
Advances in Critical Care Pediatric Nephrology

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Editors

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Point of Care Ultrasound
and Diagnostics



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Preface

At the outset, our aim for the book is to provide foundational knowledge for physicians, not only to pediatric nephrologists, and clinical scientists who may come across pediatric patients in a critical care setting. There has been incredible growth and advancement in the field of critical care pediatric nephrology over the last few years. With the progression and improvement of renal replacement therapy, ultrasound, and other pharmacological modalities, practices used commonly in adults have been adapted and modified to allow for the increased care and management of pediatric patients, even for the smallest infants. The field of pediatric nephrology has become increasingly specialized and subspecialties such as critical care pediatric nephrology have been developed as a self-containing area of expertise in its own right.

The unique considerations in regard to critical care patients have provided the recent impetus to developing this subspecialty. Experience and knowledge gained from physicians in similar specialties have been crucial in developing treatment plans for this patient population.

In this Edition of “*Advances in Critical Care Pediatric Nephrology*,” the authors have concentrated on point of care ultrasound as these devices are widely available as guiding management tools. Additionally, they are found freely available in both low-income and high-income center, allowing for its use in patient populations all around the world. The incredibly beneficial technique of ultrasonography is now being taught to trainees in medical centers around the world and has become akin to that of a stethoscope with the field of pediatric nephrology. Aside from diagnostic tools, we also highlight advancement in the understanding of biomarkers within this patient population, allowing for increased understanding of the unique considerations of patients in a critical care setting. Increased knowledge of clinical biomarkers has allowed pediatric nephrologists to bring the laboratory to the bedside in order to better adjust and deliver appropriate management and treatment of patients.

The editors of this book are experienced “hands-on” pediatric nephrologists from across the world and we have been privileged to have input from a number of expert colleagues for whom we are grateful.

Most importantly, we have learnt so much from individual patients and their carers on a daily basis and would like to dedicate this book to the special patients that we care for.

Hope you enjoy reading this edition of “*Advances in Critical Care Pediatric Nephrology*” textbook as much as we have!

Stay safe and take care.

Gurugram, India
Akron, OH
Cape Town, South Africa
Richmond, VA

Sidharth Kumar Sethi
Rupesh Raina
Mignon McCulloch
Timothy E. Bunchman

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articles and editorial and book chapters relating to biomedical research and clinical activities. He is currently the medical advisory board member for the National Kidney Foundation, fellow of the American College of Physicians, fellow of the American Association of Pediatrics, fellow and board member of the National Kidney Foundation, and fellow of the American Society of Nephrology.

Mignon McCulloch is currently a pediatric nephrologist and consultant at the Pediatric Intensive Care Unit at the Red Cross War Memorial Children's Hospital, Cape Town, as well as a senior lecturer at the University of Cape Town, South Africa. She is also an honorary consultant at Evelina London Children's Hospital, United Kingdom.

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She is the current president elect of the International Pediatric Transplantation Association (IPTA), assistant secretary of the International Pediatric Nephrology Association (IPNA), and president of the African Pediatric Nephrology Association.

She is actively involved in the "Saving Young Lives (SYL)" steering committee—providing hands-on training in pediatric dialysis to teams of doctors and nurses at residential courses, including bedside PD catheter insertion, vascular access training, basic resuscitation, and all forms of dialysis.

Timothy E. Bunchman is currently tenured professor and division chief, Children's Hospital of Richmond at Virginia Commonwealth University (VCU), USA. His primary departmental program area is pediatric nephrology. He is trained in pediatric nephrology from the University of Minnesota, Minneapolis. His areas of expertise and interest are pediatric transplantation, acute kidney injury, renal replacement therapy, and vasculitis. He has published papers in international journals and contributed chapters in books on pediatric nephrology and pediatric critical care. He has multiple awards to his credit and has been nominated by the American Society of Pediatric Nephrology to the National Advisory Committee on Children and Disasters (NACCD). He is on the editorial board of many reputed international journals including *Pediatric Critical Care Medicine*, *Pediatric Nephrology*, and *Nephrology Dialysis Transplantation*. He has also been an associate editor for the *American Journal of Kidney Diseases*. He is the organizer and program director of the International Conference on Pediatric Continuous Renal Replacement Therapy (PCRRT) endorsed by International Pediatric Nephrology Association (IPNA) as well as the critical care section of the American Academy of Pediatrics (AAP).