

# How to set ASV® correctly for a (COVID-19) ARDS patient

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This article describes step-by-step how to set the ventilator when using the Adaptive Support Ventilation (ASV) mode on ARDS patients.

ASV targets the optimal respiratory rate for the low compliance of an ARDS patient and already targets low tidal volumes as recommended in the ARDS guidelines<sup>1</sup>.

For any given minute volume, ASV determines the optimal respiratory rate and tidal volume associated with the minimal work of breathing and minimal driving pressure. It applies lung-protective ventilation with low tidal volumes (VT), and limited Pplateau and driving pressure in passive ICU patients with different lung conditions. In ARDS patients, ASV applies individualized lung-protective ventilation. 2,3

## **Step 1: Determine patient height and select gender**

### **Step 2: Initial settings**

- %MinVol setting of 120% (this corresponds to 120 ml/kg IBW/min)
- PEEP setting of 8 cmH2O
- Oxygen 100% adjust according to your blood gas examinations

### **Step 3: Adjust %MinVol and Pasvlimit**

Increase or decrease the %MinVol to reach the target PaCO<sub>2</sub> in passive patients. In spontaneously breathing patients, increase or decrease the %MinVol to change the level of pressure support.

Be aware that tidal volumes delivered by ASV can be limited by means of the pressure limitation (Pasvlimit) setting. Adjust the Pasvlimit according your Pplateau measurement results if needed. Normally a Pasvlimit ≤30 cmH<sub>2</sub>O is sufficient; in severe cases with low chest wall compliance or high airway resistance, a higher Pasvlimit up to 35 cmH<sub>2</sub>O might be needed. Verify your PEEP and Pasvlimit settings according to transpulmonary pressure measurement. Keep the driving pressure below 14 cmH<sub>2</sub>O<sup>4</sup> and the transpulmonary driving pressure below 10 cmH<sub>2</sub>O.

### **Step 4: Consider an early recruitability assessment**

An RCT<sup>5</sup> investigating high PEEP and prolonged high pressure RMs showed harm to the lung, suggesting that the protocol used in this RCT should be avoided. In those trials however, patients were not screened for recruitability and they were exposed to high pressures over a long time. We recommend using the P/V Tool Pro for an early assessment of recruitability; if a patient is a responder, recruitment should be carried out promptly with the P/V Tool Pro.

For more information:

[Download P/V Tool User guide](#)

[Download P/V Tool Quick reference card](#)

(Click [here](#) to download these documents in other languages.)

## References

1. [http://www.ardsnet.org/files/ventilator\\_protocol\\_2008-07.pdf](http://www.ardsnet.org/files/ventilator_protocol_2008-07.pdf)
2. JM Arnal, MS Saoli, D Novotni, A Garnero. Driving pressure automatically selected by INTELLiVENT-ASV in ICU patients. Intensive Care Med Exp 2016; 4 (Suppl 1):A602.
3. Arnal, Jean-Michel, Mathieu Saoli, and Aude Garnero. "Airway and transpulmonary driving pressures and mechanical powers selected by INTELLiVENT-ASV in passive, mechanically ventilated ICU patients." Heart & Lung (2019).
4. Amato, Marcelo BP, et al. "Driving pressure and survival in the acute respiratory distress syndrome." New England Journal of Medicine 372.8 (2015): 747-755.
5. Writing Group for the Alveolar Recruitment for Acute Respiratory Distress Syndrome Trial Investigators, Cavalcanti AB, Suzumura EA, et al. Effect of Lung Recruitment and Titrated Positive End-Expiratory Pressure (PEEP) vs Low PEEP on Mortality in Patients With Acute Respiratory Distress Syndrome: A Randomized Clinical Trial. JAMA 2017;318:1335-45.

For additional information on COVID-19:

WHO guidelines: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>

ESICM information: <https://www.esicm.org/resources/coronavirus-public-health-emergency/>

Current evidence about COVID-19:

<https://jamanetwork.com/journals/jama/pages/coronavirus-alert>

Centers for Disease Control and Prevention, CDC: <https://www.cdc.gov/coronavirus/2019->

[ncov/hcp/clinical-guidance-management-patients.html](https://www.hamilton-medical.com/ncov/hcp/clinical-guidance-management-patients.html)

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