

VENTILATOR/FLUID MANAGEMENT IN ADULT CRITICALLY ILL COVID PATIENTS – UHealth

adapted from "Clinical Management of SARI when COVID-19 Disease is Suspected – Interim Guidance, 13 March 2020, WHO"

1. INCLUSION: Acute onset PaO₂/FiO₂ ≤ 300 & bilateral infiltrates & hypoxia not fully explained by cardiac failure/volume

2. LUNG PROTECTIVE VENTILATION

- Calculate predicted body weight: Males = 50+2.3*[height (inches)–60]; Females = 45.5+2.3*[height (inches)–60]
- Start at 6 mL/kg PBW, maximum respiratory rate (RR) 35. (Up to 8 mL/kg PBW if dyssynchrony or pH < 7.15)
- Adjust tidal volume and RR to achieve pH and plateau pressure goals.

pH GOAL: 7.30-7.45 Acidosis Management: (pH < 7.30) If pH 7.15-7.30: Increase RR until pH > 7.30 or PaCO ₂ < 25 (Maximum set RR = 35). If pH < 7.15: Increase RR to 35. If pH remains < 7.15, V _T may be increased in 1 ml/kg steps until pH > 7.15 (Pplat target of 30 may be exceeded). May give NaHCO ₃ Alkalosis Management: (pH > 7.45) Decrease vent rate if possible.	PLATEAU PRESSURE GOAL: ≤ 30 cm H₂O Check Pplat (0.5 second inspiratory pause), at least q 4h and after each change in PEEP or V _T . If Pplat > 30 cm H ₂ O: decrease V _T by 1ml/kg steps (minimum = 4 ml/kg). If Pplat < 25 cm H ₂ O and V _T < 6 ml/kg, increase V _T by 1 ml/kg until Pplat > 25 cm H ₂ O or V _T = 6 ml/kg. If Pplat < 30 and breath stacking or dys-synchrony occurs: may increase V _T in 1ml/kg increments to 7 or 8 ml/kg if Pplat remains ≤ 30 cm H ₂ O.
--	--

- Deep sedation may be required to control respiratory drive and achieve tidal volume targets.
- Titrate PEEP / FiO₂ to achieve goal oxygenation 90 – 98%

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	18-24

- Avoid disconnecting patient from the ventilator, which results in atelectasis.

3. PRONE VENTILATE for 16h per day if P/F < 120 on FiO₂ ≥ 0.6, PEEP ≥ 5, Vt close to 6 mL/kg PBW after 12-24h on vent.

4. USE A CONSERVATIVE FLUID MANAGEMENT STRATEGY IN PATIENTS WITHOUT TISSUE HYPOPERFUSION: See NHLBI ARDSnet FACTT. Net effect ≤1500mL net positive first 24h, net negative daily thereafter. Goal UOP 0.5 ml/kg/hr, CVP <4.

5. MAY CONSIDER the following therapies in patients with PaO₂/FiO₂ < 150 refractory to above maneuvers. Evidence for their mortality benefit is variable, and these should only be undertaken under the direct supervision of an intensivist.

- Higher PEEP strategies, recruitment maneuvers, neuromuscular blockade, esophageal manometry.

Note: These are recommendations, but can be modified based upon clinician discretion.

VENTILATOR/FLUID MANAGEMENT IN ADULT CRITICALLY ILL COVID PATIENTS – UHealth

adapted from "Clinical Management of SARI when COVID-19 Disease is Suspected – Interim Guidance, 13 March 2020, WHO"

1. INCLUSION: Acute onset PaO₂/FiO₂ ≤ 300 & bilateral infiltrates & hypoxia not fully explained by cardiac failure/volume

2. LUNG PROTECTIVE VENTILATION

- Calculate predicted body weight: Males = 50+2.3*[height (inches)–60]; Females = 45.5+2.3*[height (inches)–60]
- Start at 6 mL/kg PBW, maximum respiratory rate (RR) 35. (Up to 8 mL/kg PBW if dyssynchrony or pH < 7.15)
- Adjust tidal volume and RR to achieve pH and plateau pressure goals.

pH GOAL: 7.30-7.45 Acidosis Management: (pH < 7.30) If pH 7.15-7.30: Increase RR until pH > 7.30 or PaCO ₂ < 25 (Maximum set RR = 35). If pH < 7.15: Increase RR to 35. If pH remains < 7.15, V _T may be increased in 1 ml/kg steps until pH > 7.15 (Pplat target of 30 may be exceeded). May give NaHCO ₃ Alkalosis Management: (pH > 7.45) Decrease vent rate if possible.	PLATEAU PRESSURE GOAL: ≤ 30 cm H₂O Check Pplat (0.5 second inspiratory pause), at least q 4h and after each change in PEEP or V _T . If Pplat > 30 cm H ₂ O: decrease V _T by 1ml/kg steps (minimum = 4 ml/kg). If Pplat < 25 cm H ₂ O and V _T < 6 ml/kg, increase V _T by 1 ml/kg until Pplat > 25 cm H ₂ O or V _T = 6 ml/kg. If Pplat < 30 and breath stacking or dys-synchrony occurs: may increase V _T in 1ml/kg increments to 7 or 8 ml/kg if Pplat remains ≤ 30 cm H ₂ O.
--	--

- Deep sedation may be required to control respiratory drive and achieve tidal volume targets.
- Titrate PEEP / FiO₂ to achieve goal oxygenation 90 – 98%

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	18-24

- Avoid disconnecting patient from the ventilator, which results in atelectasis.

3. PRONE VENTILATE for 16h per day if P/F < 120 on FiO₂ ≥ 0.6, PEEP ≥ 5, Vt close to 6 mL/kg PBW after 12-24h on vent.

4. USE A CONSERVATIVE FLUID MANAGEMENT STRATEGY IN PATIENTS WITHOUT TISSUE HYPOPERFUSION: See NHLBI ARDSnet FACTT. Net effect ≤1500mL net positive first 24h, net negative daily thereafter. Goal UOP 0.5 ml/kg/hr, CVP <4.

5. MAY CONSIDER the following therapies in patients with PaO₂/FiO₂ < 150 refractory to above maneuvers. Evidence for their mortality benefit is variable, and these should only be undertaken under the direct supervision of an intensivist.

- Higher PEEP strategies, recruitment maneuvers, neuromuscular blockade, esophageal manometry.

Note: These are recommendations, but can be modified based upon clinician discretion.