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Relationship between arteriovenous access flow and cardiovascular risk factors in hemodialysis patients

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An adequate hemodialysis vascular access flow is required to a more efficient dialysis and to improve patient's outcome. However, vascular access has significant and potentially deleterious effects on cardiac functions particularly in the setting of preexisting heart disease. The creation of vascular access causes significant changes in cardiovascular hemodynamics (increase in cardiac contractility and decrease in peripheral resistance, and increase cardiac output). High access flows are postulated to increase cardiac output and cause high-output heart failure. According to the Vascular Access Society guidelines, a high access flow has been defined as one with a flow >1–1.5 L/minute or as one where the access flow is >20% of the cardiac output. Although it may be clinically insignificant, it can be associated with distal hypoperfusion ischemic syndrome, aneurysms, central vein stenosis, and cardiovascular disease such as congestive heart failure, left ventricular hypertrophy, pulmonary hypertension and coronary artery disease in some patients. In hemodialysis patients with preexisting cardiovascular morbidity, vascular access should be monitored carefully for adverse hemodynamic consequences. In case of symptoms and evidence of high access flow, strategies to reduce flow should be considered.