

NUTRITION & IMMUNITY PODCAST SERIES

NUTRITION SUPPORT OF THE COVID-19 ICU PATIENT

Featuring :: David Evans, MD, FACS & Paul Wischmeyer, MD, EDIC

TRANSCRIPT

Maura: With a constant flow of news related to the novel coronavirus—Covid-19—hitting the air waves each day, one concept remains consistent: The best way to fight the virus is to avoid contracting the infection altogether, and to do everything we can to prevent its spread if we fall ill. Both tactics are designed to help us flatten the rising curve of ICU visits related to this virus. I'm speaking globally, here. And, I'd offer statistics, but they're changing from day to day.

Maura: I'm Maura Bowen, podcasting for Abbott Nutrition Health Institute. I'm talking today with Dr David Evans (MD, FACS), Surgeon and Critical Care Specialist at Ohio Health in Columbus, Ohio, and Dr Paul Wischmeyer (MD, EDIC), Anesthesiologist and Critical Care Specialist at Duke University Hospital in Durham, North Carolina.

Maura: Dr Evans and Dr Wischmeyer are here to talk about the role of nutrition and immunity for patients and practitioners who are fighting the virus in the ICU.

Maura: One quick note first: This podcast recording may sound softer than you're used to hearing, and that's for the sake of social distancing. Dr Evans, Dr Wischmeyer and I are dialing in for today's discussion rather than sitting in the studio.

Maura: Dr Evans and Dr Wischmeyer, welcome.

Dr Evans: Thanks for having us.

Dr Wischmeyer: It's great to be here.

Maura: Thank you so much. We appreciate your time. We know how busy you are. I feel like this is an important question to ask, because I think our listeners would like to know just what I would like to know, which is: How are you doing in this new environment? What's it like on the front lines?

Dr Evans: Sure. Well, I'm a trauma and critical care surgeon, so normally I'm not involved in the regular care of patients with ARDS and pneumonia unless it's a complication of surgery. But we're already redeploying all of our critical care specialists, so I am on the front lines. We're dealing with Covid-19 already. I think one of the surprising aspects has been that even when you're doing trauma care, there's a lot of fear and a lot of anxiety. A lot of patients are getting worked up about Covid-19 and being put in isolation, that maybe we wouldn't have normally been looking at.

Dr Wischmeyer: This has definitely been a dramatic career and life change, I will say. I've spent 10 of the last 12 days in the ICU—the first half doing nights and now this whole week doing days. It's really a dramatic thing. I work in a mixed surgical-medical ICU at Duke. And so I'm used to seeing respiratory failure, without a doubt, but now the

predominance of what we're seeing is only Covid respiratory failure. As many hospitals have, we've stopped doing elective surgery. And so instead of me having rows of surgical critical care and trauma patients, now I have almost entirely Covid patients with the occasional scattered trauma or surgical patient involved. You can't go into rooms without your devices and face masks and face shields and gowns. And you're afraid to touch anything. You wash your hands hundreds of times a day. You come home and you take all your clothes off in the garage, and you put them in a paper bag, go into your house and jump into the shower because you're afraid you've brought it home to your family. This is a pretty big change in all of our lives, and I'm sure for some of your listeners.

Maura: And how are you both, health-wise? Are you both staying healthy? And how is your staff?

Dr Wischmeyer: One bright note is that when we're not in the ICU, the rest of the time, I'm home. And so I've been able to work out on my Peloton bike in my home gym 7, 8, 10 days in a row sometimes when I'm not in the ICU, so I've probably never been fitter in my life. And I think all of us have put an incredible emphasis on eating well, sleeping well, and really doing a lot of self-care, as maybe we'll mention later, for people to take care of themselves. Now I'm religiously, as I always have—and I've been encouraging my whole family to — take Vitamin D and take probiotics, and there's a lot of good data for ways to prevent viral infections that we're not bringing to the forefront. In fact, we're planning trials here at Duke to prevent healthcare provider illness from Covid with these things. So, taking care of yourself is of paramount importance now because none of us as providers, as David knows, can afford to get sick since we're on the schedule almost every day as either a primary provider or backup provider.

Maura: And how about you, Dr Evans?

Dr Evans: Yeah, I agree. I think my team and myself are staying healthy. We're definitely being much more conscious of our own bodies. But that comes with a little paranoia as well. Every sniffle, every cough, every sneeze, you start to wonder, "Am I getting something?" And of course, it can be allergy season for many of us anyway, so we're trying to work through those things. The bathing rituals, the way we're managing even our wardrobes—we're just much more conscious of things we normally take for granted that we normally don't have to think about much.

