

**A Consensus Statement on the Use of Angiotensin Receptor Blockers  
and Angiotensin Converting Enzyme Inhibitors in relation to COVID-19  
(Corona Virus Disease 2019)**

This opinion statement has been discussed and agreed by the Specialist Hypertension Research Network of the North Island of Aotearoa and includes the members:

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There has been an unprecedented interest generated in the medical fraternity and on social media around the interaction of Coronavirus (SARS-CoV2) and ACE inhibitors (ACEi) and angiotensin receptor blockers (ARB), and whether these medications increase the risk of COVID-19.

This was triggered by correspondences published in well-known medical journals, Lancet Respiratory Medicine and BMJ.<sup>1,2</sup> They observe that the COVID-19 patients with comorbidities such as hypertension, diabetes, cardiovascular disease had more severe disease. The authors hypothesized that diabetes and hypertension treatment with ACE2-stimulating drugs increases the risk of developing severe and fatal COVID-19. They suggest that ACEi and ARB can increase ACE2 enzyme, which is a receptor used by the virus to gain entry into the host cells. Therefore, these drugs could potentially increase the risk of severe infection.

We reviewed the evidence supporting this theory, and would like to make the following observations:

1. The studies from China report higher prevalence of hypertension in those who developed severe COVID-19 disease.<sup>3,4</sup> However, a conclusion cannot be drawn that hypertension results in severe infection as these analyses were unadjusted for confounders such as age, and there was no reported data on ACEi and ARB use in these studies.
2. The authors suggest that ACEi and ARB upregulate ACE2 enzyme that enhances infectivity of the SARS CoV2 virus based on a few animal studies.<sup>5</sup> However, other animal and human studies did not find any association of circulating ACE2 levels with the use of ACEi or ARBs.<sup>6,7</sup> Therefore, it is questionable whether these drugs increase ACE2 concentration in lungs and kidneys to allow severe viral infection.
3. To the contrary, there is some evidence that ACEi might actually confer some protection in viral pneumonias.<sup>8</sup> Based on similar hypothesis, there are on-going trials studying the effect of Losartan (ARB) in patients with COVID-19 in outpatient and inpatient settings.<sup>9,10</sup>

Therefore, based on the currently available evidence, we DO NOT advise patients on ACEi or ARB to change therapy. These commonly used medications confer benefits in patients with cardiovascular disease and diabetes, and should not be changed unless clinically indicated. The current evidence on COVID-19 and hypertension/ ACEi or ARB in humans is inadequately adjusted and prone to bias, and therefore remains inconclusive.

Our recommendation is consistent with the viewpoint of numerous societies from around the world including the European Society of Cardiology, the International Society for Hypertension, European Renal Association and European Dialysis and Transplant Association.

## References:

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