

Speaker 1:	00:00	Welcome to the Perioperative Nutrition Podcast, sharing knowledge with clinicians to ensure all patients are ready for surgery. This six-episode series is sponsored by Abbott Nutrition.
Monty Mythen:	00:11	Hi, I'm Monty Mythen. I'm a professor of anesthesia and critical care from University College London. I'm an adjunct professor at Duke University Medical Center, and I'm also editor-in-chief of TopMedTalk, so I'm delighted to be here at the Duke Clinical Research Institute, the DCRI, with Paul Wischmeyer. I've been invited in to be a guest host for a special series that he's been recorded on nutrition in surgery. Paul, how are you this morning?
Paul Wischmeyer:	00:36	Wonderful. Wonderful. Thanks for joining us Monty and thanks for guest hosting our podcast today.
Monty Mythen:	00:42	Well, I didn't expect the call, but thank you very much. I come here on a regular basis, and I know a lot about the work that you do, but I understand that the reason you've asked me to come along today and not only to explore a little bit more about your expertise, but also talk to you, which we'll come back to it a moment, as Paul, the patient, which not everyone may know about. An expert on nutrition, both from giving out advice, but also hopefully, doing the right thing for yourself. First of all, Paul reminds us about your role here.
Paul Wischmeyer:	01:09	Sure. Again, this is Paul Wischmeyer, and I'm a professor of anesthesiology and surgery here at Duke, and work as an intensive care doctor, perioperative physician and nutrition physician running the nutrition service for Duke University Hospital and the TPN service in that role, and then also serve as the director of perioperative research for the Duke Clinical Research Institute.
Monty Mythen:	01:33	Which is where we're sitting.
Paul Wischmeyer:	01:34	Which is where we're sitting now.
Monty Mythen:	01:35	Amazing institute. They very generously shared with us on previous podcasts elsewhere that you're also, at times, Paul the patient. Just briefly tell us about that again, Paul.
Paul Wischmeyer:	01:46	Sure. This is where my passion for why an anesthesiologist would choose to become, first, a perioperative physician, I suppose, but second a nutrition, in particular, perioperative, an ICU physician. This, for me, began at age 15 when I was

diagnosed with inflammatory bowel disease, or ulcerative colitis, and told, rather abruptly, as a student that I was going to spend the next month in the hospital and not eat anything and get all of my nutrition through an IV they were going to put into my neck via parental nutrition, we call, or intravenous nutrition.

- Paul Wischmeyer: 02:18 That was the beginning of my experience, and ultimately about three months later my colon perforated, broke open, and I got a severe septic peritonitis like, abdominal picture and ended up having my first operation where my colon was removed. Since then I've had about 21 other subsequent major abdominal surgical operations over the last 30 some years. Some as recent as just a few years ago, two, three years ago, I had three additional large operations. This has been a routine part of my life and everyday for me, I realize, that tomorrow could be a day a bowel obstruction occurs or some other urgent surgical abdominal surgical matter will occur. So everyday I see as a preoperative nutritional preparation and optimization for me, and so it's become a big part of my life, an everyday part of my life.
- Monty Mythen: 03:10 It doesn't necessarily carry over in a podcast, but you are in fantastic shape. I know you're highly, highly motivated to keep yourself well-nourished, but also exercises are a key components of what you do.
- Paul Wischmeyer: 03:22 Yeah. I really think that the truest, optimal way to prepare for surgery is the combination of nutrition and exercise as well as all the other, of course, medical things we need to do for patients. But I think when you're focusing on sort of the metabolic readiness of a patient, the combination of nutrition and exercise is essential. We have a lot of data that there actually is an obesity paradox, the idea that maybe the ideal BMI to have surgery, to have COPD, to have heart disease, to have cancer is actually around 30 to 31.
- Paul Wischmeyer: 03:55 Now, with the assumption that we believe that 30 to 31 probably comes with additional lean body mass, and so clearly a BMI of 30 to 31 that is largely fat mass versus one that's largely muscle mass, which is what I try to shoot for and attain in my preparation for surgery. We think that is where we want to build a reserve, and the best way, of course, to build muscle reserve is through exercise and nutrition. And then, clearly, there's a cardiovascular conditioning roll that affects the vagus nerve and signaling to inflammation that also is essential in cardiovascular training.