Maura: Well, thank you both so much for all you're doing for your patients and their families. We've been thinking about our healthcare professionals and others on the front lines non-stop. We're really just so grateful.

Maura: Many of our listeners know both of you. Even so, do you mind telling us a bit about yourselves: your names, your current roles, why you do what you do?

Dr Wischmeyer: Sure. This is Paul Wischmeyer, and I'm a critical care physician at Duke University. I also direct the nutrition and TPN team at Duke University, as well. I serve as professor of anesthesiology and surgery here, associate vice chair for clinical research. I spend my time split between nutrition and critical care, and then research on the role of nutrition to improve outcomes in critical care surgery and other illness to improve recovery and readiness for things like surgery in patients.

Dr Evans: I'm David Evans. I'm a trauma critical care and acute care surgeon at Ohio Health in Columbus, Ohio. I previously was the medical director of a parenteral nutrition service, and I am transitioning into a similar role for my [current] health system.

Dr Evans: When I started working in the parenteral leadership position, I realized that nutrition is really a continuum, and that parenteral nutrition doesn't really stand on its own but needs to be supported by comprehensive enteral and oral nutrition care as well. And so over time, both my research and educational interests have evolved into supporting best practices and operational enhancements to make sure our nutrition practices and hospitalized patients are optimal for improved outcomes and improved recovery.

Dr Evans: And really, as a surgeon getting to follow my patients over time, I really see the impact of good nutrition

care on wound healing, functional recovery, and see that the patients who are prescribed a good nutrition care plan and are practicing and compliant with that to have much better outcomes.

Maura: So. Let's talk about this virus. COVID-19 has had a significant global and domestic impact on healthcare providers and the patients they care for—particularly in the ICU. Many practitioners find themselves providing nutrition care for an increasing number of patients with increasingly high levels of acuity. Can you tell us about that?

Dr Wischmeyer: Covid-19 really presents unique problems in many respects. Aside from the Covid patients, one of the first things I've noticed in the ICU is that the patients who don't have Covid-19 are coming to the hospital much sicker and much later with other diseases than we're used to seeing because people are afraid to come to the hospital.

Dr Wischmeyer: The Covid-19 patients are quite dramatic because, we all know about the respiratory failure they have, and it's quite dramatic. We're proning more patients—in other words, turning them over on their stomachs to help them ventilate. We're intubating people much sooner than we would have before. We have a special Covid intubating team that runs the hospital that's there 24/7. It's a team that has special safety devices. It takes about 45 minutes to get dressed up to go in the room and about 45 minutes to come out of the room. Of course, this disease affects many other organs. Two out of three patients have cardiac issues: sudden cardiac death, cardiac arrhythmias, heart failure.

Dr Evans: I think another major impact on our care has been that we're trying to minimize the number of providers in the room. We're trying to minimize the number of times providers need to go in and out of rooms. So, we essentially have tried to batch medication delivery so that more medications can be administered at the same time, rather than having schedules of meds that are variable so that the nurses are going in, for example, every hour or so. We are trying to make our procedures much simpler, reducing things like eliminating gastric residual volume measurements for many patients, which is in line with some guidelines that already are existing, but this forces the issue a little more. Certainly, intubation is the big one, and so the earlier intubations is a key part of that.

Dr Evans: A lot of these precautions have trickled down not just to the known Covid patients but to the average patients, because we know many patients can be asymptomatic carriers of Covid-19, we're using N95 face masks for all intubations. If they are Covid-19, we're also taking additional precautions with a special team.

Maura: Both the American Society for Parenteral and Enteral Nutrition (ASPEN)/SCCM (Society of Critical Care Medicine) and the European Society for Clinical Nutrition and Metabolism (ESPEN) recently released recommendations about the nutritional care of COVID-19 patients. We'd like to hear your perspective on whether providing nutritional care for a COVID-19 patient is different from the care you would provide to other ICU patients.

