

# In-Vitro Oxygen Delivery Concentrations in Simulated Spontaneously Breathing Patients using the EXHALO™ Shield

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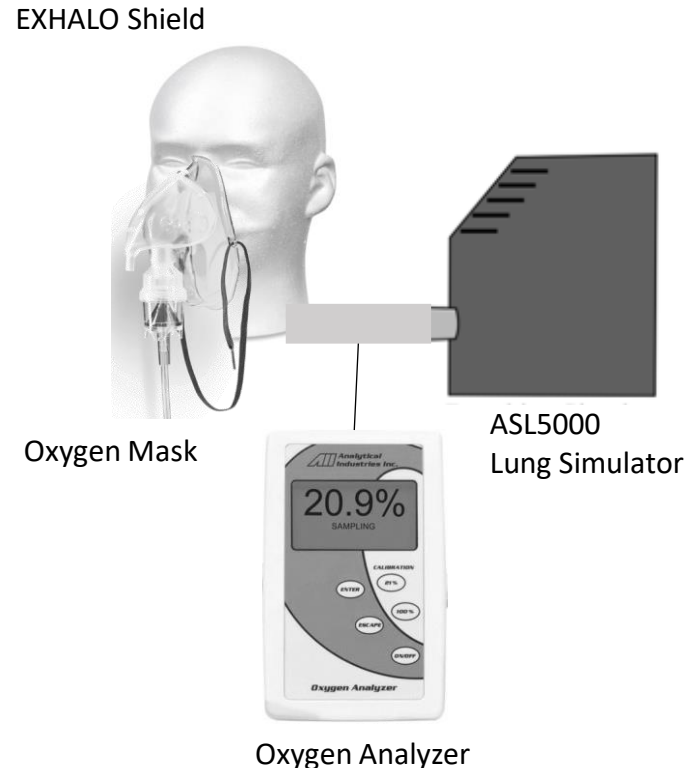
## Introduction

During SARS-CoV-2 outbreak clinicians increased efforts to minimize aerosol generating medical procedures. The EXHALO Shield is a new innovative device designed to minimize and manage the release of airborne contaminants and aerosol particles upon patient exhalation.

## Methods

- Spontaneously breathing COPD lung profile set up on ASL5000 (IngMar Medical):
  - Spont. Tidal Volume (Vt) = 565 ml
  - 18 breaths per minute
  - Inspiratory Muscle Pressure – 24 cmH<sub>2</sub>O
  - Inspiratory Rise Time - 35%
- An Aerosol mask with Nebulizer, Simple Mask and Non-Rebreather mask (Salter Labs, USA) on the manikin head attached to the ASL5000
- An ASL lung simulator was set with 21 ml/cmH<sub>2</sub>O compliance and 53 cmH<sub>2</sub>O/litre/sec resistance
- Oxygen driving flow set as follows:
  - Aerosol mask with nebulizer - 6 L/min and allowed to nebulize for 5 min.
  - Simple mask - 6 L/min for 5 min.
  - Non-Rebreather mask - 8 L/min for 5 min.
- The EXHALO Shield was connected to a portable suction unit set at 100 mmHg (DeVilbiss Healthcare)
- Oxygen monitored with Analytical Industries AII 2000 A oxygen analyzer

## Experimental Set Up



## Study Purpose

To assess the use of the EXHALO Shield in collaboration with oxygen delivery devices. To review increases (resistance to patient exhalation) or decreases (therapy being affected) of FIO<sub>2</sub> delivered to the simulated spontaneously breathing patient.

## Results

	Without EXHALO Shield		
	Simple Mask Average ± SD	Aerosol Mask Average ± SD	Non-Rebreather Mask Average ± SD
Average FIO <sub>2</sub> Measured	35.55 ± 1.35	39.85 ± 2.45	51.75 ± 0.95
Minimum FIO <sub>2</sub> Measured	34.2	37.4	50.8
	With EXHALO Shield		
	Simple Mask Average ± SD	Aerosol Mask Average ± SD	Non-Rebreather Mask Average ± SD
Average FIO <sub>2</sub> Measured	36.3 ± 0.5	41.2 ± 1.7	50.9 ± 0.2
Minimum FIO <sub>2</sub> Measured	35.8	39.5	50.7

## Conclusion

The use of the EXHALO Shield with Aerosol mask, simple mask and non-rebreather masks did not increase nor decrease oxygen delivery.