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Paul Palevsky and Ron Wald

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Nephrologists rather than intensivists should manage kidney replacement therapy in the ICU: PRO

Paul M. Palevsky¹ and Ron Wald²

¹Kidney Medicine Section, VA Pittsburgh Healthcare System and Renal-Electrolyte Division, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

²Division of Nephrology, St. Michael’s Hospital and the University of Toronto, Toronto, Ontario, Canada

Address Correspondence to:
Paul M. Palevsky, MD
Room 7E123 (111F-U)
VA Pittsburgh Healthcare System
University Drive
Pittsburgh, PA 15240
USA
Phone: 412-360-3932
Fax: 412-360-6130
e-mail: palevsky@pitt.edu
Who should manage kidney replacement therapy (KRT) in the ICU? The answer to this question is straightforward – of course it should be the nephrologist, *that’s what we do*. Frankly, we wonder why this is even a subject for debate? As nephrology consultants, we are expected to provide expert advice throughout the hospital for patients with AKI, as well as those with end-stage kidney disease (ESKD) who are hospitalized. We are warmly welcomed on surgical and medical wards where our comprehensive consultation and dialysis management plans are appreciated and accepted. This is a tacit acknowledgement of the obvious fact that we as nephrologists are immersed in the delivery of KRT from the day we commence specialty training and thus are optimally positioned to prescribe and manage all forms of KRT in the sickest hospitalized patients. However, our role in KRT delivery is challenged in some ICUs where intensivist colleagues, accustomed to managing other compromised organ systems, argue that they are sufficiently adept at managing failed kidneys. If intensivists are the undisputed stewards of mechanical ventilation and vasopressors, why, they argue, should this not extend to KRT? We believe that this thinking is fundamentally flawed.

The debate over control of KRT can be traced to the advent of CKRT in the late 1970s (1). In a pair of publications published more than 25 years ago in *Seminars in Dialysis*, Emil Paganini, one of the innovators of CKRT, made the case for nephrology control, arguing that it is the nephrologist who truly understands the intricacies of extracorporeal kidney support (2). David Bihari, an intensivist, argued that critically ill patients with multisystem organ failure require management by a specialist who is responsible for the overall management of the patient, and who remains present in the ICU over time, rather than merely rounding episodically(3). This
clash of views persists to the present, and the fundamental arguments on each side remain essentially unchanged.

Careful analysis suggests that this debate is actually rooted in more foundational issues regarding the role of nephrologists in the ICU. What are the perceived and actual added values that we as nephrologists bring to the care of the critically ill patient with AKI? Are we merely providing a technical or procedural service, or do we provide broader expertise? If it is the former, a strong argument can be made for our replaceability by non-nephrologist colleagues who have acquired skills in KRT delivery.

Our management of critically ill patients with severe AKI is much broader than simply considerations pertaining to the initiation and delivery of KRT. Nephrologists bring an understanding of the broad spectrum of potential AKI etiologies and the ability to recognize less common causes of ICU-associated AKI such as renal vasculitis, acute glomerulonephritis, and paraprotein-associated disease, which also have unique therapeutic considerations. As nephrologists, a key part of our expertise is to be attentive to issues related to drug dosing and early management of the electrolyte and acid-base disorders that accompany AKI, which, when managed promptly and effectively, can potentially avoid the need for emergent KRT. However, there is a perception that we often focus on minutiae of care that are peripheral to the urgent management needs of the critically ill patient and that our rote recommendations pertaining to volume resuscitation, avoidance of hypotension and discontinuation of nephrotoxins are unhelpful. If we wish to be consulted early in the course of AKI, we need to ensure that our input is substantive, thoughtful, and pragmatic.
Whereas KRT is a component of the curriculum in most critical care training programs, it is a central part of nephrology training and continuing education. Moreover, caring for patients requiring maintenance dialysis is a major part of most nephrologists’ clinical practice. Adapting this expertise to the ICU is a natural extension of the nephrologist’s skill set. We have a deep understanding of the theoretical foundations of hemodialysis and hemofiltration, the management of extracorporeal circuits and their complications, the hemodynamic stresses of KRT, management of vascular access and the implications of KRT on medication dosing (4). As nephrologists, we are also able to prescribe and troubleshoot a full spectrum of KRT modalities, including peritoneal dialysis. For patients who leave the ICU with persistent KRT-dependence, it is the nephrologist will provide follow-up on the ward and if necessary, the outpatient setting, not the intensivist. Patients who recover to KRT-independence may still be left with significant post-AKI kidney impairment and benefit from specialized nephrology follow-up after hospital discharge (5). In all of these scenarios, initiating a relationship with the patient in the ICU ensures optimal continuity of care.