Monty Mythen: 04:27 If you don't mind just a little bit about how you prep. Let's imagine, you know you're going to have surgery in ... What's a meaningful time period? Four weeks, six weeks, two weeks, one week?

Paul Wischmeyer: 04:35 Yeah. I think we're finding that, at Duke, we have about a four-week lead time. Say, on the average major GI surgery. It could be as long as six, could be as short as two to three, but the average is four weeks. Most of my surgeries, and the reason this is an everyday part of my life, actually they're more emergent. They're related to bowel obstructions that happened acutely, so I don't know if tomorrow will be the day or next week will be the day. That's why every day is I take the same 15 supplements and do the same exercise routine.

Paul Wischmeyer: 05:04 But I think for the patient who's now been told, like if I had been told, let's say, tomorrow that I'm going to have a major abdominal surgery in four weeks, I would have a very structured approach to that. That is a part of my everyday life now.

Monty Mythen: 05:17 And is there any particular secret sauce that you throw in that's readily available? Or is it about good, well-balanced food off the plate?

Paul Wischmeyer: 05:26 Yeah, that's a great question, Monty. I think patients, ask us, other physicians asks all the time, can patients not just eat their way with a good healthy diet? Which I think is essential. Clearly, intake of a high protein diet, which is part of our per kilo recommendations, getting in more than 1.2 grams per kilo or ...

Monty Mythen: 05:46 What does that [crosstalk 00:05:47]?

Paul Wischmeyer: 05:47 Two grams per pound, perhaps even. Grams per pound, sorry.

Monty Mythen: 05:49 What does [crosstalk 00:05:50] in steak or chicken terms. What does that look like?

Paul Wischmeyer: 05:52 Sure. Typical chicken breasts may have seven to 10 grams or protein, an egg has seven grams. If somebody sends ... A glass of milk, eight grams.

Monty Mythen: 06:02 Let's imagine I'm a 100 kilos, I wish. How much chicken do I have to eat roughly?

Paul Wischmeyer: 06:09 We're talking about for a minimum of 120 grams a day. If you were talking about eggs, we're talking about 15 to 20 eggs a day.

Monty Mythen: 06:18 Not everyone remember the film Cool Hand Luke, but I can't remember how many he got to ... But anyway, we can look back at that another time. That's a big challenge. Some supplementation, which allows to pack the protein in, you think is a key part of it or is believed to be a key part of it.

Paul Wischmeyer: 06:32 We do, and we know that all protein is not created equal. Clearly, if you're asking me what food gives you the best protein to prepare you for surgery and to build lean body mass, muscle mass and strength, for an operation, I would tell you eggs are the best biological efficiency protein of the natural foods, and then meats, chickens, fish. I think fish is one of the best because of the fatty acid content being healthy in many of the fishes, but meat in general is going to have a better amino acid profile to build muscle, say, then vegetable-based proteins.

Paul Wischmeyer: 07:02 There clearly is a hierarchy of protein in foods and then there's also a hierarchy of protein in supplements. We know Whey protein is by far the most efficient protein, which is the kind of protein contained in many of the nutrition supplements that are out there, and if you're a patient looking for one, that's the one you want or Whey/Casein mixture. Casein is a milk protein that has a slower absorption. Whey protein has a very fast absorption, and very efficient absorption.

Monty Mythen: 07:25 Whey being W-H-E-Y protein, is that right?

Paul Wischmeyer: 07:30 You got it. Yeah.

Monty Mythen: 07:30 Yeah. [inaudible 00:07:31] whey.

