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## Overcoming the Challenges of Coordinating Acute Dialysis Care in the ICU

Announcer:

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

Your host is Dr. Jennifer Caudle.

Dr. Caudle:

Providing medical care to critically ill patients in the ICU requires constant coordination between multiple providers. This is especially true for patients undergoing acute dialysis but approaches to this procedure aren't without challenges, and the current climate of COVID-19 only heightens those challenges. And that's why today we'll look at some of the ways that critical care physicians and nurses can improve coordination around acute dialysis in the ICU.

You're listening to *Vascular Viewpoints* on ReachMD. I'm your host, Dr. Jennifer Caudle, and joining me from the University at Nebraska Medical Center are critical care physician Dr. Brian Boer and ICU nurse Grant Fabry. Dr. Boer is an Assistant Professor of Internal Medicine in the Division of Pulmonary Critical Care, Sleep, and Allergy at UNMC. Welcome to you, Dr. Boer.

Dr. Boer:

Thanks for having me.

Dr. Caudle:

Of course. And Grant Fabry is a nurse and clinical instructor at UNMC's College of Nursing. It's great to have you as well, Mr. Fabry.

Mr. Fabry:

Great to be here, thank you.

Dr. Caudle:

Of course. So, let's dive right into the subject of care coordination and look at two of the key roles in acute dialysis: that of catheter placers and maintenance personnel. So, Dr. Boer, starting with you, what are some of the more common issues or knowledge gaps that circle around catheter placers, such as critical care physicians and interventional radiologists?

Dr. Boer:

I would say as it pertains to dialysis catheters in general is, kind of, knowing what catheter to select in the first place. So, sometimes people will just ask for a catheter and then may not get the right catheter for the job. So, in terms of position and placement, whether it's going in the patient's neck or groin, for example, and what length that catheter should be, and then just kind of the approach to ensure that the – the working end of that catheter is in the right place so it's gonna be as effective as possible.

Dr. Caudle:

And is there any friction that ever turns up around who should be doing what when it comes to catheter placement?

Dr. Boer:

I would say at Nebraska Medicine, we work really well together in multidisciplinary teams, so, there's not really a lot of friction. It usually comes down to bedside catheters being placed either by the critical care team or sometimes the nephrology team, uh, in the terms of HD catheters and it – it's really a constant communication of who's available to do it first in the most safe and effective manner. And I would say, I don't know, probably three-fourths of our lines at the bedside are placed by the critical care team and maybe the other fourth of dialysis catheters are by the nephrology fellow or attending. And at Nebraska Medicine, at least, we don't utilize interventional

radiology for dialysis catheter placements unless it's a – a tunneled or p – perm catheter placement, or if it's a patient with pre-existing very difficult access that requires, uh, fluoroscopy and possible dilation, things of that nature.

Dr. Caudle:

I see. And on the other side, Mr. Fabry, uh, we have the care and maintenance considerations for these catheters. So, what types of issues crop up from this corner, and do these issues feedback on problematic catheter placement practices sometimes?

Mr. Fabry:

I'll start out by saying that, you know, care of any central line and HD lines are extremely important. Um, you know, we need to be assessing them very, very frequently, you know, every hour to four hours. Um, you know, we have – a lot of the issues we see with our lines in the ICU, um, I wouldn't say are directly related to how they are placed. It, um – it's a lot of patient-specific issues, you know. Um, I typically work in the cancer ICU – ICU here at Nebraska Medicine before the COVID ICU opened, and in that I see – we just see a lot of, uh, bleeding complications from thrombocytopenia, so, we would have to figure out ways to safely, you know, minimize bleeding on these patients and that, you know, that could include sandbagging, um, or, you know, changing dressings, you know, more frequently than seven days, which is our policy here at Nebraska Medicine. Um, we've even given platelets in the past to patients who need platelet infusions for bleeding purposes.

Dr. Caudle:

Staying with you for another moment, Mr. Fabry, what are some of the technical issues with dialysis equipment in particular that your team has needed to work through in ICU settings?

Mr. Fabry:

Dialysis units are complicated units and, you know, each patient brings a specific, um, different complication to each unit sometimes, you know. Um, we have patients who are, you know, severely obese, which brings, you know, pressures with, you know, issues with pressures being, um, elevated and, you know, having to turn down blood flow. Um, you know, a lot of the issues, you know, are resolved by just, you know, nurses with – who have had opportunities to take those, uh, CVVHD patients multiple times. So, um, you can troubleshoot problems sometimes before they start, you know. Um, you know, and it's, you know, this isn't a surprise but, you know, we like to have right HD-sided catheters in the ICU if it's a neck line, um, it's just they're easier to use and maneuver with. Um, and a lot of the things that we'll do to help with any issues we have is just a lot of positioning with pillows or, um, towels, um, even body positioning. Sometimes we'll have to turn patients on certain sides or elevate arms.

Dr. Caudle:

For those just tuning in, you're listening to Vascular Viewpoints on ReachMD. I'm Dr. Jennifer Caudle, and today I'm speaking with critical care physician Dr. Brian Boer and ICU nurse instructor Grant Fabry about current and emerging challenges in managing acute dialysis procedures within the ICU setting. So, Dr. Boer, back to you.

You know, we just got a better sense of the technical issues that staff encounter with acute dialysis procedures and equipment. But I want to put these challenges in context to the COVID-19 pandemic, which presumably changes the game entirely. So, what impacts has COVID-19 had on your team's approach to dialysis?

