Market, I believe the age is 65 and older, but that gross household income does need to be less than 185% in the current poverty line for a household of two, right now is 16,910, so less than that. To find any of these type of programs and just to find if there's anything in your community that may be beneficial, the Eldercare link that's listed there is a good

one to use to find out if these programs are available within your own local community. And then what some research has found is that a real successful approach to addressing your patients' needs nutritionally is to provide them with nutritional education, address nutrient delivery, access, providing them tools to assist, providing some nutritional coaching, and then a coordination of care, right, that referral, and what studies have shown is that if you do this successful approach with your patients over 65, it has shown to reduce medical complication rates, length of stay, readmission, cost of care, and then even mortality. And then just to share a recent study that actually involved home health therapists and a look at nutrition, this particular study looked at screening for nutritional needs by the admitting clinician, whether it being a nurse or a physical therapist.

Patients were then flagged for moderate or high need for intervention, and then there was a protocol that was developed by a registered dietitian. So once they were screened and flagged for that malnutrition risk, the dietitian protocol kicked in, and what they found out was relative risk of hospitalization was reduced by over 20% at that 30 day, and they showed kind of a net savings of about $1,500 per patient that was treated within this protocol. So just a review of the home health advantages that we've kind of gone through, you do hold that all-access pass, you do have a greater influence over this patient population, being the older adults who are at risk of malnutrition and then a hospital readmission.

You have that increased patient time, right, and your time being within their home environment you've access, influence to their sanitation, preparation of foods, any environmental limitations they may have. But really it's an opportunity to use your creative skillset as a home health therapist, you can incorporate time in the kitchen, working on standing balance and tolerance while reviewing some nutritional education, looking through their pantry, navigating their kitchen, and things like that, are all ways that you can kind of integrate some nutritional education into your actual plan of care if

you are in a time constraint. So, kind of a quick little pause again before we get into the last section, which is really kind of an application of things. Any questions on kind of nutritional education goal, evidence-informed recommendations that we looked at and just kind of eating pattern recommendation for plant-based foods? So, in looking at kind of applying this information you wanna consider application considerations, and knowing that every patient is different and each with their own individual needs and nutritional determinants. And it's really important to note that the time and manner that you address nutritional education, or kind of moving forward with things will never be the same for every patient, because you may need to build that relationship with that individual in order to appropriately address it, because we know that nutrition is something that is very personal to some people, and then you wanna take into account their readiness to change to determine the type of nutritional education that is most appropriate.

So motivational interviewing is kinda one of those techniques that you can utilize as far as behavioral change. So what motivational interviewing is is that guided approach to conversation, right, and what you're doing is you're really kind of building internal motivation, and the acronym that they use is OARS, and what it is is just utilizing open ended questions that really kind of facilitates more listening than you telling them things, you know, let them paint a picture of their situation. Try to avoid why questions, because sometimes people can get offensive, can get defensive if you utilize why questions. You wanna affirm and give honest feedback, right, give positive feedback, trying to avoid I statements because it sometimes creates an external feeling. You wanna practice reflective listening and kinda paraphrase what they told you to ensure that you're not misinterpreting anything, and then going ahead and kind of summarizing what it is that you heard just for clarification. So motivational interviewing, whether if it's with trying to change nutritional habits, whether it's trying to get someone more physically active or improve their sleep, these type of techniques are good to utilize for any patient trying to make change, or for any patients you're trying to

build internal motivation in. So the stages of change, as you may know, you start as precontemplation which is going to be kind of an individual that really doesn't think that they need any change, and that there's nothing wrong, going down to contemplation. This individual may be aware of a problem and they're thinking of change, and they're starting to need information on how to progress forward. Preparation may be an individual that does realize the benefits of change, but they really now need a game plan, and these are those individuals that you can really start to teach behavior change to when they're in this stage. Action are going to be those patients that when they're in this stage of change they're actively already doing it, so this is where you can provide some sort of support, provide that positive reinforcement or reassurance if they don't have any immediate needs.

