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Cardiovascular-Kidney-Metabolic (CKM) Syndrome

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Cardiovascular, Kidney, and Metabolic Interplay in CKD: Mechanisms and Integrated Care Approaches
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Cardiovascular-kidney-metabolic (CKM) syndrome represents a complex interplay between metabolic disorders, cardiovascular disease, and kidney dysfunction, significantly impacting patient outcomes. Early identification and intervention are essential in preventing disease progression and improving overall health. Excess weight and dysfunctional adiposity are central drivers of CKM risk, necessitating targeted strategies for weight reduction. Lifestyle interventions, pharmacotherapy, and metabolic surgery are all crucial components in addressing this challenge. GLP-1 receptor agonists (GLP-1 RAs) have emerged as a powerful tool in CKM prevention, demonstrating benefits that extend beyond glucose control. These agents effectively reduce body weight, lower blood pressure, and improve lipid profiles, leading to a decreased risk of type 2 diabetes and cardiovascular disease. Among available options, tirzepatide has shown the most significant impact, with superior weight loss and the lowest diabetes risk, making it a promising therapeutic choice. A comprehensive, multidisciplinary approach is essential for optimizing CKM outcomes. Integrating care across cardiology, nephrology, and endocrinology enables a personalized, risk-based strategy tailored to individual patient needs. Given the rising global burden of CKM syndrome, shifting focus towards prevention and early intervention with effective therapies like GLP-1 RAs is crucial. Future research should aim to refine treatment algorithms, expand access to these therapies, and further explore their long-term effects on CKM progression. The evolving landscape of CKM management underscores the need for proactive strategies that address metabolic health as a cornerstone of cardiovascular and kidney disease prevention.

Keywords: Cardio-kidney-metabolic syndrome, cardiovascular outcome, chronic kidney disease, GLP-1 receptor antagonists, Obesity