

# **Comparison of Monotherapy with Angiotensin-Converting Enzyme Inhibitors or Angiotensin II Receptor Blockers in Preventing Vascular Disease Events and All-Cause Mortality among Veteran Patients with Type 2 Diabetes**

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## **Abstract**

In recent years, prevalence and incidence of type 2 diabetes (T2DM) have increased<sup>1</sup>. Projections estimate 1 in 3 people born in the year 2000 will develop diabetes<sup>2</sup>. Patients with type 2 diabetes mellitus (P2DM) have increased incidence of major vascular disease (VD)<sup>3,4</sup>, including congestive heart failure (HF), myocardial infarction (MI), left ventricular (LV) dysfunction, and stroke and mortality. Currently, to reduce the probability of VD, P2DM are prescribed angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs)<sup>5</sup>. Randomized controlled trials have established the efficacy of ACEIs and ARBs in reducing VD events<sup>6,7,8</sup>. However, there is limited data on long-term effectiveness and hardly any data on head-to-head comparisons between ACEI and ARB monotherapy. This study aims to fill this gap by studying clinical outcomes in veteran P2DM. Specifically, this study will compare those who have received ACEIs to those who have received ARBs for reduction in VD events and all-cause mortality over 4 years.

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<sup>2</sup> Narayan KM, Boyle JP, Thompson TJ, Sorensen SW, Williamson DF. Lifetime risk for diabetes mellitus in the United States. *JAMA* 2003;290(14):1884-90.

<sup>3</sup> Krimholtz MJ, Karalliedde J, Thomas S, Bilous R, Viberti G. Targeting albumin excretion rate in the treatment of the hypertensive diabetic patient with renal disease. *J Am Soc Nephrol* 2005;16 Suppl 1:S42-7.

<sup>4</sup> Gerstein HC, Mann JF, Yi Q, et al. Albuminuria and risk of cardiovascular events, death, and heart failure in diabetic and nondiabetic individuals. *JAMA* 2001;286(4):421-6.

<sup>5</sup> Standards of Medical Care in Diabetes – 2006. *Diabetes Care* 2006;29 Suppl 1:S4-42.

<sup>6</sup> Effects of ramipril on cardiovascular and microvascular outcomes in people with diabetes mellitus: results of the HOPE study and MICRO-HOPE substudy. Heart Outcomes Prevention Evaluation Study Investigators. *Lancet* 2000;355(9200):253-9.

<sup>7</sup> Berl T, Hunsicker LG, Lewis JB, et al. Cardiovascular outcomes in the Irbesartan Diabetic Nephropathy Trial of patients with type 2 diabetes and overt nephropathy. *Ann Intern Med* 2003;138(7):542-9.

<sup>8</sup> Brenner BM, Cooper ME, de Zeeuw D, et al. Effects of losartan on renal and cardiovascular outcomes in patients with type 2 diabetes and nephropathy. *N Engl J Med* 2001;345(12):861-9.