And then maintenance, right, you're basically at that point, again, providing positive reinforcement and just trying to control any relapse, and just know that relapse, that being kind of backing up into a previous stage, can occur at any point, even to someone that's had a long term behavior of healthy eating could potentially revert back if something happened that caused that to happen. So readiness to change, right, so this kinda goes in with motivational interviewing. You wanna look at, please rate your readiness to change your nutritional habits, and that's going to be looking at on a one to five, or even a one to 10, sometimes what I use.

But you'll notice that these five match up with those stages of change, that one through five. So one being no current interest, two being they plan the next six months, three being they plan to change this month, four recently started, five they're already doing it on a regular basis. So again, looking on a one to 10, how important is nutrition to you right now? How confident are you that you can improve and make change? And then, how ready are you to start making changes if needed to improve your nutritional intake? So I wanna look at this case, and I'm gonna give you just a brief second to kinda look at it before I run through it, before I move on. So just kinda take a second

and just kinda read it, and then I'll kind of run through, you know, we'll kinda look at applying some of this information. So, with this first case we're lookin' at a 75 year old male with a history of a left CVA, which is about two months ago. So within your evaluation, et cetera, you find physical limitations that occasionally create difficulty with feeding. He's got a past medical history of uncontrolled diabetes and congestive heart failure. He is retired, he lives alone, and he does have minimal family support. He's a smoker, and then in conversation he does report that he has had a recent loss in appetite, but he also mentions that his pants are no longer fitting and you happen to actually notice that they do frequently fall down during your gait training. So that's what's going on with our patient here.

So in kind of thinking what you're going to do, right, you wanna think of your steps, so you wanna look at your nutritional screening, you wanna think about his medical history, you wanna think about your state practice acts, and then you wanna think about, you know, your own personal knowledge that's pertaining to the situation, and then if you're comfortable in handling it. So what you may choose to do is utilize some of those tools, and I'm specifically looking at the DETERMINE, or the Mini Nutrition Assessment, or the malnutrition screening tool because he is an older adult, so I did automatically go to looking at malnutrition. So you can use one of those screening tools, or you can just simply look at those characteristics that are used in identifying a risk of malnutrition. So if you look at just those criteria, right, so it's gonna be two or more, so just think about, again, I'll go back to, so you can see kind of our case that we're looking at here. Right, we've got physical limitations, uncontrolled diabetes, congestive heart failure, those limitations with feeding, and then the loss of appetite and what looks to be some weight loss. So what I did is I kinda looked at my own screening tool, and what I pulled from here is really looking at his readiness to change. So this individual, we named him Bob, and what I wanted to know is really Bob's readiness to change, to really depict what type of information I may utilize or educate with Bob. So if you looked when I asked Bob on a scale of zero to 10 how important is

consuming healthy eating pattern to you? And Bob put a one, so it's not really important to him. And then how ready are you to make change? Again, it's not really important to him, okay, so just kinda keep that in mind as far as what you think you would do based on his stage of change. So I'm gonna be looking in the comments and the Q&A here. With Bob what do you think your nutritional intervention would be? I'm gonna give you a minute or two to just kinda put in some responses and kinda see what you all come up with as far as what would you do based on this case. All right, so Deanna's got, you know, encourage to increase water intake, increase fruits and vegetables. Robert pointed out to obtain an RD referral. I'm just kinda randomly kicking through, and I do apologize, Callista, this is probably gonna mess up our Q&A after, but that's okay. Christina, controlling diabetes, Linda, assisting getting Meals on Wheels to get at least one meal a day. These are all fantastic responses that are coming in. Refer to a dietitian.

