



Respiratory ARDSNet Protocol

A UMC Health System Performance Improvement Initiative for use in all units where patients with ARDS are admitted.

INITIAL VENTILATOR TIDAL VOLUME AND RATE ADJUSTMENTS

- A. Calculate predicted body weight (PBW)
 - Male = $50 + 2.3 [\text{height (inches)} - 60]$
 - Female = $45.5 + 2.3 [\text{height (inches)} - 60]$
- B. Mode: Volume Assist-Control
 1. Set Initial tidal volume to 8 ml/kg PBW
 2. Reduce tidal volume to 7 ml/kg after 1-2 hours and then to 6 ml/kg PBW after 1-2 hours
 3. Set initial ventilator rate to maintain baseline minute ventilation (not > 35 bpm)

SUBSEQUENT TIDAL VOLUME ADJUSTMENTS

Plateau Pressure Goal: ≤ 30 cmH₂O

Check inspiratory plateau pressure (Pplat) with **0.5 second** inspiratory pause at least every four hours and after each change in PEEP or tidal volume.

- If Pplat > 30 cmH₂O, decrease tidal volume by 1 ml/kg PBW steps to 5 ml/kg or, if necessary to 4 ml/kg PBW.
- If Pplat < 25 cmH₂O and tidal volume < 6 ml/kg, increase tidal volume by 1 ml/kg PBW until Pplat > 25 cmH₂O or tidal volume = 6 ml/kg.
- If Pplat < 20 cmH₂O and breath stacking occurs: tidal volume may be increased (not required) by 1 ml/kg PBW increments (**maximum** tidal volume = 8 ml/kg PBW)

ARTERIAL OXYGENATION

GOAL: PaO₂ 55 – 80 mm Hg or SpO₂ 88 – 95%

Use these FiO₂/PEEP combinations to achieve oxygenation goal.

FiO ₂	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0
PEEP	5	5	8	8	10	10	10	12	14	14	14	16	18	20-20

RESPIRATORY RATE (RR) AND ARTERIAL pH

Arterial pH GOAL: 7.30 – 7.45

- A. Acidosis Management:
 - If pH 7.15 – 7.30:
 - Increase set RR until pH > 7.30 or PaCO₂ < 25 (**Maximum** Set RR = 35)
 - If set RR = 35 **and** pH < 7.30, NaHCO₃ may be given (not required)
 - If pH < 7.15:
 - Increase set RR to 35.
 - If set RR = 35 and pH 7.15 and NaHCO₃ has been considered, tidal volume may be increased in 1 ml/kg PBW steps until pH > 7.15 (Pplat target may be exceeded).

- B. Alkalosis Management: (pH > 7.45):
- Decrease set RR until patient RR > set RR.
Minimum set RR = 6/min.

C. I:E RATIO

GOAL: 1:1.0 – 1:3.0

- Adjust flow rate and inspiratory flow wave-form to achieve goal.

D. WEANING will be conducted when

- Physician orders wean to extubate
- Criteria are met as described in 1. a. b. c. and d. for daily CPAP trial

1. Conduct a CPAP trial daily when

- $FiO_2 \leq 0.40$ and PEEP 8, \leq
- PEEP and $FiO_2 \leq$ values of previous day, **and**
- Patient has spontaneous breathing efforts (may decrease vent set rate by 50% for 5 minutes to detect effort), and
- Systolic BP ≥ 90 mm Hg without vasopressor support.

Conducting the CPAP Trial:

Set CPAP = 5 cmH₂O, $FiO_2 = 0.50$

If patient RR ≤ 35 for 5 mins., advance to Pressure Support Weaning Procedure (Section 2a)

If patient RR > 35, return to previous settings and reassess for weaning the next morning or as ordered per physician

2. Pressure Support (PS) Weaning Procedure

- Set PEEP = 5 and $FiO_2 = 0.50$
- Set initial PS based on RR during CPAP trial:
 - If CPAP RR < 25: Set PS = 5 cmH₂O and go to steps 3c – d.
 - If CPAP RR = 25 – 35: Set PS = 20 cmH₂O, then reduce by 5 cmH₂O at ≤ 5 min. intervals until patient RR = 26 – 35, then go to step c-i.
 - If initial PS not tolerated: Return to previous settings.

c. REDUCING PS:

- Reduce PS by 5 cmH₂O q 1 – 3 hours
- If PS ≥ 10 cm H₂O is not tolerated (as defined above): return to previous A/C settings. Resume the last tolerated PS level on the next morning and reduce PS by 5 cmH₂O every 1 – 3 hours.
- If PS = 5 cmH₂O not tolerated, go to PS = 10 cmH₂O. If tolerated, PS of 5 or 10 cmH₂O may be used overnight with further attempts at weaning the next morning or ordered per physician
- If PS = 5 cmH₂O tolerated for ≥ 2 hours, assess for ability to sustain unassisted breath trial.

3. UNASSISTED BREATHING TRIAL

- Place on T-piece, trach collar, or CPAP < 5 cmH₂O x 2 hours
- Assess for tolerance, as described below
- If tolerated, consider extubation.
- If not tolerated, resume PS 5 cmH₂O

Definition of Weaning Intolerance

RR > 35 (may exceed 35 ≤ 5 minutes), and

SpO₂ < 88% (< 5 minutes at < 88% may be tolerated), **and**

Respiratory distress (≥ 2 of the following):

- Pulse > 120% of rate for > 5 minutes
- Marked use of accessory muscles
- Abdominal paradox
- Diaphoresis

- Marked complaint of dyspnea

Definition of Unassisted Breathing Intolerance

1. RR > 35
 2. SpO₂ < 90% and/or PaO₂ < 60 mmHg, and
 3. Spontaneous tidal volume < 4 ml/kg PBW, and
 4. Respiratory distress (any two of the following):
 - Pulse >120% of the usual rate for > 5 minutes
 - Marked use of accessory muscles
 - Abdominal paradox
 - Diaphoresis
 - Marked complaints of dyspnea
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1. Patients on mechanical ventilation that are ARDSNet can have their ventilator settings weaned using the ARDS policy as a guideline.
 2. The order should state for ARDSNet.
 3. When using the ARDSNet there may be times that the mode of ventilation could be ordered as volume with SIMV, per the physicians orders.
 4. When performing the unassisted breathing trial described in Part D 3, there may be orders for weaning parameters
 5. There may be other specific orders at the physician's discretion.