

## Wearable PEEP Mouthpiece Improves Oxygenation in COVID-19 Patients

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### Introduction:

We evaluated a medical device in the form of a mouthpiece that functions as a two way PEEP valve and is used by nonintubated/responsive patients and evaluated its performance in COVID-19 cases to improve oxygen level.

We observed 5 patients with COVID-19 infection and pulmonary compromised, defined as pulse oximetry (POx) percent less than 93. We recorded POx, heart rate, respiratory rate and blood pressure at baseline and again after 5, 10, and 15 min. of device use. After the device was removed, we recorded these measurements again 15 min. post device removal.

No adverse events experienced during this study. Measurements were compared using a one-tailed T-test statistical analysis. Mean POx at baseline was 91%. There was a statistically significant increase in oxygen levels with the PEEP mouthpiece. Increased means POx's observed were 94.2% ( $p=0.01$ ) at 5 min., at 95% ( $p=0.004$ ) at 10 min., and 94.8% ( $p=0.01$ ) at 15 min. At 15 min. post removal, POx mean decreased to 91.2% ( $p=0.02$ ). When comparing all data points in aggregate, there was a statistically significant increase in oxygen levels at all data points and conversely a significant decrease in oxygen levels after removal of the device. All other metrics observed clinically significant trends.

The novel PEEP mouthpiece results in a statically significant improvement in oxygen levels in COVID-19 patients with compromised lung function. Further studies are necessary to determine the utility of the device in a larger study population and with longer duration of use.