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# Responsiveness of Inhaled Epoprostenol in Respiratory Failure due to COVID-19

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## Abstract

**Background:** Inhaled pulmonary vasodilators are used as adjunctive therapies for the treatment of refractory hypoxemia. Available evidence suggest they improve oxygenation in a subset of patients without changing long-term trajectory. Given the differences in respiratory failure due to COVID-19 and "traditional" ARDS, we sought to identify their physiologic impact.

**Methods:** This is a retrospective observational study of patients mechanically ventilated for COVID-19, from the ICUs of 2 tertiary care centers, who received inhaled epoprostenol (iEpo) for the management of hypoxemia. The primary outcome is change in PaO<sub>2</sub>/FiO<sub>2</sub>. Additionally, we measured several patient level features to predict iEpo responsiveness (or lack thereof).

**Results:** Eighty patients with laboratory confirmed SARS-CoV2 received iEpo while mechanically ventilated and had PaO<sub>2</sub>/FiO<sub>2</sub> measured before and after. The median PaO<sub>2</sub>/FiO<sub>2</sub> prior to receiving iEpo was 92 mmHg and interquartile range (74 - 122). The median change in PaO<sub>2</sub>/FiO<sub>2</sub> was 9 mmHg (-9 - 37) corresponding to a 10% improvement (-8 - 41). Fifty-percent (40 / 80) met our a priori definition of a clinically significant improvement in PaO<sub>2</sub>/FiO<sub>2</sub> (increase in 10% from the baseline value). Prone position and lower PaO<sub>2</sub>/FiO<sub>2</sub> when iEpo was started predicted a more robust response, which held after multivariate adjustment. For prone individuals, improvement in PaO<sub>2</sub>/FiO<sub>2</sub> was 14 mmHg (-6 to 45) vs. 3 mmHg (-11 - 20), p = 0.04 for supine individuals; for those with severe ARDS (PaO<sub>2</sub>/FiO<sub>2</sub> < 100, n = 49) the median improvement was 16 mmHg (-2 - 46).

**Conclusion:** Fifty percent of patients have a clinically significant improvement in PaO<sub>2</sub>/FiO<sub>2</sub> after the initiation of iEpo. This suggests it is worth trying as a rescue therapy; although generally the benefit was modest with a wide variability. Those who were prone and had lower PaO<sub>2</sub>/FiO<sub>2</sub> were more likely to respond.

**Keywords:** ARDS; COVID-19; inhaled epoprostenol.

## LinkOut – more resources

Full Text Sources

[Atypon](#)

**Research Materials**

[NCI CPTC Antibody Characterization Program](#)

**Miscellaneous**

[NCI CPTAC Assay Portal](#)