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Vascular Innovations in the ICU: Lessons Learned from COVID-19

Announcer:

Welcome to *Vascular Viewpoints* on ReachMD, brought to you by Becton Dickinson. Here's your host, Dr. Jennifer Caudle.

Dr. Caudle:

Looking back on when the COVID-19 pandemic first began, the profound and painful impact was mostly shouldered by our intensive care units and the healthcare professionals within those units. So to learn more about this profound impact, today we'll be listening to an ICU physician share her lessons learned from the pandemic.

This is *Vascular Viewpoints* on ReachMD. And I'm your host, Dr. Jennifer Caudle. Here with me today is Dr. Kelly Cawcutt, an assistant professor in the Department of Internal Medicine and the Associate Medical Director of Infection Control and Epidemiology at the University of Nebraska Medical Center. Dr. Cawcutt, welcome to the program.

Dr. Cawcutt:

Thank you so much for having me.

Dr. Caudle:

Before we dive into the specifics, Dr. Cawcutt, can you tell us about how COVID-19 has changed the way you work in the intensive care unit?

Dr. Cawcutt:

Absolutely, I think for all of us in our organization and really for us to use across the country and the globe, we've seen some significant changes happen in how we care for patients. And a lot of that has had to do with changes in our personal protective equipment, our staffing, and just managing the surges of patients that we've seen throughout the last year. We've also seen adjustments in length of stay for patients and more patients that need a longer device-related support like mechanical ventilation or central lines. And so just a big shift to more aggressive critical care for longer periods of time in which we might be a little resource limited.

Dr. Caudle:

And just as a quick follow-up to that, what are some unique clinical factors that have come into prominence in patient care since the pandemic began?

Dr. Cawcutt:

So I think there are several patient factors that really have changed the way we think about care in the ICU, particularly as it relates to COVID-19 patients. So as I mentioned earlier, severity of illness has been significant. We have seen a lot more patients who've had severe respiratory failure and specifically ARDS, or acute respiratory distress syndrome. And those patients require a different level of critical care management. They may require increased numbers of infusions while on mechanical ventilators. They may require neuromuscular blockade and also thinking about the requirements for proning patients due to that severe hypoxia that accompanies ARDS. In addition, we've seen patients with worsening renal failure, requiring renal replacement therapies that require dialysis lines and adequate venous access for frequent monitoring of labs and electrolytes. We have seen longer durations of stay in the intensive care units on average, which also means that our patients have these devices in place for a much longer period of time, placing them at increased risk for potential complications, including infection, local site problems, or associations with clotting and thrombosis, which also really leads to that particular risk factor. The increased rates of clotting and thrombosis in COVID-19 patients have impacted our level of care with how we evaluate those patients, where we can put vascular access devices and how closely we monitor for development of thrombosis in these patients.

Dr. Caudle:

Excellent. And now on to the topic of vascular access, which is never too far away when considering patients with COVID-19. With regards to vascular access paradigms, what types of shifts have taken place?

Dr. Cawcutt:

So I think a few of the big shifts to really relate to what I just mentioned. We've seen patients in the ICU for much longer periods of time. Again, both here at my organization, but also as you look at the literature, really across the country. And that has related to increasing healthcare-associated infections that we also are seeing reported across the country.

And that really makes us pause and go back and think about that paradigm shift of what changed with COVID. And the length of stay in the ICU and overall indwell time for vascular access devices has been a significant concern. The need for additional or multiple vascular access devices at the same time, given the medications needed and potential renal replacement therapy needed, is something we have to be cognizant of.

And we also have patients where we have to consider their positioning, such as our patients who are being prone. And we may, under emergent situations, need to start with a centrally inserted central catheter placed in the internal jugular vein or subclavian vein. But when those patients are flipped supine, we can't see those dressings or access that is often. And certainly, we know that a long time of those indwells can increase risks for our patients, especially when we can't see them as frequently. And so we've really had a lot of de-escalation, if you will, of our lines to looking at transitioning to a peripherally inserted central catheter like a PICC line or increased use of peripheral I.V.s or midlines to treat and manage these multiple medical problems, but also to try and access the lines safely.

Dr. Caudle:

For those of you who are just tuning in, you're listening to *Vascular Viewpoints* on ReachMD, I'm your host, Dr. Jennifer Caudle, and I'm speaking with Dr. Kelly Cawcutt about vascular innovations in the ICU amid the COVID-19 pandemic.