Awesome, patient education on nutritional importance. I'm gonna say, Valerie, you really hit it right on there as far as my first one. So, the first thing you can start with is education on that importance of nutrition. Because Bob is not really in a state of change sometimes providing those immediate suggestions to change or those tips and tricks may not be most appropriate, 'cause he's not ready to absorb that information. So one of the best things that you could do is really just kind of educate him on the importance. And Susan just pointed out, right, educate him on the positives, the increase in strength and energy that he may receive from taking in adequate amounts of food or appropriate food, okay. So that's kinda the first thing you can do, the next one being access solutions. I do apologize, I didn't catch the name, but that was definitely mentioned in there as far as referral to Meals on Wheels, so that's awesome. Because of his social isolation, living alone, I might go to probably be congregate sites, trying to get him motivated to be around other people. And then a referral. The malnutrition would've triggered it, and because of his increase in needs, because of the uncontrolled diabetes, you may not feel most appropriate to recommend some type of

supplement because you don't know how it may affect his chronic conditions. So, the referral to a registered dietitian would most likely be appropriate beyond that general education. It's really because I'm concerned of that uncontrolled diabetes. So, case two, and those were great responses, everybody seemed to kind of really hit the nail on the head as far as referrals and education, et cetera. So looking at case two, right, you got a 54 year old female that's status post right total knee, so I'll give you kind of a second just to look at this here before I move off of this slide.

So, this patient's name, her name is Jane, she's got a medical diagnosis of some knee OA, but she is one week status post right knee replacement. She's got four kids, two jobs, she's a social drinker, a BMI of 38, so classified to be obese, and then her blood pressure is classified to be hypertensive. So looking at her intake form here, what I kinda generally gathered was that she sometimes ate processed foods is what she indicated, she always drank sugar-sweetened beverages, she always eats traditional processed foods, I apologize, the meat processed was sometimes, she does eat out often. Looking at her readiness to change, how important is consuming a healthy eating pattern to you, she rated a six.

So at a six you're kinda more so closer to preparation and downward, right, looking at somebody that you could probably really influence their behavior change 'cause they know that they need to, and they're kind of in that stage to get ready. And that being how ready are you, at that five. So with Jane here just let's again kinda throw in some nutritional interventions, right, what would you do as kind of your first thing going forward, or any concerns you may have with Jane? She's just had a total knee, her eating pattern looks to be a little bit more processed foods, we're dealing with an individual that's overweight. And remember, she has kind of a social history going on as well with four kids and needing to work two jobs to kind of support everything. All right, so we've got discuss the role of nutrition and healing from Amy, okay. Maria says since she is motivated offer resources to healthier diet options, including online

sources. Deanna, discuss general nutrition education, decrease processed foods, increase water consumption. Linda, tell her to make one small change at a time, for example, substitute water for sugary beverages. Fantastic response, Linda. Valerie, offer to help her make better eating decisions, provide her with websites, handouts for nutritional info. So, pretty awesome responses rolling in again. It was pointed to as far as the healing, right, educate on increased nutritional needs, that protein, additional protein that may be needed. I think Tammy just kind of commented on that as well, protein to improve that healing, right, 'cause we're status post total knee, would most likely benefit from some weight management approach, too, which is kind of my thought, and the wonderful thing about Jane is that there's a lot of ways that you could go about it, there's no one perfect answer, 'cause she's got a lot of various things going on.

But the protein's important, the weight management may be important which could coincide with the processed foods. She is in a preparation stage, so it is appropriate for you to kinda help with modifications, as someone alluded to, making swaps, water for sugar-sweetened beverages, things like that. Now what I did throw in here, what may have thrown some of you, is actual referral because of her social situation and her home life. Now, again, and what I'm thinking is, is because of the extensity, the intensity that Jane may need coaching or counseling, she may do better with working with a registered dietitian that can devote a lot of time to it, because she's working those two jobs, and she's got the four kids, and she may need assistance with meal planning because we're eating out often, so there might be some deeper lifestyle adjustments that need to be made. So just kind of an option as far as potential referral because of that. So in conclusion, nutrition is essential to patient care and it's well within a therapist's scope. You won't know of a need unless you are screening for it, so that nutritional screening kind of being of most importance. Be mindful of your practice act and know your own personal knowledge limitations and know your own biases, and not to portray that onto your patients. You wanna utilize readiness to change to help

