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## COVID-19

Due to a potentially high respiratory drive and effort in patients with COVID-19 related ARDS (CARDS), it is recommended to closely monitor these two parameters in order to prevent relapse.<sup>1</sup> In the following we highlight the generally available measures for respiratory drive and effort as well as a few important aspects to take into account during weaning.

P<sub>O.1</sub>

### P<sub>O.1</sub> MEASUREMENT

as an indicator for respiratory drive.

- Measures the first 100ms of a triggered, occluded breath which is supposed to reflect drive, rather than effort, although not entirely decoupled.
- Values of P<sub>O.1</sub> ≥ 4cmH<sub>2</sub>O were found to be associated with a higher risk of relapse.<sup>15,18</sup>

P<sub>oc</sub>

### OCLUSION MANEUVER

as a measure of muscle pressure.

- Negative airway pressure in an occluded inspiration indicating muscle pressure and thus respiratory effort.
- Target value ≥ 10cmH<sub>2</sub>O

P<sub>es</sub>

### ESOPHAGEAL PRESSURE

as a surrogate for transpulmonary pressure.

- Negative pressure swings indicate respiratory effort, higher ΔP<sub>es</sub> demonstrating increasing effort.
- P<sub>es</sub> swings of > 15cmH<sub>2</sub>O<sup>6</sup> represent excessive work of breathing

V<sub>T</sub>

### TIDAL VOLUME

as an indicator for respiratory drive & effort.

- High tidal volumes might reflect high drive and effort. No clear cut-off values defined yet. In NIV V<sub>te</sub> > 9.5ml/kg/PBW was significantly associated with NIV failure.
- Beware of double triggering and breath stacking in assisted ventilation resulting into excessive tidal volumes potentially promoting P-SILI.

## Weaning patients with COVID-19 related ARDS from mechanical ventilation<sup>2</sup>:

- A main cause for weaning failure in COVID-19 patients is the hypoxemic respiratory failure with hyperventilation und low to normal PaCO<sub>2</sub> values. CARDS specifics also contribute to difficulties in weaning.
- An early focus on weaning from mechanical ventilation is important, as COVID-19 patients frequently require prolonged weaning of up to 6 weeks.

- Downward adaptation of support levels may alternate with required increases, until the patient is eventually weaned and extubated. Automated systems may help to continuously provide the right support level while at the same time ensuring that no chance is missed to attempt to have the patients do more respiratory work on their own. Automated spontaneous breathing trials may help to take a profound decision on the right timing and success probability of an extubation of the patient.



In our article on ventilating patients with COVID-19-associated ARDS, we reviewed relevant literature and four current guidelines to provide a practical overview. For references and details, please visit our website: [www.draeger.com/covid-ventilation](http://www.draeger.com/covid-ventilation)





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## REFERENCES

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