So let's pick back up our discussion, Dr. Cawcutt, and consider multilumen PICCs. In what ways have you seen their role expand in ICU settings since the COVID-19 pandemic began?

Dr. Cawcutt:

So I think we've seen, at least in our clinical practice, an increased use specifically when we have to de-escalate down from our central lines that might be placed in an IJ or subclavian location. And given that some of our patients also are requiring renal replacement therapy, they may need a centrally inserted central catheter for part of the dialysis or, you know, replacement therapy needs, but also need a perfectly inserted central catheter for ongoing medications and infusions. So we may see them in tandem. Like I said, we may see it as a step down from those centrally inserted catheters to something with a little longer duration for interval time by preference. And I think we've seen a lot more leaning towards, again, at our organization, going to multilumen PICCs, specifically because these patients just tend to need frequent blood draws. They have multiple infusions that we're continuing to give these patients and medical therapies that are related towards their COVID-19 infection or also, again, potentially related to those secondary infections that we do see arise at times related to the severity of illness and nosocomial risk for prolonged device utilization.

Dr. Caudle:

And if we consider the CDC infection burden in ICUs, what are some steps you've taken in the past year to decrease this burden?

Dr. Cawcutt:

So I think even before we think about decreasing the burden, we do need to step back and just recognize that as we start to see the evolving data, we are seeing an increase in HAIs or healthcare-acquired infections related to COVID-19 and beyond across the country. And we are seeing more data come out suggesting that some of that is related to COVID-specific patient factors, such as the long time that they're in the hospital or the risks for maintenance of care while we are proning a patient and the lack of access to the dressing that we may have in that setting.

But also we were very resource limited and all eyes were on how to manage COVID-19 infections, how to take care of the patient specific to COVID. And when I say we, I include the entire ICU team, our nursing staff, our respiratory therapists, you know, our APPs, our physicians. We were all stretched incredibly thin. And some of these standards of practice in this setting did shift. And so I think step one for many of us is now that we're seeing this down-trend of cases that's persistent is to get back to the basics and make sure that all of those practices and policies that we had in place to prevent infections are still being maintained in the current setting.

And then we have further capacity to really look at the specific risk factors for why infections may happen more in COVID-19 patients. And are there better ways to prevent them? And like we mentioned before, we did have patients that we may have de-escalated their line from a centrally inserted catheter to a PICC line, and part of that allowed better access when the patients were prone. And so some of those caveats are different than we've had to really think about in some of our bundles across the ICUs at high levels before because

we just didn't have as many patients that needed that level of care.

Dr. Caudle:

Understood. And lastly, Dr. Cawcutt, I like to open up the floor for the final word. Are there any key takeaways you'd like to pass along to our listeners?

Dr. Cawcutt:

Yeah, I think that there's a few things that I really want to pass along. One is we talked about the experience in the intensive care unit with COVID-19, and that experience has been a really high burden on those frontline staff. We're seeing just more and more data that there has been profound burnout. We have seen more data about potential turnover of staff, and that really puts us at a potentially tenuous place at my institution, but institutions that are similar, that may be suffering from some of these issues we're seeing in the broader literature.

We know that when you are stretched thin or when there's a lot of turnover, it is harder to maintain the education and appropriate training for attention to central lines, the device choice, the device options from an algorithmic standpoint, and the maintenance of those lines to ensure that we really optimize that care across the board. And knowing that we've seen these increases in HAIs, I think it's really important to recognize that the burden cannot simply be dropped back to that frontline staff. We really need a collaboration within our entire organization to reinforce those needs, to revisit the workflows that we have now compared to what we had pre COVID, and really almost in some ways start from scratch as we re-evaluate that to optimize care and minimize burden on those frontline staff members that are so, so critical to helping us make sure that we protect our patients and provide the right vascular access for our patients at the right time, and also do that with preventing any adverse events to the best of our ability.

Dr. Caudle:

Well, with those final thoughts in mind, I'd like to thank my guest, Dr. Kelly Cawcutt, for joining me to discuss lessons learned from the COVID-19 pandemic as it pertains to her work in ICUs. Dr. Cawcutt, it was great having you on the program.

Dr. Cawcutt:

Thank you again so much. It was an honor to be here.

Announcer:

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