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Assessment of Vascular Function

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Changes in vascular function such as endothelial function and arterial stiffness are key early features in the development of human cardiovascular disease. Assessment of vascular function is clinically important, because information on vascular function can be used in the risk stratification and in the prediction future cardiovascular events independent of conventional risk factors for cardiovascular disease. There are several types of method for the assessment of vascular function. Pulse wave velocity (PWV), augmentation index (AIX) and pulse pressure (PP) are measures of arterial stiffness. Increased arterial stiffness causes increased cardiac afterload, impaired coronary arterial blood supply, and left ventricular diastolic dysfunction. Most popular and convenient noninvasive measurement of arterial stiffness was PWV. Although carotid-femoral PWV (cfPWV) is considered gold standard, technical requirement and patients' inconvenience during the cfPWV measurement are main limitations of cfPWV. More recently developed brachial-ankle PWV (baPWV) is more simple and convenient measurement of arterial

stiffness. baPWV can be obtained by just wrapping the blood pressure cuffs at arm and ankles. The clinical significance of baPWV predicting cardiovascular events has been proven and validated in many clinical studies and meta-analysis. baPWV is useful in many clinical aspects. Endothelial dysfunction contributes to the initiation and progression of atherosclerosis. Endothelial function can be assessed using flow-mediated vasodilation (FMD) or digital reactive hyperemia. As emerging evidence now suggests that central pressure is better related to future cardiovascular events than is brachial pressure, basing treatment decisions on central, rather than brachial pressure, is likely to have important implications for the future diagnosis and management. Although invasive cardiac catheterization is the gold standard to measure central blood pressure, recently developed non-invasive technique such as radial artery tonometry can estimate central blood pressure accurately. Non-invasive measurement of vascular function has the potential to guide the care of patients with or at risk of cardiovascular disease.