

Transcript Details

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More Than Modifications: How ICUs Are Adapting to COVID-19

Announcer:

This is ReachMD, and you're listening to *Vascular Viewpoints*, sponsored by Becton Dickinson, advancing the world of health.

Here's your host, Dr. Matt Birnholz.

Dr. Birnholz:

Coming to you from the ReachMD studios, this is a special COVID-19 edition of *Vascular Viewpoints*. I'm Dr. Matt Birnholz. Joining me to talk about vascular access team adaptations in response to COVID-19 in the US is Dr. Kelly Cawcutt, an infectious disease and critical care physician and Associate Director of Infection Control and Hospital Epidemiology at the University of Nebraska Medical Center, site of one of the world's most preeminent biocontainment units where several of the first American cases were managed.

Dr. Cawcutt, welcome to the program.

Dr. Cawcutt:

Hello, thank you so much for having me.

Dr. Birnholz:

Wonderful to have you with us, especially given how busy you are over at University of Nebraska Medical Center. So, just to start, why don't we get a sense of the ground situation at your hospital from your unique vantage point as both critical care and infectious disease specialist, especially given where you're practicing in this leading American frontrunner for containment and response efforts. What can you tell us?

Dr. Cawcutt:

Sure, absolutely. So I think the vantage point that I've had has been one of a lot of foresight. Having the biocontainment unit here, being part of the physician team, being part of infection control, we have been planning and preparing for episodes like this kind of highly infectious disease that's emerging throughout the world for years. We were prepared when the call came in to accept patients from the Diamond Princess to help support their medical care as some of those first cases, as you mentioned.

In the background, because of our experience historically in preparing and teaching both nationally and internationally on biopreparedness for such infections as this, we really started planning aggressively and early on regarding how to manage patients as we anticipated continued global spread and increasing patients in our community with COVID-19 infections. Having that preemptive foresight allowed us to have a lot of our biocontainment unit protocols rolled out to a broader hospital standpoint. It allowed us to have a lot of people training in and really start looking aggressively at our protective equipment, or PPE, our ICU practices and resources—which, of course, includes vascular access—and to have that time to preemptively strategize and frankly to learn from some of the other areas in the world and other areas in the country that were struggling to meet the demand as the pandemic rolled through their areas, communities and healthcare systems. I do think that we had an opportunity to assess our protocols. We wrote a lot of new protocols for our institution, but one of them that we actually did not change was our vascular access protocol.

Dr. Birnholz:

Interesting. It's clear that your unit was thinking about this for a long time and preparing for this eventuality, but there still had to be some progression of changes within your hospital department that needed to be made to better adapt to the patient demands. What were some of those changes that had to be done even though you had a game plan coming in?

Dr. Cawcutt:

Right, so just like everywhere else, we struggled first and foremost with are we going to have enough personal protective equipment, or PPE, and when we started to look at that, our biocontainment unit has very aggressive PPE, including PAPRs that we used regularly, and very aggressive donning and doffing protocols with partners, and those of us on that physician team and our nursing colleagues, our respiratory therapy colleagues, everybody entering a biocontainment unit practiced this donning and doffing to be sure that we were prepared to care for patients in advance.

So we struggled with many other things: testing capacity, adequate numbers of swabs, making sure that we have the gowns that we need, the hand sanitizer, the germicidal wipes for disinfection. Seeing what other institutions were starting to run short of early on gave us more capacity to look at our protocols and say, "Okay, we have to assume that we are going to face the shortages that everyone else is starting to recognize. How do we move forward with those?" We've done a lot of 3D printing also of our swabs. Our lab has its own in-house COVID-19 test and has been prepared to make our own reagents if needed, so definitely a lot of innovation, a lot of creativity development, new disinfection techniques, creation of novel infection control methodologies with a TEE probe cover for our ultrasounds or even a different oxygen mask that helps to provide some scavenging of aerosol particles for patients who are on oxygen. But it's an area in which you have to build protocols, and then you have to reflect back and constantly try to improve, deal with whatever shortages are coming next and recognize that it's very fluid and in constant motion.

Dr. Birnholz:

And I'm interested in that idea of the fluidity and constant motion. Given the needs that you described for rapid onboarding of staff, for better resource allocation with PPE and other resources, were there any ripple effects on how vascular access teams approached their roles or their practice methods to better take care of patients suffering from severe cases of COVID-19?

Dr. Cawcutt:

Sure. So that's a great question. Our vascular access team, specifically in the hospital setting, is responsible for PICC line placement and midline placements. They do not place central lines at the institution. That is still done by our critical care physicians or anesthesia physicians and CRNAs, some of our best practice providers on the unit—and radiology if otherwise difficult access is noted.

We spoke with our vascular access team, but the team was ready and willing to step up and have an increasing number of providers trained in the PPE and coming into the unit in order to place lines as needed for our patients that are both critically ill or noncritically ill.

Dr. Birnholz:

For those just tuning in, you're listening to a special COVID-19 edition of Vascular Viewpoints on ReachMD. I'm Dr. Matt Birnholz, and with me is Dr. Kelly Cawcutt, Associate Director of Infection Control and Hospital Epidemiology at the University of Nebraska Medical Center.