Paul Wischmeyer: 07:30 It is. It's a derivative of making cheese.

Monty Mythen: 07:33 Gotcha.

Paul Wischmeyer: 07:33 That's where it comes from.

Monty Mythen: 07:34 Paul, if you were advising me, let's imagine that I was going to have surgery in four to six weeks time. I think I'm reasonably well-nourished, carrying a few extra pounds I shouldn't be, but I get physical activity every week. I'm going to the gym every week. What can I do to change my style?

Paul Wischmeyer: 07:49 This is where we really believe that adding some additional protein supplementation and maybe even some specific nutrients themselves can make a difference in your outcome. And this is part of what I take every day, as a patient or

preparing for being a patient, and that would include a high protein oral nutritional supplement, which are these little drinks. They cost \$1 to \$3, that contain typically 18 to 20 grams in one small serving of high-quality protein, typically Whey and/or Whey Casein, and often other nutrients that have been shown in large randomized trials to benefit hospitalized patients in their recovery.

- Paul Wischmeyer: 08:28 Things like HMB, hydroxy methylbutyrate, which is a derivative of leucine, it's found in catfish and watermelon. You'd have to eat a lot of watermelon to get enough where you can just drink one of these small drinks, and you can get in enough, and HMB has been shown in AIDS patients and cancer patients and athletes to increase lean body mass building without fat gain. It stimulates some of the pathways for the physicians out there, the mTOR pathways, that stimulate muscle growth. I take that every day. I take three grams of HMB every day.
- Monty Mythen: 08:57 If I appear to be, by your assessment, screened out as being reasonably healthy and reasonably well-nourished, that's advice you're giving me an I go to the pharmacy and buy those for myself? Or are you giving them to me as Duke trying to make my surgery better?
- Paul Wischmeyer: 09:12 We have some processes through Duke that will give them to you, but some processes where we're going to suggest you go to the pharmacy or go through Amazon or go through another vendor to get them. You can get them at drugstores, the products that contain HMB are available, say, at your local Walgreens or local Rite Aid, local drug stores here in the US, around the world, but they're also available on Amazon and other mail order websites often quite reasonably. Actually, the best place to get them cost-wise is within the hospital pharmacies because we cut a deal.
- Monty Mythen: 09:41 Without over-judging it, I'm paying a similar sort of price to a fast food meal of some form. It's not going to break my budget in the four to six weeks-
- Paul Wischmeyer: 09:48 Probably less.
- Monty Mythen: 09:49 Probably less, okay. That's great. That was very, very helpful. Now, let's imagine my frail, elderly relative or friend who hopefully is lucky enough to come through a system like yours and get screened out. We can see they're malnourished, that we've been struggling to get them to take extra food over time, but we can see that they're wasting with time and age, no

matter how much we care for them. What are you going to do to change their styles?

- Paul Wischmeyer: 10:13 I think, again, the inclusion of at least twice a day, sometimes three, of these high protein oral supplements is essential, which can be challenging. Some people don't like the way they taste. They come in lots of flavors, luckily, they're better cold, I will tell you. But I think it's something that we really need to, as caregivers, family or physicians or other providers, need to say, "This is medicine," just like the preop antibiotics you might take or your preop blood pressure medicine you might take or your diabetes medicine. This nutrient supplement is medicine that needs to be taken every day because we need to be sure that compliance is good with this. And often, if people see it as just a nutrition or food option, it becomes optional to take.
- Monty Mythen: 10:57 When you give it to them, do they receive it ... It looks like a vitamin supplement you could buy in a supermarket or does it look like a medicine?
- Paul Wischmeyer: 11:06 Unfortunately, it still looks like supplements you can buy in the supermarket. They still look like the small protein drinks you can buy on the nutrition counters of the supermarkets and of the drugstores. I think that's why it's such an important piece that we emphasize, as providers, that people take this in because again, it's easy not to. I tell my patients, "You should take them ..." And I do this myself. "You should take this before you eat your meal."
- Paul Wischmeyer: 11:31 Because if you eat a meal, you may feeling not likely to take it or take it between meals and before you go to bed. Before you go to bed is the most important time to take in protein and amino acids, branched-chain amino acids, if you can bring those in as well, because we know that can stimulate lean body mass muscle gain as much as 20% in the elderly study from Netherlands, that have shown a 17 to 20% muscle gain when someone takes 15 grams or more of protein before they go to bed, especially if they're branched-chain amino acids.
- Monty Mythen: 11:59 For us, the loved ones trying to help the person through that, we're saying to them, "Mom, dad," whatever it is, "Auntie, uncle. These are medicines."
- Paul Wischmeyer: 12:10 These are medicines. These are essential to your recovery. They're going to reduce your infection, they're going to improve your ability to walk after surgery. They're gonna check your length of stay in the hospital. They're going to get you ready for surgery, make you safe for surgery. And then I think the other

