

**Supplementary Table 1. Definition of cardiovascular-kidney-metabolic syndrome stages**

Stage	Definition
Stage 0	Individuals with normal BMI and waist circumference, normoglycemia, normotension, a normal lipid profile, and no evidence of CKD or subclinical or clinical CVD
Stage 1	Individuals with overweight/obesity, abdominal obesity, or dysfunctional adipose tissue, without the presence of other metabolic risk factors or CKD <b>Criteria (any one of the following):</b> 1) BMI $\geq 23$ kg/m <sup>2</sup> 2) WC $\geq 85$ cm (women) / $\geq 90$ cm (men) 3) Fasting glucose: 100–125 mg/dL
Stage 2	Individuals with metabolic risk factors (hypertriglyceridemia $\geq 135$ mg/dL, hypertension, metabolic syndrome, diabetes), or CKD <b>Criteria (any one of the following):</b> 1) Triglyceride $\geq 135$ mg/dL 2) Hypertension: Blood pressure $\geq 140/90$ mmHg or history of hypertension (ICD-10 codes I10–I15) or use of antihypertensive medication 3) Metabolic syndrome: At least 3 of the following: - Abdominal obesity (WC $\geq 85$ cm (women) / $\geq 90$ cm (men)) - Fasting glucose $\geq 100$ mg/dL or history of diabetes or use of anti-diabetic medication - Blood pressure $\geq 130/85$ mmHg or history of hypertension or use of antihypertensive medication - Triglycerides $\geq 150$ mg/dL - HDL cholesterol $< 40$ mg/dL (men) or $< 50$ mg/dL (women) 4) CKD: $30 \text{ mL/min/1.73 m}^2 \leq \text{eGFR} < 60 \text{ mL/min/1.73 m}^2$ 5) Diabetes: Anti-diabetic medications or fasting glucose $\geq 126$ mg/dL 6) Dyslipidemia: lipid lowering medications (statin) or total cholesterol $\geq 240$ mg/dL
Stage 3	Subclinical CVD among individuals with excess/dysfunctional adiposity, other metabolic risk factors, or CKD <b>Criteria (any one of the following):</b> - Very high-risk CKD (eGFR $< 30 \text{ mL/min/1.73 m}^2$ ) - High 10-year CVD risk (PREVENT score $\geq 20\%$ )
Stage 4	Clinical CVD (coronary heart disease, HF, stroke, peripheral artery disease, atrial fibrillation) among individuals with excess/dysfunctional adiposity, other metabolic risk factors, or CKD - CAD: MI (MI was diagnosed in hospitalized patients who had undergone coronary revascularization, including PCI or CABG, based on procedure codes (PCI: M6551-6654, M6561-6567, M6571, M6572, O1876-1877; CABG: O1640-1642, O1647-1649, OA640-642, OA647-649), with discharge diagnoses based on ICD-10 codes I21-I22) - HF: HF diagnosed based on discharge diagnosis ICD-10 codes of I50, I42.0, I11.0, I13.0, and I13.2 following hospitalization - Stroke: Ischemic stroke was diagnosed in hospitalized patients who had undergone brain imaging, with discharge diagnoses ICD-10 codes of I63 and I64. Hemorrhagic stroke was also diagnosed in hospitalized patients who had undergone brain imaging, with discharge diagnoses ICD-10 codes of I60–62 - PAD: PAD was diagnosed in hospitalized patients who had ICD-10 codes I70–71, I73.1, I73.8–9, I77.1, I79.0, I79.2, K55.1, K55.8–9, Z95.8–9 as the primary diagnosis and who had undergone revascularization procedures identified by codes M6597, M6605, M6620, M6613, M6632, O0161–70, O1645, O1646, O2064, O2065, O2067, O2068 - AF: AF was diagnosed using the ICD-10 code I48, defined as a primary or secondary diagnosis during hospitalization or at least one outpatient diagnosis

AF, atrial fibrillation; BMI, body mass index; CABG, coronary artery bypass graft; CAD, coronary artery disease; CKD, chronic kidney disease; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; HDL, high-density lipoprotein; HF, heart failure; ICD-10, International Classification of Diseases, 10th Revision; MI, myocardial infarction; PAD, peripheral artery disease; PCI, percutaneous coronary intervention; WC, waist circumference.