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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

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Session Topic : Unresolved Issues in the Care of HD Patients
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Uremic Toxins and Clinical Outcomes in Hemodialysis

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Uremic toxins refer to a broad range of metabolic waste products, such as urea, hippurates, indoles, phenols, polyamines, among others, that occur with diminished kidney function. Along with the retention of metabolic waste products, patients with advanced kidney disease typically experience a constellation of symptoms that may include nausea, vomiting, fatigue, anorexia, muscle cramps, pruritus, mental status changes, and others (so-called uremic syndrome), which lead to reduced quality of life and excess morbidity and mortality. Given the retention of metabolic waste products with end-stage kidney disease, there has been much interest in using dialysis techniques to remove these substances with the hope that symptoms and outcomes would also improve. The binding of some solutes to plasma proteins complicates their removal via conventional therapies, e.g., hemodialysis. Protein-bound uremic toxins can also originate either from endogenous production, diet, microbial metabolism, or the environment. Overall, the reduction of uremic toxins has only been partially achieved, and outcomes for patients with hemodialysis remain suboptimal. This presentation will conduct an extensive review of the classification and type of different uremic toxins and its impact on the organ system. Also, we will discuss the possible solutions to ameliorate the retention and adverse effects of these toxins. The identification of representative biomarkers for different classes of uremic retention solutes and their correlation to clinical outcomes may facilitate personalized and targeted intervention or dialysis prescriptions to improve the quality of life, morbidity, and mortality of hemodialysis patients.

Keywords: Hemodialysis, Outcome, Toxins, Uremia