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## **Achievement of blood pressure target and risk of MACCE in patients with metabolic syndrome**

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**Objectives:** Metabolic syndrome (MetS) is closely related to adversely cardiovascular morbidities and mortality. Among the components of MetS, controlling blood pressure (BP) might provide the highest yield in reducing major cerebro-cardiovascular events (MACCE).

**Methods:** We used the national health insurance database of South Korea. Among 2,998,127 subjects with hypertension who received national health screenings from 2003 to 2011, 1,920,601 subjects were included in the study. The study group was divided by the presence of the MetS and the degree of control of BP, 1) intensive well-controlled (well-C) (SBP <120 and DBP <70), 2) standard well-C (SBP 120-130 and DBP 70-80), 3) uncontrolled subgroup 1 (U-S1) (SBP 130-159 or DBP 80-99), and 4) uncontrolled subgroup 2 (U-S2) (SBP ≥160 or DBP ≥100). We used multivariable Cox-regression analysis to identify the risk of the all-cause mortality and composite MACCE.

**Results:** There were 945,243 (49.2%) subjects with 2 or more components of MetS. Compared to standard well-C group, both intensively controlled group (adjusted hazard ratio [aHR]; 1.12, 95% confidence interval [95% CI]; 1.06-1.19) and uncontrolled group (aHR: 1.11; 95% CI 1.06-1.15 in U-S1, and aHR: 1.35; 95% CI 1.27-1.45 in U-S2) increased risk of composite MACCE. Among the components of MACCE, the risk for acute myocardial infarction (MI) was significantly increased in U-S2 irrespective of MetS status. However, intensive BP control increased risk for heart failure and stroke in different subjects; with and without MetS, respectively. In addition, the risk of all-cause mortality was increased in intensive well-C group (HR: 1.197; 95% CI 1.143-1.254) and U-S2 group (HR: 1.211; 95% CI 1.211-1.138-1.287), compared to standard well-C group.

**Conclusions:** Uncontrolled hypertension increased risk of MACCE and mortality in patients with or without MetS, whereas intensive control of BP also increased risk. Therefore, proper targeting BP is important to reduce the risk of major clinical outcomes.