Dr Evans: It is different. I am particularly partial to the ASPEN/SCCM guideline that was published about a week ago. I recommend that people check that out. We really need to rethink how our dietitians are doing nutritional assessments, how we approach nutrition in general. We are being more aggressive with gastric feeding. We have eliminated the in-room dietitian nutrition-focused physical exam and moved to a telemedicine version of the nutrition assessment. Our dietitians for the most part are offsite, they're reviewing records if they want to know physical exam aspects of the patient. They'll talk to the nurse for that patient. They're interviewing families, and, when the patients are conscious, they interview them by telephone. We're keeping one dietitian in the hospital. Their role is primarily as an educator for patient discharges. But overall you can see it has really impacted how we've handled things. And a lot of that is consistent with ideas we got from the ASPEN/SCCM guidelines.

Dr Wischmeyer: I totally agree with David Evans that the nutrition therapy guidelines from SCCM are excellent. One of the things we're discovering—and the guidelines address this—is you can feed prone patients, there are some small trials showing safety. I think everyone should remember that the patients who are prone have a tracheal tube in place. And, I think the other piece is we're having a lot of these patients on pressors. The guidelines say it is safe

to do that. In fact, a large recent trial of clinical nutrition in 50,000 Japanese patients showed that starting enteral feeds within 48 hours of admission in the ICU reduces mortality.

Dr Wischmeyer: And the last thing to think about is we're considering going to parenteral nutrition sooner. And the guideline suggests this. Covid effects the gut. We've had patients that we've cared for who have had negative tests from their nasal swabs—in fact, multiple negative tests—and their stool has been positive.

Maura: Let's talk about how to determine the nutritional needs of the ICU patient. What is your preferred method for determining nutritional need and protein requirement?

Dr Wischmeyer: We're still using the equations that are typically used. Again, we're starting off with trophic feeds, keeping the calories 10, 15, maybe at most 20 k-cals per kilos for the first few days, so less non-protein calories initially, even trophic feeds initially, ramping our protein up maybe .8 grams per kilo in the first few days then advancing to 1.2 grams per kilo by Day 3 and then 2 grams per kilo every day thereafter.

Maura: Why did these recent professional society recommendations advocate for the provision of high protein enteral formulas?

Dr Evans: Well, I think over time we've become more and more concerned about post-intensive care syndromes, or basically the neuromuscular weakness we see in patients who've had long ICU stays, prolonged malnutrition, and so, by giving protein, we're trying to reduce the muscle wasting we see. One of our concerns is that while our ICU survival generally has improved, we aren't necessarily getting back to functional recovery. Many patients may go to a long-term acute care facility where they're undergoing long-term ventilator weaning, or they're having to learn how to walk again. Or they're really even too weak to do that—to ever get back to work or get back to the quality of life with their family. All of our goals around maintaining adequate protein delivery and coupling that with exercise and other strategies to maintain muscle mass and prevent muscle loss, these are all still key focuses for us.

Dr Wischmeyer: Covid is really striking the patients who already have comorbid illnesses, the elderly, the frail. Many of the patients I'm caring for are coming from long-term care centers where there are outbreaks. Nursing homes. These are the most at-risk patients for muscle wasting. If you allow significant muscle wasting to occur even for a week, or two weeks at most, these patients may never walk again, may never go back to a quality of life.

Dr Wischmeyer: One of our ICU fellows said it best: There's so much fear and trepidation about these Covid patients, we're forgetting our basic ICU care skills.

Maura: Are there any special considerations when determining caloric and protein needs for patients who are obese?

Dr Wischmeyer: I think they're the most challenging for all of us to estimate. That's where the research has shown that the predictive equations perform the poorest. I think the other challenge we have is that a lot of providers see the obese patient and say they don't need nutrition, they're overweight already, they're well-nourished. When we do CT scans and ultrasounds of these obese patients, we've discovered that many of them are very sarcopenic. So they really don't have the muscle reserve or muscle mass you would really expect.

Dr Evans: I completely agree. I'm using a similar low-calorie, high-protein strategy typically in that 15-18 kcals per kilos range, with a protein delivery of 2-2.5 grams per kilo. Modulars may play a role to achieve some of the high protein deliveries as well. And then I definitely continue to find sources of protein—both oral nutrition supplements and other sources—after the patient is extubated and out of the ICU.

Maura: You both have touched on the role of dietitians in the care of ICU patients. How have you been collaborating with your team during this crisis to provide optimal care?

