

CURE screening, and study processes

All patients admitted to Christchurch Hospital ICU undergoing invasion mechanical ventilation

N = _____

Inclusion criteria:

- 1 P/F ratio \leq 200
 - i. on any level of PEEP or FiO₂, **OR**
 - ii. P/F ratio \leq 200 on FiO₂ = 50% and PEEP = 5

N = _____

Lung recruitment manoeuvres considered to be in patient's best interests

Proxy consent

Allocation of treatment

Model-Based Ventilation (MBV)

N= _____

Withdrawn from study

N= _____

Withdrawn from study

N= _____

Standard Practice Ventilation (SPV)

N= _____

Analysis of results

Primary Outcome: AUC PaO₂/FiO₂

Secondary Outcomes: (i) LoMV, (ii) VFD up to 28 days, (iii) ICU and hospital LoS, (iv) AUC of SpO₂ / FiO₂ during MV, (v) Frequency /Fraction of time SpO₂ < 88%, (vi) Changes in respiratory mechanics, (vii) Changes in chest X-ray Index scores, (viii) Rescue therapies: (a) prone positioning, (b) nitric oxide (c) ECMO, (ix) Hospital and 90-day mortality.

Adverse Events:

Exclusion criteria:

1. P/F ratio > 300 on any level of PEEP or FiO₂
2. P/F ratio > 200 on FiO₂ = 50% and PEEP = 5
3. Ventilated > 48 hours (including time spent in another hospital)
4. Not expected to be ventilated for another 48 hours
5. < 16 years.
6. Suspicion of raised intracranial pressure (ICP) or ICP \geq 20 mmHg.
7. High spinal cord injury with loss of motor function and/ or significant weakness from any neurological disease.
8. Any barotrauma during this admission.
9. Asthma as the primary presenting condition or significant COPD.
10. Patients who are moribund and/or not expected to survive for > 72 hours.
11. Limitations of treatment, or not expected to survive 90 days
12. Lack of clinical equipoise.
13. Previously enrolled patient

N = _____