

## Angiotensin-Converting Enzyme Inhibitor and Angiotensin Receptor Blocker Use and ICU Delirium Incidence

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**Background:** Delirium is a form of acute brain dysfunction which is associated with longer hospital stays, cognitive decline, and increased risk of mortality. Angiotensin converting enzyme inhibitors (ACEI) and angiotensin receptor blockers (ARB) have been proposed to have neuroprotective effects. ACE inhibitors and ARBs both block the action of angiotensin II leading to an increase in release of acetylcholine. As acetylcholinergic failure is implicated in delirium pathophysiology, ACE inhibitors or ARBs may improve cognitive function and protect against ICU delirium.

**Objective:** To study the relationship between the prescription of ACEIs or ARBs on delirium occurrence in ICU patients.

**Design:** Observational study

**Setting:** ICUs in three large academic hospitals in Indianapolis

**Patients:** 4791 patients admitted to the ICU for more than 24 hours

**Methods and Main Results:** The Richmond Agitation Sedation Scale (RASS) and the Confusion Assessment Method for the ICU (CAM-ICU) were used to evaluate patients for the presence of delirium while in the ICU. ACEI/ARB exposure was determined if the patient had prescription for these medications 6 months prior to ICU admission. The cohort of 4791 participants had a mean age of 60.7 years (SD: 16.1), 46% were female, and 39% were African American. The most common comorbidities were hypertension (68%), hyperlipidemia (49%), and depression (43%). Delirium incidence in this cohort was 13%. Prescription of an ACEI alone (OR: 0.91, 95% CI: 0.73, 1.15, p=0.425) or ARB alone (OR: 0.64, 95% CI: 0.38, 1.07, p=0.114) were not significantly associated with decreased odds of delirium.

**Conclusion:** Prescription of an ACEI or ARB 6 months prior to ICU admission was not associated with reduced incidence of ICU delirium, although further research is needed. Larger studies with medication adherence data are needed to further study the relationship among ACEI/ARBs and delirium.