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KDIGO Conversations in Nephrology: Deciding When and Who Should Start Acute Dialysis - From Evidence to Bedside Practice

Announcer:
Welcome to KDIGO Conversations in Nephrology. This episode is titled “Deciding When and Who Should Start Acute Dialysis: From Evidence to Bedside Practice.”

Here’s your host, Dr. Ravi Mehta.

Dr. Mehta:
There are important decisions to be made regarding when and who should start acute dialysis. How do clinicians take this from evidence to bedside practice?

Hello, and welcome to KDIGO Conversations in Nephrology. I’m Dr. Ravi Mehta, Professor of Medicine at the University of California in San Diego, and joining me to discuss the ins and out of starting acute dialysis is Dr. Marlies Ostermann. Dr. Ostermann is a consultant in critical care and nephrology at Guy's & St. Thomas' Foundation Trust in London, and her clinical and research interests include acute kidney injury in the critically ill, including biomarkers and long-term complications, and all aspects related to acute kidney replacement therapy.

Dr. Ostermann, welcome to the program.

Dr. Ostermann:
Thank you, Professor Mehta, for this kind introduction. It’s a great honor to participate in today’s discussion about timing of acute dialysis, such an important topic in routine clinical practice.

Dr. Mehta:
So let’s get started. There has been considerable interest in defining the optimal timing for starting dialysis in critically ill patients. Why is this an area of controversy?

Dr. Ostermann:
That’s a very good question. I’m afraid acute kidney injury is very common in critically ill patients in the intensive care unit, and patients who develop acute kidney injury often spend longer in hospital and have a much higher risk of complications. It’s a particularly high risk of dying in those who need acute dialysis. So on the one hand, acute dialysis can be lifesaving, but I’m afraid it also has adverse effects and can cause harm. And we as clinicians, we want to avoid harm if possible, so with regards to acute dialysis, we grapple with the decision when to start. If we start too early, we may prevent the complications of acute kidney injury, but we will give a treatment to patients who don’t actually need it. And if we wait too long, the treatment may no longer be beneficial. So this “harm versus benefit” question is a real challenge in clinical practice when caring for an individual patient. Fortunately, in the last few years, a lot of trials have been published, and a lot of publications have given us more insight and important results and findings.

Dr. Mehta:
So what have these recent trials on timing of dialysis shown us that can help us guide clinical application?

Dr. Ostermann:
We’ve had a lot of publications, including 5 landmark trials, and I’ll just mention them briefly. We have the ELAIN trial, AKIKI 1 and AKIKI 2, IDEAL-ICU, and STARRT-AKI. These are landmark trials in the field of critical care nephrology. They all explore timing of acute dialysis, but they address this question from different perspectives. So for instance, the ELAIN trial was a single-center study with the

aim to find out whether starting acute dialysis in patients with moderate acute kidney injury could reduce mortality. And indeed, the trial showed a significantly lower 90-day mortality in patients who received dialysis treatment earlier. In contrast, the AKIKI and IDEAL-ICU trials were multicenter studies which explored the question, "Is it safe to wait?" They enrolled patients with more severe acute kidney injury and showed that 60- or 90-day mortality was no different in patients who had received acute dialysis later, compared to those who had received acute dialysis much earlier. Importantly, they also found that acute dialysis could be avoided in a large number of patients who had been randomized to the delayed arm. However, it should be mentioned that mortality was higher if patients in the delayed arm actually needed acute dialysis treatment.

And then we have the STARRT-AKI trial, which is, to date, the largest study, with more than 3,000 patients from 168 different ICUs from 15 countries. And this study focused on patients where clinicians had equipoise and had no objections to either accelerated or delayed initiation. The study showed no difference in 90-day mortality between the accelerated versus standard initiation group. Like the previous two studies, it also showed that acute dialysis could be avoided in almost 40% of patients, and importantly, they highlighted some harm from starting dialysis early. There was a higher risk of dialysis dependence at 90 days, and there were more adverse events in the accelerated group. And overall, there was no obvious benefit from starting acute dialysis earlier.

So this, then, brings us to the next question, "How long can you wait?" and this was a question explored in the AKIKI 2 trial. Patients with severe acute kidney injury, and oliguria or uremia, were randomized to delayed or very delayed initiation of dialysis. The trial showed that, again, dialysis could be avoided if you waited for longer, but 60-day mortality was higher. So together, these trials have given us important information that explored the question from different angles, but they have still not given us enough information to manage an individual patient at the bedside, because we still do not know which patient actually needs acute dialysis and who can be managed conservatively. In all studies, the criteria for either early or late initiation was based on serum creatinine or severity of acute kidney injury. But in real life, at the bedside, there are many other criteria. In fact, acute dialysis is a form of organ support which we use to prevent fluid overload or normalize metabolic derangements or correct fluid overload, and so we clearly need more information at the bedside to guide us.

