Introduction to Critical Care Nephrology and Acute Kidney Injury

Kathleen D. Liu¹ and Paul M. Palevsky²

Background: Over the past several decades, the acuity of hospitalized patients has increased, as has the percentage of time that nephrologists spend caring for patients in intensive care units. This includes both the care of patients with CKD or dialysis-dependent kidney failure who are predisposed to the development of critical illness in the setting of sepsis, cardiovascular disease, and postsurgical management as well as the management of patients with various etiologies of AKI. This increasing overlap between nephrology and critical care is manifested by an increasing number of nephrologists who have chosen to obtain dual training in nephrology and critical care medicine, and nephrology training programs developing dedicated critical care nephrology tracks (1). However, even for those who are not dual trained, it is increasingly important that nephrologists remain abreast of the continuing advances in critical care medicine as they relate to the care of patients with kidney disease, as well as specific aspects of kidney disease that may arise in the intensive care unit.

Nephrologists have been at the forefront of management of AKI that are often encountered in the intensive care unit including prerenal states, abdominal compartment syndrome, sepsis, contrast administration, nephrotoxic medications, postsurgical patients, cancer, liver disease, and cardiorenal syndrome. This will be followed by a review of critical fluid and electrolyte issues and a series of reviews serving as a primer on the management of kidney replacement therapy in the intensive care unit. This latter series will cover topics related to timing of initiation, selection of modality, and volume management as well as reviews of the technical aspects of management of intermittent hemodialysis, continuous and prolonged intermittent kidney replacement therapies, and acute peritoneal dialysis. Finally, the series will conclude with several miscellaneous topics, including medication management in the critically ill patient with AKI and the management of poisonings and intoxications.

We hope that you find this series useful in your day-to-day care of patients in the intensive care unit.

Disclosures

K.D. Liu reports consultancy agreements with AM Pharma, Biomerieux, BOA Medical, and Seastar Medical; stock in Amgen; serving on the Editorial Boards of American Journal of Kidney Diseases, American Journal of Respiratory and Critical Care Medicine, and CJASN; serving as a scientific advisor or member of the NKF Scientific Advisory Board and American Thoracic Society; and other interests or relationships with UpToDate.

P.M. Palevsky reports employment with the United States Department of Veterans Affairs and VA Pittsburgh Healthcare System; consultancy agreements with Janssen Research & Development, LLC; and serving as President of the National Kidney Foundation and being a member of the National Kidney Foundation Scientific Advisory Board, a member of the Renal Physicians Association Quality, Safety and Accountability Committee, Chair of the Quality Insights Renal Network 4 Medical Review Board, Section Editor, Renal Failure of UpToDate; and a member of the Editorial Board of Journal of Intensive Care Medicine.

¹Divisions of Nephrology and Critical Care Medicine, Departments of Medicine and Anesthesia, University of California, San Francisco, San Francisco, California
²Renal-Electrolyte Division, University of Pittsburgh School of Medicine and Kidney Medicine Section, VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania

Correspondence:
Dr. Kathleen D. Liu, UCSF – Medicine, Box 0532, San Francisco, CA 94143. Email: Kathleen.Liu@ucsf.edu
Funding
None.

Author Contributions
K.D. Liu and P.M. Palevsky wrote the original draft and reviewed and edited the manuscript.

Reference

Published online ahead of print. Publication date available at www.cjasn.org.