Dr Evans: I've already mentioned that we've removed our dietitians off campus, working in a telework capacity. They still have access to the EMR. One of the things I've been very impressed with is their willingness to reach out to the patients themselves, and to their families. We've just had to step up that willingness to communicate. And definitely, we've been relying on them to keep us honest. Honestly, the Covid-19 disease is just so complex, and makes the care of the patient complicated—it's really made things that were normally routine now very complicated. Dr Wischmeyer mentioned the timing it takes to intubate a patient—to do all the stuff and then come out of the room. And so it's easy to let nutrition slip through the cracks. We really need to rely on our dietitians to keep us honest, keep track of calorie deficits, days of being in PO, watching lactate levels, watching pressor levels, trying to remind us when we're meeting our set trigger points for when it's safe to feed—or at least to start some trophic feeding.

Dr Wischmeyer: The dietitian is an essential front-line provider for the Covid patient, and I've just been amazed at the passion of the dietitians I've seen both in my hospital but around the country, especially in New York. I've watched some really creative things occur for the dietitians especially in the really hard-hit cities—New York, New Orleans and others—where they're moving to bolus feedings because they've run out of feeding pumps. When you're running out of pumps, I think continuous feeds are safer because you don't have to be in the room. But I've seen dietitians string the feeding syringe outside of the room and do bolus remittent feedings when they don't have any pumps from outside the room. I want you to know that's safe, and there's a nice ESPEN meta-analysis of that.

Maura: How do you determine what type of nutrition support you should be using (enteral vs. parenteral vs both)?

Dr Wischmeyer: The guidelines do a nice job of addressing this. When it comes to choosing the type, enteral is the preferred route. And starting trophically is a reasonable thing to do in your sickest patients. That said, if you have a patient in shock or a patient who is gastro-intolerant, or perhaps has GI involvement from their Covid, the guidelines recommend and I'm an advocate of moving to earlier parenteral as a good move. I would do it much sooner. We know now there's no infection risk with infusing parenteral nutrition in a critical care setting.

Dr Evans: I agree completely. The other thing to think about is that enteral nutrition has been shown to reduce the risk of ventilator-associated pneumonia (VAP). I mention that because it's so crucial that a lot of these patients early in the process have edema in the lung, the alveoli are filling up with fluid, but then what happens is that a secondary bacterial pneumonia sets in. And so while this may not be what we would traditionally call a ventilator-associated pneumonia, it essentially is kind of the same disease process. So a combination of enteral nutrition also probiotics may play a role. There's really good data showing that probiotics do reduce the rates of VAP in ICU patients.

Maura: What guidance can you share on the best practices for advancing to goal for enteral feeding?

Dr Wischmeyer: This is a really important topic we get asked about a lot. As the SCCM guidelines suggest, I think starting with trophic feeds and then advancing judiciously over a day or two is a very reasonable thing to do. I think one of the things they suggested that is quite useful is the use of prokinetics if you need to. Reglan and azithromycin can be of help here and help you get to goal. The other potential option could be, if patients start to recover and you have interruptions for various reasons, consider a volume-based feeding regimen.

Dr Evans: We're hearing a lot of reports about the gastrointestinal complications of Covid-19 and the symptomatology of that. While standard feeds are probably appropriated in the typical ARDS patient without gastrointestinal dysfunction, they may play more of a role in these patients. We really just haven't characterized what that gastrointestinal disease process is. Is there a defect in absorption in these patients? We really don't know that.

Maura: Could you talk about the importance of post-ICU nutritional care for COVID-19 patients? What nutrients should HCPs be aware of and recommend to their patients?

Dr Evans: Post-ICU we need to continue to be very diligent about protein delivery, both as oral nutrition supplements and in the diet. We want to make sure patients are combining protein delivery with exercise so that they're using muscle so they can build or in this case maintain muscle.

Dr Evans: I'm a big believer in the use of HMB as well. I like those HMB supplemented oral nutrition supplements. We know that HMB, which is an amino acid of the metabolite, leucine, can stimulate muscle synthesis and also reduce muscle breakdown through several different mitochondrial and other pathways. So HMB, particularly in geriatric populations and comorbid populations, can reduce muscle loss, improve strength and improve functional outcomes. Thinking about specialized nutrients like that is very important.

Dr Wischmeyer: I totally agree. In post ICU care it is every bit as important—perhaps even more important to ensure and really pay attention to adequate nutrition delivery. In the ICU, we have many more people watching if the patient is being fed. In that period we're trying to prevent the additional loss of muscle mass. It's not until the patient is in the post-ICU period that we really have the opportunity to begin to recover muscle mass and gain muscle mass again. That's when the post-ICU oral nutrition supplement use is essential.