Dr. Mehta:
Dr. Ostermann, you're a very experienced clinician, and these trials, as you've pointed out, have not been fully comprehensive in telling us what we need. So what are the most relevant parameters that influence your decision on who you offer dialysis to, when you start, and when you stop?

Dr. Ostermann:
My main aim is to give treatments to patients who will benefit from them and to avoid treatments that may either cause more harm than benefits, and the acute dialysis is no exception. So I view acute dialysis as a form of kidney support, and I want to start it and offer it to patients who are – in whom kidney function is not sufficient to cope with the complications, including metabolic derangements or fluid overload, and I want to start it before the kidneys actually fail completely. And therefore, my approach consists of repeated assessments and evaluation of the trajectories and an assessment of the future including the next 12-24 hours – prediction of what may happen.

And looking at these trends and predicting whether patients will come to harm from the metabolic derangements or the accumulation of fluid guides me, so if patients are getting worse and fluid is building up, and metabolic derangements are contributing to their condition, and acute dialysis is in line with the patient's wishes and their overall treatment goal, then I start, regardless of the level of creatinine. I hope this demonstrates that there are many more factors than just creatinine alone or stage of acute kidney injury which guide and determine our management at the bedside. And it became very clear during the recent pandemic that we may need to modify our general approach when dealing with sick patients with acute kidney injury.

Dr. Mehta:
For those just tuning in, you're listening to KDIGO Conversations in Nephrology. Our topic today is deciding when and who should start acute dialysis, from evidence to bedside practice. I'm Dr. Ravi Mehta, and I am speaking with Dr. Marlies Ostermann.

Dr. Ostermann, has your experience with managing patients changed during the COVID-19 pandemic, and if so, in what way?

Dr. Ostermann:
I'm afraid during the pandemic, we had to change our approach to acute dialysis on many fronts. We, like many colleagues, were facing unexpected challenges, including reduced dialysis capacity, unexpected supply problems, and a major shortage of nursing staff. And the first thing we learned was that there are at least two key processes that influence timing of acute dialysis. On the one hand, there is a decision process which focuses on the medical decision that a patient needs dialysis. And then there are the logistics, and they certainly influence and impact timing. And these challenges forced us to adapt our practice. We obviously recruited more nurses,

we expanded the dialysis modalities, and used different types of dialysis. We even produced dialysis fluid in-house, to overcome some of the challenges. But we also changed our approach to timing, and we carefully assessed and reassessed which patients needed dialysis urgently. We always asked the question whether it was safe to wait without causing harm, whether there were any potential alternatives, and then lastly, whether we actually had the necessary kit and the nurses available to deliver dialysis treatment. Overall, the aim was to deliver the greatest good for the greatest number of patients. I'm very pleased that we've recovered from this period, and now we are back to business as usual, which means a more personalized approach to timing of acute dialysis.

Dr. Mehta:
So what additional information is needed currently to help us improve care of patients in this setting? What should clinicians do to currently manage their patients, and are there any final messages you'd like to leave with our listeners?

Dr. Ostermann:
My key message is to emphasize that acute dialysis is a form of support therapy which should be considered before kidney function actually fails completely, and the optimal time varies from patient to patient. And to deliver this form of personalized medicine, taking into account all the various aspects from metabolic derangement and fluid accumulation to potential trajectories, means that we need more diagnostic tools and techniques to come to the right decision. And as I already mentioned, it's clearly important that we all work together and communicate well with all the relevant people caring for patients, including staff and the team delivering acute dialysis, in order to devoid delays after a decision in favor of acute dialysis has been made.

I also want to highlight again that acute dialysis is delivered and monitored very differently across the world, and when speaking to colleagues, it's clear that we all use different quality metrics. And I think it would be nice for us to agree on some quality indicators so that we can at least have similar standards and put improvement projects in place.

And then lastly, I would plea to have an update of the existing official guidelines because none of them have included the data of the recent studies and randomized control trials. With that in mind, I was very pleased to hear that KDIGO is making preparation for an update of the KDIGO guideline.

Dr. Mehta:
That's a great way to round out our discussion today. I would like to thank my guest, Dr. Marlies Ostermann, for joining me. Dr. Ostermann, it was great having you on the program.

Dr. Ostermann:
It's been a great honor to participate, and I hope today's discussion has highlighted some of the ongoing challenges, but also the enormous advances and progress made in the last 10 years since the release of the KDIGO guideline in 2012.

Dr. Mehta:
I'm Dr. Ravi Mehta. To access this and other episodes in the series, visit kdigo.org/podcasts. Thanks for listening.

Announcer:
This episode of KDIGO Conversions in Nephrology was provided by KDIGO and supported by Baxter Healthcare.