In addition to patients with AKI, a substantial proportion patients receiving KRT in the ICU have ESKD. Nephrologists are best positioned to understand the subtleties of their kidney disease and are the right people to tailor their usual dialysis prescription to the ICU setting. When patients are admitted to ICUs at medical centers affiliated with their dialysis program, they get the further benefit of care from nephrologists with whom they already have an established relationship.

Management of KRT in the ICU should not be viewed as a nephrologist’s natural entitlement. Acknowledging the dynamic clinical needs of critically ill patients, especially those receiving
KRT who are frequently among the sickest in the ICU, nephrologists must maintain a presence in the ICU and not be perceived as mere itinerant purveyors of KRT. It is the responsibility of the consulting nephrologist to keep abreast of patient’s evolving clinical issues and new diagnostic studies as these may significantly impact on the KRT prescription. If we expect to direct KRT management in the ICU setting, we must maintain our expertise across the full range of critical care nephrology and be up to date on advances in general ICU care (6). While some nephrologists may choose to pursue additional training in critical care, this should not be a prerequisite for management of KRT in the ICU (7).

Though all aspects of KRT management should be led by the consulting nephrologist, the management of all KRT in the critically ill patient must be coordinated with the broader management of the patient by the ICU team. From experience, the most common areas of dispute between nephrology and critical care services relate to specific indications for initiation of KRT and volume management once treatment is started. While discussions around the timing of initiation were previously often a matter of passionately held opinion, recent clinical trials have provided evidence that pre-emptive initiation of KRT prior to the development of pulmonary edema, hyperkalemia, or severe metabolic acidosis unresponsive to medical management does not result in improved outcomes as compared to a strategy of active medical management and moderately delayed initiation of KRT in those without kidney recovery (8-10). Discussions regarding the optimal timing of KRT initiation can now be tempered by this rigorous evidence, combined with assessment of the patient’s goals of care. The management of net ultrafiltration during KRT must also be aligned with the overall goals for the patient’s management and continuously reassessed as the patient’s status evolves. This may involve a
strategy of joint management, with the critical care team empowered to independently adjust ultrafiltration rates within pre-specified parameters as the patient’s volume management progresses from resuscitation, through maintenance and then to deresuscitation. Regularly scheduled joint ICU-Nephrology “bullet rounds” can enhance communication and ensure that KRT is being delivered in a manner that reflects the objectives that were determined by all the key players in the patient’s care.

Nephrologists should be managing the delivery of KRT patients in the ICU, as is the case in all other inpatient and ambulatory settings. This is supported by the undeniable premise that the healthcare provider with the best training and most extensive clinical experience should direct the management of a given problem. There is no doubt that many ICU specialists are familiar with acute KRT and can competently deploy KRT in their units. But familiarity and expertise should not be conflated. Expertise in all aspects of KRT delivery is a core competency of nephrologists and a major focus of what we do as kidney specialists. By bringing these skills to the ICU, patient care is invariably enhanced. However, to establish and maintain credibility in the ICU, it is incumbent on nephrologists to be deeply invested in the care of critically ill patients and demonstrate why our contributions are truly valuable. Close collaboration with our ICU counterparts regarding all aspects of KRT delivery will ensure coordinated care of the highest quality.
Disclosures

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Author Contributions

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