NephJC statement on SARS-CoV-2 virus, COVID-19, and ACEi/ARB treatment

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Several initial reports from China suggest that hypertension and chronic kidney disease may be risk factors for adverse outcomes amongst individuals with COVID-19 disease. Rapid sharing of clinical information on COVID-19 is essential; nonetheless, these conclusions are starkly limited because the studies did not fully account for age and other comorbidities. Since angiotensin-converting enzyme 2 (ACE2), a component of the renin-angiotensin system, facilitates cellular entry of SARS-CoV-2 (the virus responsible for COVID-19) there has been interest in understanding how angiotensin-converting enzyme inhibitors (ACEis) and angiotensin receptor blockers (ARBs) may impact COVID-19. Several recent articles in the lay press and medical journals have speculated that patients may benefit from discontinuing these important drugs. However, experimental data are conflicting regarding the potential role of ACEis and/or ARBs in SARS-CoV-2 disease severity, and these medications may even be beneficial in patients with COVID-19.

As physicians and researchers who work in this area, we developed a summary of the existing evidence on the topic: The Coronavirus Conundrum: ACE2 and Hypertension Edition. The summary is being updated in real time on the NephJC website as new information emerges. It includes an ongoing update of international society statements related to ACEi/ARB therapy in patients at risk for and infected with COVID-19 (**Table**). We agree with the overarching conclusions across these guidelines, **recommending that patients who are prescribed ACEi/ARB therapy continue to take these medications at this time unless there is a compelling, evidence-based indication to discontinue therapy.** There is a lack of evidence to support differential use or discontinuation of ACEis or ARBs in patients with COVID-19. Present evidence indicates that the benefits of these drugs in lowering blood pressure and protecting against kidney and heart disease outweigh potential risks. Decisions on continuing or stopping these drugs should be done on an individualised basis by the treating physician.

We will continue to critically evaluate the literature and provide updates on the NephJC website to help providers make informed decisions surrounding the use of ACEi/ARB therapy in our patients as new data emerge.

We invite all of the nephrology community to contribute to the conversation on this important topic. Please contact anyone on the *COVID-19 and ACE2 in Cardiovascular, Lung, and Kidney Working Group* with suggestions. If you would like to join our group, we would welcome this.

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Table. Summary of international society recommendations related to ACEi/ARB therapy in patients at-risk of and infected with SARS-CoV2

Society	Summary of recommendations
European Society of Hypertension	Recommend continuing ACEis/ARBs due to lack of evidence to support differential use in COVID-19 patients. In those with severe symptoms or sepsis, antihypertensive decisions should be made on a case-by-case basis taking into account current guidelines
European Society of Cardiology Council on Hypertension	Strongly encourage continuing ACEis/ARBs due to lack of evidence to support discontinuing
Hypertension Canada	Recommend continuing ACEis/ARBs due to lack of evidence that patients with hypertension or those treated with ACEis/ARBs are at higher risk of adverse outcomes from COVID-19 infection
Canadian Cardiovascular Society	Strongly encourage continuing ACEis/ARBs and Angiotensin Receptor Neprilysin Inhibitors due to a lack of clinical evidence to support withdrawal of these agents

The Renal Association, United Kingdom	Strongly encourage continuing ACEis/ARBs due to unconvincing evidence that these medications increase risk
International Society of Hypertension	Strongly recommend that the routine use of ACEis/ARBs to treat hypertension should not be influenced by concerns about COVID-19 in the absence of compelling data that ACEis/ARBs either improve or worsen susceptibility to COVID-19 infection nor do they affect the outcomes of those infected
American College of Physicians	Encourage continuing ACEis/ARBs because there is no evidence linking them to COVID-19 disease severity, and discontinuation of antihypertensive therapy without medical indication could in some circumstances result in harm
Spanish Society of Hypertension	Recommend that ACEis/ARBs should not be empirically stopped in patients who are already taking them; in seriously ill patients, changes should be made on a case-by-case basis
American Heart Association, Heart Failure Society of America, American College of Cardiology	Recommend continuing ACEis/ARBs for all patients already prescribed them
European Renal Association - European Dialysis and Transplant Association	Recommend continuing ACEis/ARBs in COVID-19 infection patients due to a lack of evidence to support differential use and discontinuation of ACEis/ARBs in COVID-19 patients
American Society of Pediatric Nephrology	Strongly recommend continuing ACEis/ARBs until new evidence to the contrary becomes available