Maura: Refeeding syndrome is another possible concern in this population. What are your recommendations for identifying the risk and implementing appropriate feeding protocols to prevent this syndrome?

Dr Wischmeyer: I think this really needs to get real attention. This is more your chronically underfed, malnourished patient than your well-fed patient that gets Covid off the street who was living life normally. You should monitor your patients' potassium, phosphorus, magnesium in case they get very low. But there's something else besides just electrolyte risk itself that leads to an increased mortality, the data is showing us. If you see refeeding syndrome happening in one of your chronically ill patients who come in with Covid or any illness, that's the patient you want to reduce the feeding to at most 50% of goal calories. Whatever you're feeding at that point—according to most of the people I talk to in the world and what I apply in my practice—we drop about half. And go up really slowly over 3-5 days.

Dr Evans: I think those are some great points. I'm very concerned, too, about some of the socioeconomic impacts of this Covid pandemic. We're at least hearing anecdotal reports of increasing food insecurity in our communities. Some of the social services are being overwhelmed with a need for food. At the same time, some of the meal delivery programs have been either cut back or unable to continue operating. Some elderly patients may not have had access to going to the grocery or able to get out of the home. They may be able to go but choosing to self-quarantine. Because of that, limiting the kinds of foods they choose because they don't cook at home or obtain higher-quality meals at restaurants, which of course aren't available now. And so I'm concerned that as the pandemic continues, we may see more of the impact of food insecurity and preexisting malnutrition when patients acquire Covid and when they're hospitalized. Some of us who may not be used to asking about food insecurity and access to food and routine food preparation in the home...those should be questions we bring forward in our interviewing and be thoughtful about that when we're looking for refeeding risk.

Maura: What advice do you have for the clinicians on the front lines of this pandemic?

Dr Wischmeyer: I think, first and foremost, be good to each other. I've never seen moral and comradery higher than the hospital I'm working in now at Duke than what I'm seeing right now. Go out of your way to compliment each other, to support each other, build each other up, be supportive. At the end of the day, I think it's really important to say that everyone did a great job today. The team and the nurses are the true front line people taking the hit in the worst way from this care. They're really giving their all in a way that is so selfless. It almost brings tears to my eyes watching the commitment love and care of the nurses on the front lines of the care of our patients. And of course the doctors and dietitians, physical therapists and pharmacists, they're all pitching in—but there's nothing more heroic than I've ever seen in my life than watching our nurses care for these patients. Even today I was just blown away.

I think there are great resources, too. The Society of Critical Care Medicine has outstanding guidelines and resources for both the critical care physician and the non-critical care physician taxed with critical care. Be sure to go to the SCCM website to take advantage of that. Twitter and Instagram have great resources. All of you at home, consider taking 4000 IU of Vitamin D every day. The other thing is probiotics. I have my kids, my parents and my whole family on them. And all of us taking a protein nutrition supplement. I take those, protein shakes and HMB every day. I take fish oil every day and some Vitamin C every day.

Dr Evans: I don't think I could have said it any better. I hope everyone can take care of themselves and take care of their families, maintain the social connections, find ways if not to exercise, at least get some fresh air, get a mental break from this situation. Mental health is another key part of this, both for the providers and for the patients. Supporting each other. And thrive on that spirit so we can of course take care of ourselves so we can take care of our patients.

Maura: All great advice. I truly want to thank you both for your time today. We appreciate all you're doing to help build awareness for the important role nutrition has to play in the management of patients with this virus.

Maura: And to our listeners: Our website, anhi.org, has a series of printable resources related to this topic—for instance, infographics on [nutrition and immunity](#), [dehydration](#), and [why maintaining muscle matters](#). You can find these resources on anhi.org by clicking “RESOURCES” and “PRINTABLE MATERIALS.”

Maura: If you're hoping for more podcast episodes on nutrition and immunity, rest assured we're developing a series of additional episodes to help support you—including the two episodes we published on 2 April featuring Dr Nicolaas Deutz. You can find these recordings on anhi.org by clicking “RESOURCES” then “PODCASTS & VIDEOS.” Don't miss an episode: Become an anhi.org member today by clicking “REGISTER” at the top of our homepage to receive regular nutrition science news updates from our team. Or, follow the Abbott Nutrition Health Institute on LinkedIn.

Maura: Thanks everyone. Stay healthy and safe.