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Advances in Acute Kidney Disease Care and Treatment: A Current Overview

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Traditional acute kidney injury (AKI) classifications, centered around semi-anatomical lines, no longer suffice in capturing the complexity of AKI. By employing strategies that identify predictive and prognostic enrichment targets, could gain a deeper comprehension of AKI's pathophysiology, allowing for the development of treatment-specific targets and enhancing individualized care. Subphenotyping, enriched with AKI biomarkers, holds insights into distinct risk profiles and tailored treatment strategies, redefining AKI and contributing to improved clinical management. The proposed management of AKI, encapsulated in a structured flowchart, bridges the gap between research and clinical practice. It streamlines the utilization of biomarkers and subphenotyping, promising a future where AKI is swiftly identified and managed with unprecedented precision. This journey represents a significant step forward in achieving the highest standard of care for patients with AKI. Incorporating kidney biomarkers into strategies for early AKI detection and the initiation of AKI care bundles has shown greater effectiveness than using care bundles without these novel biomarkers. This comprehensive approach represents a significant stride towards precision medicine, enabling the identification of high-risk subphenotypes in patients with AKI. Acute kidney disease (AKD) is a critical transitional period between AKI and chronic kidney disease (CKD). Approximately 33.6% cases of AKD have been reported following AKI, however, AKD can also occur without identifiable preceding AKI. The development of AKD is associated with increased risks of chronic kidney disease, dialysis, and mortality. Biomarkers and subphenotypes are promising tools to predict prognosis in AKD. The complex clinical situations in patients with AKD necessitate a comprehensive and structured approach, termed “KAMPS” (Kidney function check, Advocacy, Medications, Pressure, Sick day protocols). We introduce “MAND-MASS”—an acronym devised to summarize the reconciliation of medications during episodes of acute illness—as a critical component of the sick day protocols. A

multidisciplinary team care, consisting of nephrologists, pharmacists, dietitians, and health educators, is an optimal model to achieve the care bundle in KAMPS. Although the evidence for patients with AKD is still lacking, several potential pharmacological agents may improve outcomes, including but not limited to angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, mineralocorticoid receptor antagonists, sodium-glucose cotransporter 2 inhibitors, and glucagon-like peptide 1 receptor agonists. In conclusion, accurate prognosis prediction and effective treatment for AKD are critical yet unmet clinical needs. Future studies are urgently needed to improve patient care in this complex and rapidly evolving field.

Keywords: AKI, AKD, subphenotypes, sick day protocols, MAND-MASS

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