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内容：4 種類の降圧薬の長期投与と心血管リスクの関連：ARB、CCB、利尿薬、β 遮断薬

出典：Impact of antihypertensive drug classes on cardiovascular outcomes: insights from the STEP study.

BMC medicine. 2025 Jul 01;23(1);365. pii: 365.

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　高齢高血圧患者において、アンジオテンシン II 受容体拮抗薬（ARB）、カルシウム拮抗薬（CCB）、サイアザイド系利尿薬、β 遮断薬の長期使用の心血管イベントに対する比較を、中国・北京協和医学院の研究者らが評価した。BMC Medicine 誌 2025 年 7 月 1 日号掲載の報告より。

　60～80 歳の中国人高血圧患者を対象とした STEP 試験のデータを用いて実施され最終的に 8,257 例が解析対象となった。主要アウトカムは、脳卒中の初回発症、急性冠症候群（ACS）、急性非代償性心不全、冠動脈血行再建術、心房細動、心血管死の複合とされた。

　追跡期間中央値 3.34 年において、主要アウトカム解析の結果、ARB または CCB への相対的曝露期間が長いほど、心血管複合リスクが有意に低下することが明らかになった。ARB への相対的曝露期間が 1 単位増加するごとに、主要アウトカムのリスクは 45％低下した（HR：0.55、95％CI：0.43～0.70）。CCB への曝露においてはリスクが 30％低下した（HR：0.70、95％CI：0.54～0.92）。一方で、β 遮断薬の相対的曝露期間が長いほど、主要アウトカムのリスクは有意に上昇し（HR：2.20、95％CI：1.81～2.68）、利尿薬は中間的な結果を示した（HR：1.02、95％CI：0.66～1.56）。

　本事後解析の結果は、ARB および CCB の長期投与が、利尿薬および β 遮断薬と比較して、高齢の高血圧患者における複数の心血管イベントについて良好な予後と関連する可能性を示唆した。さらに、ARB は CCB よりも大きな心血管ベネフィットをもたらすことが推察された。
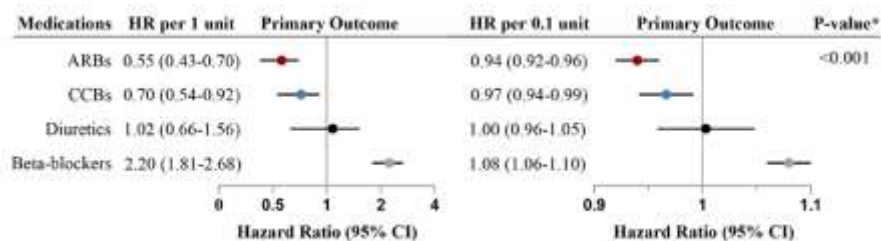
Medications	HR per 1 unit	Primary Outcome	HR per 0.1 unit	Primary Outcome	P-value*
ARBs	0.55 (0.43-0.70)		0.94 (0.92-0.96)		<0.001
CCBs	0.70 (0.54-0.92)		0.97 (0.94-0.99)		
Diuretics	1.02 (0.66-1.56)		1.00 (0.96-1.05)		
Beta-blockers	2.20 (1.81-2.68)		1.08 (1.06-1.10)		

Hazard Ratio (95% CI) | Hazard Ratio (95% CI)

