

# Ventilation strategies - Covid 19

6th April 2020 - V5

## Initial post intubation management:

- **SIMV-VC on ICU vent.**
- **PRVC on Flow-I**
- FiO<sub>2</sub> 80-100%
- PEEP 8
- Vt 6-8mls/kg IBW – see below
- Rate 20 but be guided by EtCO<sub>2</sub>
- I:E 1:2 with Pplat < 30cmH<sub>2</sub>O

**ABG after 30mins**

**Aim:**

### Target SaO<sub>2</sub> 90-94%

(PaO<sub>2</sub> < 8kPa)

- Increase FiO<sub>2</sub> by 10%
- Increase PEEP to 15cm H<sub>2</sub>O by increments of 2cm
- Move to I:E ratio 1:1
- Keep pH >7.2
- **Call for consultant support**
- Recruitment manoeuvre
- Consider APRV vs PRONE
- Consider ECMO referral

### Target normal pH > 7.2

(pH <7.2 and rising PaCO<sub>2</sub>)

- Minimise dead space
- Increase RR to 26(max 30)
- Increase I:E to 1:2
- **Call for consultant support**
- Consider ECCO<sub>2</sub>R
- Consider palliation

### PaO<sub>2</sub> < 8kPa with (Pplat > 30cmH<sub>2</sub>O or driving pressure > 15)

- Reduce Vt 4-6mls/kg IBW
- Permissive hypercapnia (but pH>7.15)
- **Call for consultant support**
- Higher PEEP (max 20cm H<sub>2</sub>O)
- Reverse ratio (as tolerated 2:1)
- Consider adjuncts in guidelines
- Consider ECMO referral

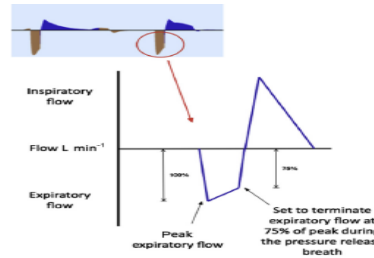
Suggested tidal volumes 6-8mls/kg:

IBW	
50kg	300-400mls
55kg	330-440mls
60kg	360-480mls
65kg	390-520mls
70kg	420-560mls
75kg	450-600mls
80kg	480-640mls
85kg	510-680mls
90kg	540-720mls

## APRV: Under direction of ICM Consultant ICU ventilators only

- Stop NMB
- Measure plateau pressure – By holding an Inspiratory pause
- Set P<sub>high</sub> to plateau pressure – Maximum 30 cmH<sub>2</sub>O
- Set P<sub>low</sub> to 0 cmH<sub>2</sub>O
- T<sub>high</sub> 4-6 seconds
- T<sub>Low</sub> 0.5- 1 second
- Set FiO<sub>2</sub> to 1.0
- Ensure ATC and autoflow off.

### Assess flow waveform



**Adjust T<sub>low</sub> until expiratory flow rate decays to 75% of PEFR**

### To improve oxygenation:

- Increase FiO<sub>2</sub>
- Increase P<sub>high</sub> to a max of 30 cmH<sub>2</sub>O
- Increase T<sub>high</sub> in 0.5 to 2 second increments to a max of 10 secs
- Reduce T<sub>low</sub> in increments of 0.1 secs

### To improve CO<sub>2</sub> clearance:

- Aim for spontaneous ventilation
- Increase T<sub>low</sub> to allow decay of expiratory flow rate to 25% of PEFT
- Increase P<sub>high</sub> to ensure release volumes of 6-8mls/kg
- Decrease T<sub>high</sub> to increase number of releases per minute

## Prone Ventilation

- Consider EARLY and when P/F ratio < 13
- **ICU Consultant decision**
- Perform all predicted invasive procedures prior
- May require several turns
- Refer to Proning guideline

## ECMO referral:

PaO<sub>2</sub> <8kPa      Prone trialed  
 PIP >30cmH<sub>2</sub>O      Age <70  
 FiO<sub>2</sub> >80%  
 Glenfield 0300 300 3200

## All patients:

- Minimise breaks in circuit - clamp ETT if disconnecting.
- Cautious use of fluids allowed - use SVV < 12 on Vigeleo-Flotrac
- Support MAP with noradrenaline / dobutamine.
- Consider nebulised prostacyclin if evidence of R heart strain on echo.
- Consider paralysis if not on APRV
- Consider recruitment to RECOVERY trial.
- Consider early anticoagulation
- Consider ECCO<sub>2</sub>R (ECMO referral mandated prior to use)