Although the role of acute kidney injury (AKI) in the adult patient population in determining outcomes following acute illnesses has been progressively recognized, extensive research on the pediatric population has also indicated the incidence and impact of AKI among children with acute illnesses. The progress in pediatric AKI has been vast and often affected kidney care not only in the pediatric population but also in the care of the adult patients who are at risk of AKI or deal with AKI or its consequences. The progress in pediatric AKI care includes but is not limited to developing a consensus AKI definition, investigations related to epidemiology, pathophysiology, and risk factors of AKI among children, implementation of quality improvement projects with clinical benefits in saving lives, and the invention of new technologies to provide adequate dialysis to infants and children with a variable volume of distributions.

As a not-for-profit organization, the Acute Disease Quality Initiative (ADQI) has been the origin of many advances in the awareness, recognition, and management of AKI and acute dialysis. ADQI has held 28 consensus conferences focusing on differing aspects of AKI care, providing an objective summary of the literature to describe the current state of key AKI-related topics among acutely ill patients. The ADQI reports have led to substantial progress not only in clinical settings but also in research realms.1 Considering advances in pediatric AKI and dialysis, a dedicated pediatric ADQI was long overdue. Therefore, the 26th ADQI was dedicated to the pediatric AKI topic with the participation of 47 multidisciplinary experts, including nephrology, critical care, and pharmacy in neonatal, pediatric, and adult age ranges. Goldstein and colleagues2 summarize the consensus statements during the 26th ADQI meeting.

This meeting was structured in 6 distinct groups focused on different aspects of AKI among children. The first group emphasized critical aspects of pediatric AKI epidemiology, including studies to understand AKI risk factors (inherent, social, economic, and cultural factors), exposures leading to AKI consisting of the underlying diseases, management strategies, and outcomes (recovery, chronic diseases, and need for long-term dialysis).3 An important message of this group is that disparity exists in reporting the pediatric AKI epidemiology between intensive care units vs other settings (hospitals and communities) or resource-rich vs resource-limited areas. As the epidemiology reports can set the agenda for resource allocation, understanding the AKI incidence, causes, and outcomes may help persuade clinicians, policy makers, and governments to redirect facilities to AKI as a significant health crisis.

The second group highlighted the value of appropriate risk-stratification and timely diagnosis of AKI. The concept of kidney fitness assessment before exposure using clinical and automated models or biomarkers was underscored by this group. Using a combination of kidney injury and function biomarkers to distinguish between functional vs structural AKI and its impact on clinical management and outcomes is discussed. In addition, the group endorsed the idea of approaching AKI as a syndrome with the need for appropriate phenotyping for individualized management strategies. This aim could be achieved through clinical data and models (logistic or machine learning models) and could be enhanced or confirmed with laboratory evaluations using urine or plasma kidney function or injury biomarkers, inflammation markers, urine examination, imaging techniques, and even kidney biopsy.4
The third workgroup in pediatric ADQI underscored the importance of fluid therapy among children. The group solidified the consensus definitions for fluid balance assessments and fluid overload across age and weight ranges. They emphasized the role of fluid overload in clinical outcomes and management. They highlighted that based on significant differences in the cause and severity of underlying critical illness and age, sex, and size among children, no specific threshold of positive volume balance could be considered to define volume overload. Instead, they recommended fluid overload be assessed, diagnosed, and managed based on individual patient characteristics.

The fourth group concentrated on extracorporeal and supportive therapies. Although significant advancements have been made in adult and pediatric extracorporeal therapies, including dialysis modalities, children-specific nuances mandate the design and implementation of age-appropriate devices, approaches, and protocols. This group emphasized the importance of a multidisciplinary team approach to pediatric extracorporeal therapies, engaging key stakeholders, including families, policy makers, and administration, in addition to the medical staff. In this regard, the industry’s role in advancing dialysis machines to satisfy pediatric needs was underlined. The group also provided general recommendations to enhance the quality of treatments by implementing continuous quality assurance projects. Last, the need for close monitoring to achieve timely and appropriate dialysis modality transition (from continuous to inpatient and outpatient intermittent hemodialysis or peritoneal dialysis) or liberation is considered a highly valued step in the care of pediatric AKI.

The fifth group focused on specific pathophysiology, nutritional, and medication management needs among children with AKI. The roles of 2 fundamental differences between adult and pediatric populations during AKI development and management, including the phase of kidney development and the impact of sex hormones as biological variables, were underscored by this group. In addition, it was highlighted that malnutrition profoundly affects the pediatric population, particularly during kidney development. Therefore, recommendations for timely and adequate nutritional status assessment and support were provided.

In addition, the focus of the last group was education and advocacy as essential factors in AKI care in the pediatric population. As by definition, the life expectancy and vulnerabilities of the pediatric population differ from those of adults, the implementation of lifelong, comprehensive, and multidisciplinary education and advocacy is considered critical in the care of AKI in the pediatric population. Of note, the presence of a patient advocate among the ADQI participants was a testament to the ADQI commitment to include all stakeholder voices, especially patients. The group highlighted raising awareness among clinical providers, patients, and their families in varying steps, including AKI development, diagnosis, short-term and long-term care, and outcomes, including kidney function recovery or development of chronic kidney disease.

In summary, the pediatric ADQI provides important outlines for what should be considered the best practices in kidney care for AKI in the pediatric population. In this ADQI consensus report, several points are worth mentioning. These points include advocacy for the multidisciplinary approach to kidney care, the role of kidney development, and sex in the risk and outcomes of AKI, promoting protocolized care simultaneous with phenotyping patients with AKI for individualized care, and lifelong and comprehensive education and advocacy. This report has the potential to affect clinical practice and open multiple avenues for investigation in pediatric AKI.

ARTICLE INFORMATION
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