

# Inhaled Pulmonary Vasodilators in COVID-19 Infection: A Systematic Review and Meta-Analysis

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**Introduction:** Inhaled pulmonary vasodilators (IPVD) have been previously studied in patients with non-coronavirus disease-19 (COVID-19) related acute respiratory distress syndrome (ARDS). The use of IPVD have been shown to increase PaO<sub>2</sub>/FiO<sub>2</sub> (P/F) ratios in ARDS patients. However, the role of IPVD in COVID-19 ARDS is still unclear. Therefore, we performed this meta-analysis to evaluate the role of IPVD in COVID-19 patients.

**Methods:** Comprehensive literature search of PubMed, Embase, Web of Science and Cochrane Library databases from inception through April 22, 2022 was performed. The single arm studies and case series were combined for a 1-arm meta-analysis, and the 2-arm studies were combined for a 2-arm meta-analysis. Primary outcomes for the 1-arm and 2-arm meta-analyses were change in pre- and post-IPVD P/F ratios and mortality, respectively.

**Results:** 13 single arm retrospective studies and 5 case series involving 613 patients were included in the 1-arm meta-analysis. 3 studies involving 640 patients were included in the 2-arm meta-analysis. The pre-IPVD P/F ratios were significantly lower compared to post-IPVD, but there was no significant difference between pre- and post-IPVD PEEP and lung compliance. The mortality rates, need for endotracheal intubation, and hospital LOS were similar between the IPVD and standard therapy groups.

**Conclusion:** Although IPVD may improve oxygenation, our investigation showed no benefits in terms of mortality compared to standard therapy alone. However, randomized controlled trials are warranted to validate our findings.