Prognostic Value of Blood Pressure Time-in-Target Range (BP-TTR) in Hypertension with Coronary Artery Disease

Ngoc Thuy Tram Nguyen, BPharm, MS[1,2], Carl J Pepine, MD[2,3], Shailina Keshwani, MS, PhD[1,2], Steven M Smith, PharmD, MPH[1,2,3]

[1]Department of Pharmaceutical Outcomes & Policy, College of Pharmacy, University of Florida, Gainesville, FL, USA
[2]Center for Integrative Cardiovascular and Metabolic Disease, University of Florida, Gainesville, FL, USA
[3]Division of Cardiovascular Medicine, Department of Medicine, University of Florida College of Medicine, Gainesville, FL, USA

ABSTRACT

Background: Little is known about prognostic value of blood pressure time-in-target range (BP-TTR) in patients with hypertension (HTN) and coronary artery disease (CAD). This post-hoc analysis of the INternational VErapamil-trandolapril STudy (INVEST) investigated the association between 6-month BP-TTR and a composite outcome of non-fatal myocardial infarction (MI), non-fatal stroke, all-cause mortality, and its components in adults with HTN+CAD.

Methods: We pooled 22,576 INVEST participants (aged ≥50 years with HTN+CAD) and identified 4 outcome-specific cohorts. Each cohort included participants with ≥3 BP measurements and remaining at-risk until 168 days post-randomization. 6-month BP-TTR was estimated as the proportion of days during this 168-day period with BP within the prespecified targets (<140/<90 mmHg or <140/60-<90 mmHg), and categorized: 0%, 3 middle tertiles, and 100%. Multivariable Cox proportional hazards models were fitted.

Results: We identified 12,952 participants for assessing the composite outcome (1,192 events), 12,992 for non-fatal MI (158 events), 12,979 for non-fatal stroke (139 events), and 13,017 for all-cause mortality (951 events). Only non-fatal stroke was significantly associated with 6-month BP-TTR: compared to the 0% group, all higher BP-TTR groups, except the low BP-TTR tertile, were significantly associated with a non-fatal stroke risk reduction of 45%–64% at the <140/<90 mmHg target, and of 48%–68% at the <140/60-<90 mmHg target.

Conclusions: In patients with HTN+CAD, only non-fatal stroke was inversely associated with 6-month BP-TTR at the <140/<90 mmHg and <140/60-<90 mmHg targets. Future analyses using more stringent BP targets are warranted.