piece I would suggest, whether it was you or an elderly parent, grandparent or family members, is things like vitamin D. We know that in the US 70% of the population in general, sick or well, is vitamin D deficient.

- Monty Mythen: 12:36 Yeah, my levels are a bit borderline because [crosstalk 00:12:38].
- Paul Wischmeyer: 12:38 Most are.
- Monty Mythen: 12:38 ... doing that for my GP, started doing it. I thought, "Whoa, where did that come from?" I need to play more golf."
- Paul Wischmeyer: 12:42 We evolved as humans to be out in the sun and, of course, we typically work jobs where we're not out in the sun and we wear sunscreen. Sunscreen inhibits vitamin D production and so you can't get enough from food. You can't get enough from just taking a multivitamin. You will never get enough by drinking milk. Realistically, if you're low, need to take 50,000 units for a week or two or three weeks before surgery, and then 2000 of D3 a day every day thereafter. Probably for the rest of your life because, again, we as humans are not built to not be in the sun and that is just part of our life now.
- Monty Mythen: 13:17 And all of this overlaps with the whole iron anemia thing, which is another whole discussion for another day, but that's getting sorted out as well.
- Paul Wischmeyer: 13:24 It is. That's one of our [inaudible 00:13:25] clinics, is clearly another piece of the perioperative preparation pie.
- Monty Mythen: 13:30 Great. Well, Paul, thank you very much indeed for sharing. I'm going to go away now, I'll worry a bit more about my vitamin D levels. Feel good that I might be the perfect BMI. I'm going to go look it up in a second. I'm going to play more golf and maybe take a few supplements if I need surgery. I've been asking people this recently, if I gave you a billboard, you can just have one, you can't have three. What would you put on it related to nutrition? That's one to monkey with all of a sudden.
- Paul Wischmeyer: 13:56 Sure. I would say taking more protein. Get your vitamin D corrected.
- Monty Mythen: 14:01 Walk a bit more.
- Paul Wischmeyer: 14:01 Yeah, walk a bit more, and I think the other piece I would say, because I'm a believer is, that the week before surgery, these

arginine-containing immunonutrition supplements have a lot of data, reduce infection as much as 40%, so anybody malnourished or not, taking both preop carb-loading the night before surgery because we wouldn't run a marathon without carb-loading. Why would we have a massive operation, that is every bit the stress that a marathon is coming, into dehydrated and starved? The carb-load and the immunonutrition piece the week before and the night before surgery really are places we have a lot of data proved outcome that can make a difference for our patients.

Monty Mythen:	14:40	Great stuff. Paul Wischmeyer, Duke Clinical Research Institute. Fantastic. Thank you very much.
Paul Wischmeyer:	14:46	Thank you.
Speaker 1:	14:47	Thank you for listening to the DCRI's Perioperative Nutrition podcast sponsored by Abbott Nutrition. More episodes are available on SoundCloud and dcricri.org .