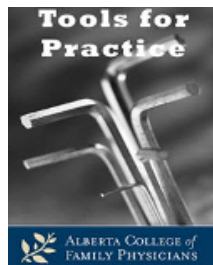


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COVID-19 Rapid Reviews

Along with regular Tools for Practice, the PEER team will be writing rapid reviews to address COVID-19 topics relevant for primary care. The evidence is changing rapidly and it is possible that as you read this, new evidence will already be available. We will try our best to stay in front and keep you up-to-date during these challenging times.



From theory to reality: ACEi, ARB, and COVID-19

Clinical Question: Do angiotensin converting enzyme inhibitors (ACEi) or angiotensin receptor blockers (ARB) increase the risk of catching, or severity of infection with, COVID-19?

Bottom Line: Despite initial theoretical suggestions that ACEi and ARB are harmful, four observational studies have since found no association between COVID-19 infection or severity of disease and ACEi/ARB. One cohort study with the smallest number of COVID-19 patients found an association between ACEi, ARB and hospitalization but not mechanical ventilation. All studies have limitations associated with observational studies including potential confounders and bias which require imperfect statistical adjustments.

Evidence:

- A March 2020 letter theorized ACEi/ARB use could increase risk of COVID-19 infection and mortality by upregulating the ACE2 receptor, which the virus uses to enter host cells.¹
 - No evidence presented.
- May 2020, 5 observational studies published, all statistically adjusted for various differences in patient populations (example presence of heart disease):
 - 3 retrospective cohort studies:
 - 8910 hospitalized COVID-19 positive patients on international registry, 17% from North America, mean age 49.²
 - In-hospital death:
 - 2.1% ACEi versus 6.1% no ACEi (statistically different).

- 6.8% ARB versus 5.7% no ARB (not statistically different).
- 12594 patients (5894 COVID-19 positive) in New York City.³
 - ACEi/ARB use had no association with:
 - Positive COVID-19 test (58% versus 57%).
 - ICU admission, mechanical ventilation, or death (25% both groups).
- 18472 patients (1735 COVID-19 positive) in Ohio and Florida, mean age 49.⁴
 - Positive COVID-19 test: No difference (9% both groups).
 - Hospitalization: 53% ACEi/ARB versus 36% no ACEi/ARB (statistically different).
 - ICU admission: 22% ACEi/ARB versus 15% no ACEi/ARB (statistically different).
 - ARB alone not statistically different from control.
 - Mechanical ventilation: 14% ACEi/ARB versus 11% no ACEi/ARB (not statistically different).
- 2 case-control studies:
 - 37031 people (6272 COVID-19 patients) in Lombardy, Italy; mean age 68.⁵
 - No association between ACEi/ARB and risk of COVID-19 infection, or risk of severe COVID-19 disease or death.
 - 12529 patients (1139 COVID-19 positive) in Madrid, Spain, mean age 69.⁶
 - ACEi/ARB use not associated with risk of hospitalization for COVID-19 disease versus other hypertensive drugs.
- Limitations: All studies observational; adjustments and variable statistical analysis may not account for all pre-existing conditions and potential confounders.

Context:

- Various professional societies recommend continuing ACEi/ARB where clearly indicated.⁷
- Observational studies investigate associations and do not demonstrate causation.

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Disclosures:

Authors do not have any conflicts of interest to declare.

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