Dr. Boer:

Well, I'd say, in general, it's had an impact, uh, starting, uh, before the pandemic really even hit Omaha is just we were hearing from a lot of other places that the rates of HD initially were low. Then we were hearing that rates of HD requirements were very high, so then we're scrambling to kind of prepare to make sure we had enough equipment to accommodate those needs. We've been lucky enough in Omaha, in the middle of the country, with, uh, slower spread and good community measures. We haven't had quite that pandemic surge a lot of other places have had. We're very busy but we haven't out-stripped our resources yet, but we're still kind of faced with the challenge of running low on HD machines, uh, the continuous dialysis machines especially. Um, and, so, trying to kind of be proactive about preventing the need for HD, or even limiting HD in patients that may not benefit from it long-term, if they're otherwise in multiorgan failure and not likely to survive their acute illness. We haven't had to make a lot of difficult decisions yet but those are the sort of things we have to think about in the setting of a pandemic. Um, one thing we've been lucky about, again, too, just in the sense that we're a little bit behind the rest of the country in terms of numbers, is we were able to see that some places were seeing, uh, acute, uh, dialysis needs as high as 50% I think just because they were being so aggressive about keeping patients dry to prevent the non-cardiogenic pulmonary, uh, capillary leak and the ARDS and then it just lead to high rates of AKI. So, we – I think we've been seeing more on the range of maybe a quarter to a third of our patients ending up in enough acute kidney injury that they might be dialysis candidates. Uh, but it's been manageable. I would say it's on par with the rates we'd otherwise see in the – the kind of, uh, severe end of the spectrum of our critically-ill patients pre-pandemic.

Dr. Caudle:

Is there a new norm for volume of acute dialysis procedures in the current environment?

Dr. Boer:

I think it's more, at least at Nebraska Medicine specifically, and from what I can get from other places too, it's – it's more just the fact that your ICU volumes are increased. So, just like, you know, your ventilator needs may be two times higher than normal then, in check, your dialysis needs are gonna be about double what they normally are. And, so, if you're anything like Nebraska Medicine, we're often running kind of at the limit of what we have in terms of not only the machines, but the nurses to do the dialysis. And, so, we're kind of operating above the norm and it's probably gonna continue that way for a while.

Dr. Caudle:

Okay. Now, Mr. Fabry, coming back to you, along the same lines, how has COVID-19 altered the maintenance care considerations for dialysis catheters in ICUs?

Mr. Fabry:

You know, to be honest, it hasn't changed the maintenance of it too much, um, and the care. You know, we're still doing our assessments as frequently as we need to. Um, we're changing the dressings on them every seven days or, if they're soiled, we change them sooner. Um, our policies are still the same with dressing changes. We have two people who are, um, we call them super users in the hospital, who are, you know, able to do it safely. Um, I would say the only thing that maybe, might be different is, Dr. Boer kind of pointed this out as well, but, you know, a limit with nursing staff, you know, with increased ratios on patients it's more difficult to, um, get to those central lines that need to be changed as soon as, you know, we were able to do them previously, you know. Um, so, that is one thing that's kind of different now is, you know, it might take a little longer to change a central line dressing, um, but as far as when, uh, the circuits are running, the maintenance isn't too different at all really, um, with these COVID patients.

Dr. Caudle:

Dr. Boer, how has the rise in thrombotic events among COVID-19 patients, as well as the witness clogging of catheters themselves, affected vascular access care paradigms for placers such as yourself?

Dr. Boer:

Good question. So, we were really worried initially that we were gonna see a lot of thrombotic events just based on what people were reporting elsewhere. And, therefore, we were prepared to do things like therapeutically anti-coagulate everybody on CVVHD, for example. But, we decided, like we did in all aspects of our critical care, to follow our usual evidence-based protocols, and see what happens, and then change our practice if needed. And, so far, we have not really been seeing an increased rate of circuits clotting and need for therapeutic anti-coagulation, so we have not changed anything at Nebraska Medicine in terms of how we provide, uh, our dialysis.

Dr. Caudle:

Excellent. And before we wrap up, I'd like to hear from you both on any additional ways that we can maintain high-quality vascular care within such a challenging context. Dr. Boer, uh, let's hear from you first.

Dr. Boer:

Yeah, so, Grant alluded to this a little bit before, and I would say it's just being cognizant of catheter placement and location, not just HD catheters, just, uh, in anticipating the need for a potential HD catheter. So, our norm at this point is typically if a patient needs central access is to use the left internal jugular or subclavian approach to keep the right IJ open for potential dialysis catheter placement. One, because we know that they're likely to last longer in that location and have less flow issues compared to like left side approach lines or femoral approach lines. And then, secondly, if that person needs to be converted to long-term dialysis, or more than just acute needs in the ICU, it's easy to convert that into a perm cath or a tunneled catheter site. So, it's just less number of times you're poking a patient and moving lines around because what we don't want is a right-sided line and then having to place a left-sided line so then you can replace the right one with a dialysis catheter and just trying to think ahead to minimize the number of lines you need to place in the patient and just – in the patient just from a workload perspective and risk for infection and complications.

Dr. Caudle:

Understood. And, Mr. Fabry, uh, the final word goes to you.

Mr. Fabry:

One thing to help with any issues, um, is to, you know, during your central line and HD insertions make sure to speak up if you feel that any sterile field has been breached, um, you know. And – and a central line infection on top of the ARDS we're seeing for this COVID – for these COVID patients would be not a fun thing for them to have to worry about on top of the, you know, trying to recover from this ARDS.

Dr. Caudle:

Excellent. Well, with those calls to action in mind, I'd really like to thank my guests, Dr. Brian Boer and Grant Fabry, for helping identify the challenges ICU physicians and nurses face in managing acute dialysis procedures for critically-ill patients. Uh, Dr. Boer, Mr. Fabry, it was great having you both on the program, and I'd really like to thank you both for your dedication to caring for patients during this difficult time.

Dr. Boer:

Absolutely. Thanks for having us.

Mr. Fabry:

Thank you very much.

Announcer:

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