determine the type and appropriateness of nutritional education. If they're early on in those stages, they're giving you ones and twos, it's really just education on the importance. If they're giving you six, sevens, and ons, it's really, that's where you can start giving tips and tricks to improving nutritional intake. And then remember the goal of a nutritional education is to really get that patient as close to normal, healthy intake as you can because you wanna improve their metabolic efficiency to facilitate physical recovery and health and lowering their risk of developing chronic diseases. So that's it for me as far as the formal presentation information goes. I do apologize for the little glitch with the connection. Feel free to reach out to me if you have any questions that are not answered today, or if you want to have a deeper conversation with anything. In all honesty Twitter is probably the easiest and quickest way to get ahold of me. Outside of that, just sending a quick email.

- [Callista] All right, we do wanna hit just a couple of questions. I know we did promise about that one question on the quiz, Patrick, if we can answer that one for sure. That one was on quiz question number seven, and I put that in the box down there, can you see that down there? Quiz question seven.

- I can.

- [Callista] Okay. And I can read it, too. It says, "Which professional practice act "should be reviewed when determining "an appropriate nutritional intervention?" And I believe that Karen was wanting clarification on that, she was asking if it was the dietetic or the PT act.

- [Patrick] Yeah, so for that particular question what I was gearing it towards would be which should be reviewed in determining the appropriate intervention, and that does point a little bit more specifically to needing to know the dietetics of nutrition. My hope would be that you would already know your own physical therapy practice act, though

you need to review both when determining that appropriate nutritional intervention, really what you're going to do avenue, it's going to be most appropriate that you're aware of any professional boundaries.

- [Callista] And then we have a question on supplements for geriatrics, and if you're able to say anything about anything that you'd recommend for supplements for geriatrics or anything on that topic.

- [Patrick] Yeah, so what generally comes up with the supplementation is because you look at your Ensures and your Glucernas, et cetera, right, they are traditionally very high in sugar, and that is traditionally the concern that some people have is that we're trying to minimize the intake of sugar, right, within the diet, but with your older adults the risk of malnutrition and trying to combat that is going to completely override any concern of sugar intake. The entire purpose of that product, having those added sugars, and fats, and flavors, et cetera, is to facilitate that individual to consume them, to get that additional protein and calories. So the risk of malnutrition outweighs the concern for sugar in any of those beverages. I think that's the question I had seen.

- [Callista] And we have another clarification question on the quiz about number 10, and it was on which resource is not appropriate to utilize as a nutritional education. And there is four of those, Academy of Nutrition and Dietetics, USDA Dietary Guidelines, nutritional systematic reviews and meta analysis, and then case study findings.

- [Patrick] So the one that would be inappropriate would be your case study findings, right, 'cause case studies are traditionally going to be one or a handful of individuals, and it's not appropriate to apply that small sample size to a general population. You wanna stick with those first three.

- [Callista] All right, I think that is it. There's a really, really long one. Kathleen, are you able to help me with that one? 'Cause I'm not even able to open all of that one up.

- [Patrick] Is it the one on the milk? Yeah, so I dove into that a little bit earlier as far as the calcium.

- Even the second part of it.

- Okay, so now I'm seein' the, let me see, in other foods, they recommended almond milk. So within the Canada Guidelines they're not recommending any type of milk replacement, they're just suggesting water intake in general. Do you think the US will follow suit and eliminate the dairy portion? For my own personal belief, I do not think they will, just because of the dairy industry's involvement in creating nutritional recommendations, so I don't think that they're going to get rid of it.

- [Callista] All right, well that was our last question. Thank you so much, Dr. Berner, for today.

- [Patrick] You are very welcome.

- [Callista] And thank you so much everyone for being a part of today, and attending, and I hope to see you all back in the classroom again. Have a great day, everyone.