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Cardiovascular Risk Factors Associated with Kidney Disease

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Cardiovascular disease remains the leading cause of death in individuals with chronic kidney disease. Conversely chronic kidney disease is a major risk factor for the development of cardiovascular disease. The interactions between the kidney and the cardiovascular systems are complex with both traditional risk factors and non-traditional risk factors playing major roles. Traditional risk factors include hypertension, the metabolic syndrome and diabetes, dyslipidaemia, excess sympathetic neural activity, along with activation of the renin-angiotensin-aldosterone axis. Non-traditional risk factors include elevated levels of 'uraemic solutes' such as Asymmetrical dimethyl arginine (ADMA), exaggerated endothelial dysfunction, vascular calcification and chronic inflammation. The resultant impact of cardiac function includes increased afterload (total peripheral resistance - atherosclerosis, vessel wall stiffness associated with increased collagen deposition and calcification) leading to increased left ventricular hypertrophy, pre-load factors with intravascular volume expansion and other factors increasing cardiac dysfunction. In particular alterations in cardiac metabolism, inflammation, increased cardiac fibrosis and interstitial calcification adding to left ventricular dysfunction, valvular disease and the risk of arrhythmias. The importance of the linkages between metabolic syndrome, cardiovascular disease and chronic kidney disease has been highlighted by the American Heart Association defining this as a specific syndrome with components all closely interacting to lead to increased morbidity and mortality.(1). They have also recognised the significant contribution of the social determinations of health that contribute to this syndrome and need to be addressed equally as effectively as the medical interventions including renin-angiotensin-aldosterone blockade (ACEinhibitors, angiotensin receptor blockers, mineralocorticoid receptor antagonists), beta blockers, lipid lowering therapy, SGLT2 inhibitors, GLP1 agonists. These social determinants of health are very important in the Asia Pacific regionj. 1. Ndumele CE et al. Circulation. 2023; 148: 1631-64



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*Promoting Sustainable Kidney Health:
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