

# Hypertension



The Leading Modifiable Risk Factor for Early Death and Disability<sup>1</sup>

## Uncontrolled Hypertension and Health Risks



For every 10 mmHg SBP decrease



There is a **20-30% reduction** in the risk of **cardiovascular events** (e.g., stroke, myocardial infarction, heart failure)<sup>2</sup>



The more ( $\geq 3$ ) antihypertensive agents



The greater the risk for a patient with uncontrolled hypertension of **CVD, myocardial infarction, or stroke**<sup>a,3</sup>



Despite availability of antihypertensive agents



Patients still have **uncontrolled hypertension** ( $\geq 130/80$  mmHg) despite **receiving multiple medications**<sup>b,4</sup>

Patients Uncontrolled on Antihypertensives (%) per Number of Medications

59.2%



58.3%



61.2%



ACE inhibitor, ARB, CCB, and/or diuretics



There is a **need** for further blood pressure control by targeting **additional pathways**<sup>5</sup>

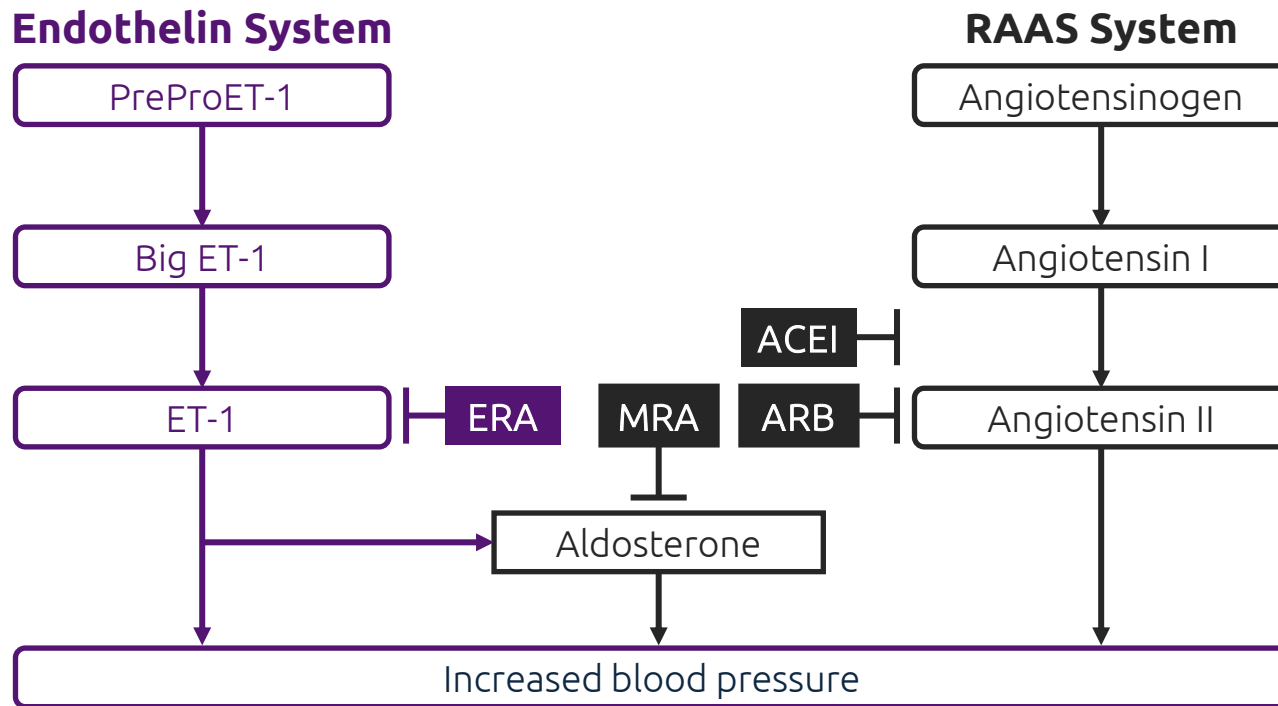
<sup>a</sup>Data from the Reduction of Atherothrombosis for Continued Health (REACH) registry, including 53,530 hypertensive patients; <sup>b</sup>Retrospective analysis of the Optum® Electronic Health Record Database evaluated patients  $\geq 18$  years of age with a diagnosis of hypertension (N=207,705) classified based on the number of prescribed antihypertensive medication classes (3, 4, or  $\geq 5$ ).

**ACE**, angiotensin-converting enzyme; **ARB**, angiotensin receptor blocker; **CCB**, calcium channel blocker; **CVD**, cardiovascular disease; **SBP**, systolic blood pressure.

**References:** **1.** Institute for Health Metrics and Evaluation (IHME). *Findings from the Global Burden of Disease Study 2017*. Seattle, WA: IHME; 2018. **2.** Ettehad D, et al. *Lancet*. 2016;387(10022):957-967. **3.** Kumbhani DJ, et al. *Eur Heart J*. 2013;34(16):1204-1214. **4.** Ammann EM, et al. *Heliyon*. 2023;9(2):e13258. **5.** Nejad SH, et al. *Curr Hypertens Rep*. 2023;25(10):343-352.

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Targeting the Endothelin Pathway Has Emerged as a Novel Approach in the Management of Hypertension<sup>1,2</sup>



 The **endothelin system** is a pathway that can provide complementary blood pressure control for patients with uncontrolled hypertension

ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ERA, endothelin receptor antagonist; ET-1, endothelin-1; MRA, mineralocorticoid receptor antagonist; RAAS, renin-angiotensin-aldosterone system.

References: 1. Kumbhani DJ, et al. *Eur Heart J*. 2013;34(16):1204-1214. 2. Clozel M, et al. *Can J Physiol Pharmacol*. 2022;100(7):573-583.