

Cardiovascular drugs and COVID-19 clinical outcomes: a systematic review and meta-analysis of randomized controlled trials

Innocent Asimwe¹, Sudeep Pushpakom², Richard Turner¹, Ruwanthi Kolamunnage-Dona¹, Andrea L. Jorgensen², and Munir Pirmohamed³

¹University of Liverpool

²University of Liverpool Faculty of Health and Life Sciences

³University of Liverpool Institute of Translational Medicine

February 8, 2022

Abstract

Aims: To update our previously reported systematic review and meta-analysis of observational studies on cardiovascular drug exposure and COVID-19 clinical outcomes by focusing on newly published randomized controlled trials (RCTs). **Methods:** More than 500 databases were searched between 1-Nov-2020 and 2-Oct-2021 to identify RCTs that were published after our baseline review. One reviewer extracted data with other reviewers verifying the extracted data for accuracy and completeness. **Results:** After screening 22,414 records, we included 24 and 21 RCTs in the qualitative and quantitative syntheses, respectively. The most investigated drug classes were angiotensin-converting enzyme inhibitors (ACEIs)/angiotensin receptor blocker (ARBs) and anticoagulants, investigated by 10 and 11 studies respectively. In meta-analyses, ACEI/ARBs did not affect hospitalization length (mean difference/MD -0.42, 95% CI -1.83; 0.98 days, n=1183), COVID-19 severity (risk ratio/RR 0.90, 95% CI 0.71; 1.15, n=1661) and mortality (RR 0.92, 95% CI 0.58; 1.47, n=1646). Therapeutic anticoagulation also had no effect (hospitalization length MD -0.29, 95% CI -1.13 to 0.56 days, n=1449; severity RR 0.86, 95% CI 0.70;1.04, n=2696; and, mortality RR 0.93, 95% CI 0.77;1.13, n=5689). Other investigated drug classes were antiplatelets (aspirin, 2 trials), antithrombotics (sulodexide, 1 trial), calcium channel blockers (amlodipine, 1 trial) and lipid modifying drugs (atorvastatin, 1 trial). **Conclusion:** Moderate- to high-certainty RCT evidence suggests that cardiovascular drugs such as ACEIs/ARBs are not associated with poor COVID-19 outcomes, and should therefore not be discontinued. These cardiovascular drugs should also not be initiated to treat or prevent COVID-19 unless they are needed for an underlying currently approved therapeutic indication.

Hosted file

COVID_manuscript_210122.docx available at <https://authorea.com/users/398687/articles/555741-cardiovascular-drugs-and-covid-19-clinical-outcomes-a-systematic-review-and-meta-analysis-of-randomized-controlled-trials>

Hosted file

Figure 1.docx available at <https://authorea.com/users/398687/articles/555741-cardiovascular-drugs-and-covid-19-clinical-outcomes-a-systematic-review-and-meta-analysis-of-randomized-controlled-trials>

Hosted file

Figure 2.pdf available at <https://authorea.com/users/398687/articles/555741-cardiovascular-drugs-and-covid-19-clinical-outcomes-a-systematic-review-and-meta-analysis-of-randomized-controlled-trials>

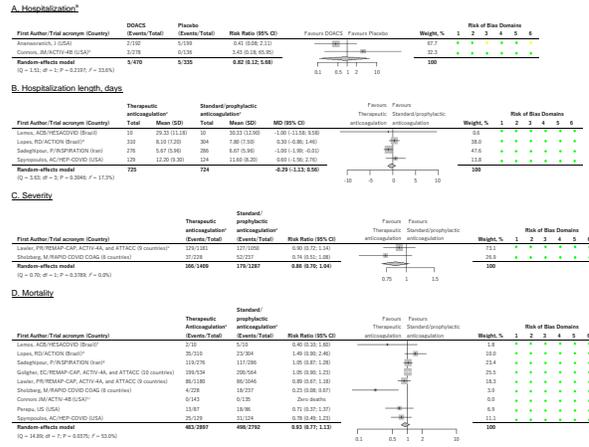


Figure 3.