So, Dr. Cawcutt, let's continue on that track and talk about some more of the specific routes of vascular access, and I'm interested in the peripherally inserted catheters. You mentioned the vascular access teams at University of Nebraska are responsible for PICC line and midline placements specifically. Did any of the factors going into how they inserted, their device selections, etc., change in scope during this crisis?

Dr. Cawcutt:

We had some early discussions regarding the scope of vascular access, and we really have not changed our practices or protocols or our vascular access decision-making algorithm in light of COVID-19. There was some early-on discussion regarding preferential placement possibly of a PICC or a midline for patients who were going to need more blood draws to try and simplify the number of people who needed to be in the room, but ultimately, we held very strongly with our algorithm that we feel is very evidence-based towards choosing the best device for your patient at the right time and really focused on how to execute placing the correct line without a possible risk of degradation of care or increasing complication rates for these patients.

Dr. Birnholz:

And that complication rates consideration is an important one here. Some of our experts in other parts of the world had discovered that where the need for ventilation support was there, the choices of vascular access had to adapt accordingly. What were your thoughts on that? Were there any adaptations that had to be made in that regard?

Dr. Cawcutt:

So, for us, we have not used any ventilatory strategies that are new in this setting of COVID-19. We have used noninvasive ventilation, including CPAP or BiPAP, as BiLevel positive pressure ventilation that's not invasive. We have had our patients intubated, ventilated and even prone. We have, for instance, specific proning teams that have expertise on proning our patients safely without putting the vascular access device at risk, with maintaining integrity of the dressing and avoiding some of those other complications, and so far we have not seen increases in rates of bloodstream infection that we have documented thus far, we are not getting increasing reports of line failure, dressing failure or dislodgement of lines, so our practices that we had pre-COVID again seem to be working in our COVID era right now with just the same ongoing training and expertise for those procedures.

Dr. Birnholz:

That's excellent and sounds inspiring, actually, for many of our listeners with respect to you had a plan, and you've been seeing it through, and it's working. What about protection measures for the operators themselves? Sometimes the device selections were geared around trying to create a little bit of space wherever possible between the line placer and the patient, specifically around their nasal mucosa, their respiratory areas. Has that made any impact?

Dr. Cawcutt:

So there was some impact as far as discussion early on with that exact question: If we're placing a central line and we are closer to the face, the nose, are we at increased risk for possible infection? But we were very confident in our PPE use. So, either the use of a PAPR or CAPR for respiratory protection for the healthcare workers or N95 face shields in addition to gown and gloves for all of our providers in the room is really adequate PPE for this infection. We had not had healthcare workers become infected in the biocontainment unit with following aggressive PPE or in our quarantine center, so we really did feel that we had the PPE under control. And, frankly, if you're putting a line in a patient who's awake, you could put a procedure mask on that patient and capture a lot of the droplet and potential aerosol to decrease the risk with that physical barrier.

Alternatively, many of our patients, if they needed to be intubated early on, that may very well happen before a central line was necessary, and so in that setting we may have intubated the patients first and then placed the line after when that airway is controlled, again decreasing the risk of theoretical aerosol in the rooms.

Dr. Birnholz:

Those are great insights, Dr. Cawcutt. So, to close, I want to take a look at the big picture then of lessons learned throughout this pandemic response so far. Are there any aspects of vascular access care that you want other ICUs to adapt to, evolve towards, perhaps follow from your institution's lead so as to help better fight this pandemic?

Dr. Cawcutt:

I think some of the biggest take-home points that we have learned are that fear is powerful, and at times we as a healthcare system overall, we have let our fear overcome the evidence, and we did not have evidence to say we should change our vascular access

management strategies or change device selection or location entering into COVID-19. And so we trusted the evidence; we trusted the personal protective equipment with the data that we had both from other respiratory viral infections and also from our predecessor experiences with SARS in the early 2000s, with MERS infection, both of those being coronaviruses that act in a similar fashion. And finally, we had a lot of experience from Ebola, which was even more contagious in many ways and more dangerous in the setting of placing vascular access—so taking the experience and the evidence we had from all of those prior infections and using that evidence to help base our decisions in the setting of a new pathogen in which we have a lot of corollary potential management decisions that we can use for evidence.

Second, trusting personal protective equipment and not changing our adding undue burden that could impact the safety of placement of a vascular access device. So there were some discussions of wearing increasing numbers of gloves far beyond double-gloving, which can decrease the tactile sensation, it can make things a little more clumsy and really potentially cause more risk to our patients, and I think those are the things that are the most important to consider until we have different evidence that suggests practices should in fact be changed.

Dr. Birnholz:

Important takeaways to keep in mind. I very much want to thank my guest, Dr. Cawcutt, for joining me to discuss vascular access team adaptations and leading the charge in response to COVID-19 in the US. Dr. Cawcutt, it's fantastic having you on the program, looking forward to talking to you again soon.

Dr. Cawcutt:

Thank you so much. It was an honor to be on the program again.

Announcer:

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