Fig. 1 Association of antihypertensive drug class exposure with primary composite outcome[†] in the entire study population. The relative exposure time was calculated for each antihypertensive drug class. This variable represents the proportion of time a participant was exposed to a specific drug class relative to their total event or censoring time. The relative exposure time was subsequently included as a continuous independent variable in the Cox regression models. The figure presents HRs derived from these models, illustrating the impact of changes in the relative time on the risk of the primary composite outcome: left panel (HR per 1 unit): displays HRs associated with each 1-unit increase in the relative exposure time. A 1-unit increase in this variable signifies a transition from no exposure (relative time = 0) to continuous exposure throughout the participant's entire follow-up period (relative time = 1). Right panel (HR per 0.1 unit): displays HRs associated with each 0.1-unit increase in the relative exposure time. This represents the change in hazard for every 10% increase in the proportion of relative time which the participant was exposed to the drug class (e.g. an increase in relative exposure time from 0.5 to 0.6). The adjusted model accounted for the randomisation group, age, sex, baseline systolic blood pressure, cumulative systolic blood pressure, body mass index, low-density lipoprotein cholesterol, glucose level, history of cardiovascular disease, and baseline renal dysfunction. *The P value was obtained by comparing the hazard ratios of ARBs and CCBs using a two-independent-samples t-test, based on bootstrapped estimates (n = 100). †Primary composite outcome includes the first occurrence of stroke (ischaemic or haemorrhagic), acute coronary syndrome (myocardial infarction and hospitalisation for unstable angina), acute decompensated heart failure, coronary revascularisation, atrial fibrillation, or death from cardiovascular causes. Abbreviations: ARB, angiotensin II receptor blocker; CCB, calcium channel blocker; CI, confidence interval; HR, hazard ratio
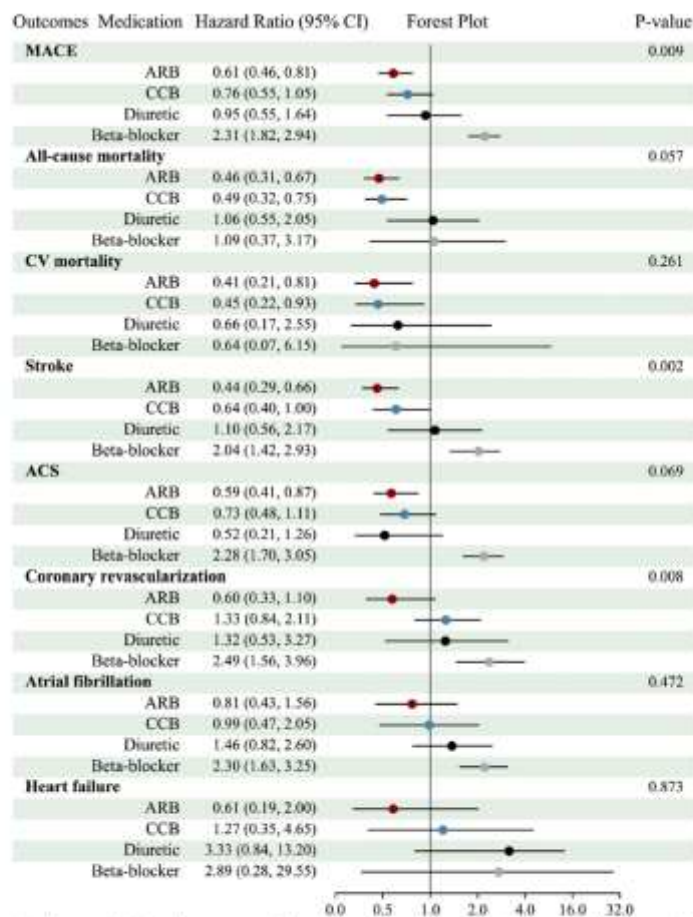
Outcomes	Medication	Hazard Ratio (95% CI)	Forest Plot	P-value
MACE				0.009
	ARB	0.61 (0.46, 0.81)		
	CCB	0.76 (0.55, 1.05)		
	Diuretic	0.95 (0.55, 1.64)		
	Beta-blocker	2.31 (1.82, 2.94)		
All-cause mortality				0.057
	ARB	0.46 (0.31, 0.67)		
	CCB	0.49 (0.32, 0.75)		
	Diuretic	1.06 (0.55, 2.05)		
	Beta-blocker	1.09 (0.37, 3.17)		
CV mortality				0.261
	ARB	0.41 (0.21, 0.81)		
	CCB	0.45 (0.22, 0.93)		
	Diuretic	0.66 (0.17, 2.55)		
	Beta-blocker	0.64 (0.07, 6.15)		
Stroke				0.002
	ARB	0.44 (0.29, 0.66)		
	CCB	0.64 (0.40, 1.00)		
	Diuretic	1.10 (0.56, 2.17)		
	Beta-blocker	2.04 (1.42, 2.93)		
ACS				0.069
	ARB	0.59 (0.41, 0.87)		
	CCB	0.73 (0.48, 1.11)		
	Diuretic	0.52 (0.21, 1.26)		
	Beta-blocker	2.28 (1.70, 3.05)		
Coronary revascularization				0.008
	ARB	0.60 (0.33, 1.10)		
	CCB	1.33 (0.84, 2.11)		
	Diuretic	1.32 (0.53, 3.27)		
	Beta-blocker	2.49 (1.56, 3.96)		
Atrial fibrillation				0.472
	ARB	0.81 (0.43, 1.56)		
	CCB	0.99 (0.47, 2.05)		
	Diuretic	1.46 (0.82, 2.60)		
	Beta-blocker	2.30 (1.63, 3.25)		
Heart failure				0.873
	ARB	0.61 (0.19, 2.00)		
	CCB	1.27 (0.35, 4.65)		
	Diuretic	3.33 (0.84, 13.20)		
	Beta-blocker	2.89 (0.28, 29.55)		

0.0 0.5 1.0 2.0 4.0 16.0 32.0

Fig. 2 Association of antihypertensive drug class exposure with secondary outcomes demonstrating the hazard ratio per unit change of relative time. The adjusted model accounted for the randomisation group, age, sex, baseline systolic blood pressure, cumulative systolic blood pressure, body mass index, low-density lipoprotein cholesterol, glucose level, history of cardiovascular disease, and baseline renal dysfunction. *The P value was obtained by comparing the hazard ratios of ARBs and CCBs using a two-independent-samples t-test, based on bootstrapped estimates (n = 100). Abbreviations: ACS, acute coronary syndrome; ARB, angiotensin II receptor blocker; CCB, calcium channel blocker; CI, confidence interval; CV, cardiovascular; MACE, major adverse cardiac events.