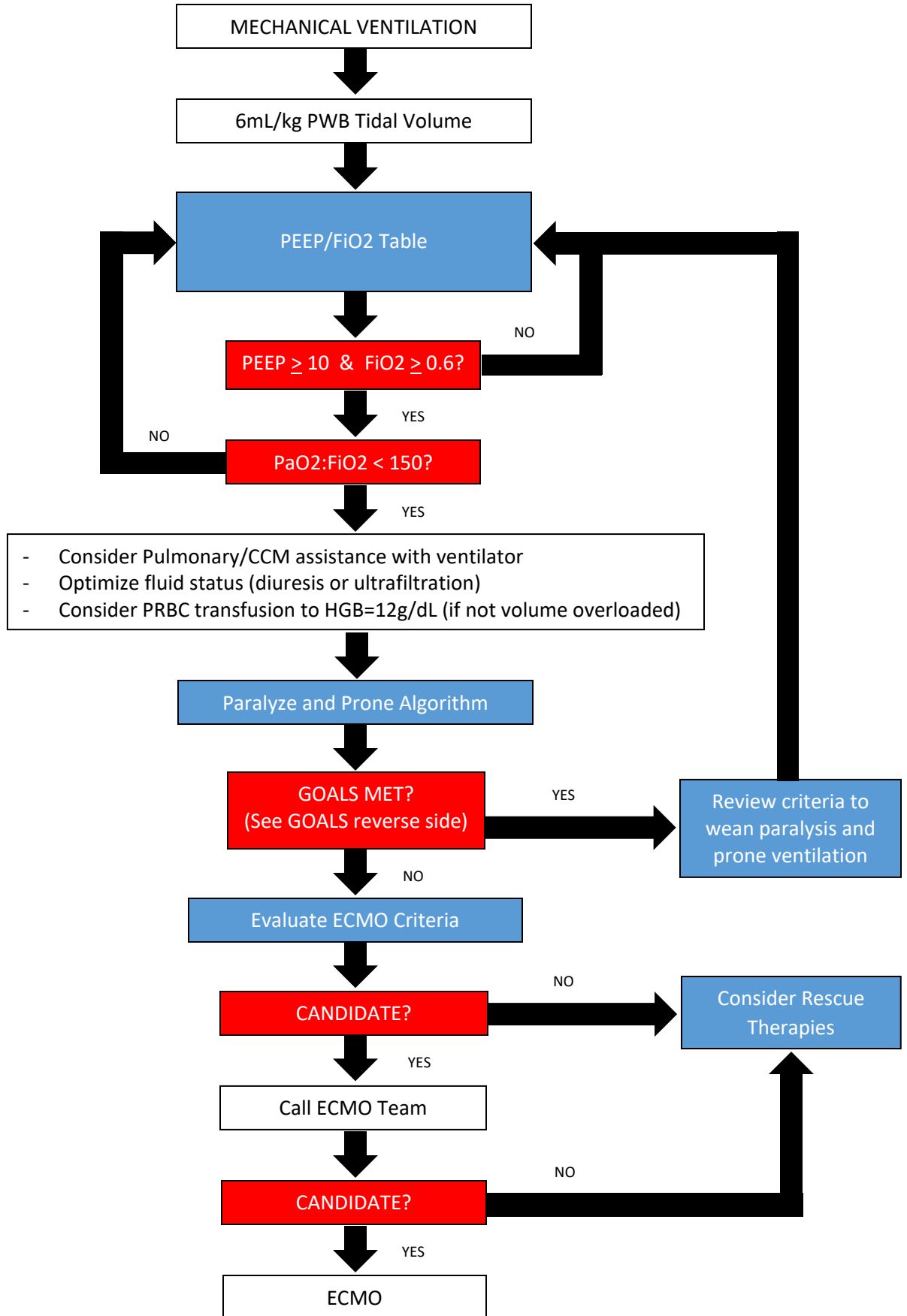




UMMC MECHANICAL VENTILATION AND REFRACTORY HYPOXIA PROTOCOL



UMMC MECHANICAL VENTILATION AND REFRACTORY HYPOXIA PROTOCOL NOTES

GOALS

- PaO₂ = 55-80mmHg
- SaO₂ = 88-95%
- pH = 7.30-7.45
- Pplat < 30cmH₂O
- Driving pressure < 15cmH₂O
- Poor grade SAH and TBI with GCS < 8: goal PaO₂ > 70mmHg and SaO₂ > 90%

HIGH PEEP + FiO₂

- PEEP ≥ 10cmH₂O
- FiO₂ ≥ 0.8

PARALYZE PRONE ALGORITHM

- If pt's PaO₂:FiO₂ ratio remains < 150mmHg on PEEP ≥ 10cmH₂O and FiO₂ ≥ 0.6, allow a 12-24h stabilization period. MD then has option to:
 - Start paralysis and prone positioning OR
 - Start paralysis and wait for a subsequent 12h. If PaO₂:FiO₂ remains < 150mmHg on PEEP ≥ 10cmH₂O and FiO₂ ≥ 0.6, then begin prone positioning. If PaO₂:FiO₂ is > 150mmHg on PEEP ≤ 10cmH₂O and FiO₂ ≤ 0.6 continue paralysis for full 48h period and re-assess.
- For pts on neurosurgery service: neurosurgery attending must be contacted at the beginning of the 12-24h stabilization period

Absolute Contraindications to Prone Treatment:

- Massive hemoptysis requiring immediate surgical or interventional radiology procedure
- Tracheal surgery or sternotomy in the previous 15 days
- Unstable spine, pelvic, or femur fracture
- Lung transplant in previous 15 days

Relative Contraindications to Prone Treatment:

- Intracranial pressure > 25mmHg or cerebral perfusion pressure < 60mmHg
- Burn location
- Serious facial trauma or facial surgery in the previous 15 days
- Anterior chest tubes with air leak – attempt to reposition the chest tube laterally then prone
- Pregnancy > 24 weeks – consider emergent delivery prior to prone positioning
- Open abdomen or open abdomen with wound vac

Criteria to Stop Prone Treatment:

- PaO₂:FiO₂ ratio ≥ 150mmHg with PEEP ≤ 10cmH₂O and FiO₂ ≤ 0.6 after 4h in supine position
- Drop in PaO₂:FiO₂ ratio of > 20% relative to the supine position
- Complications occurring during a prone session and leading to its immediate interruption such as bradycardia (<30bpm for >1min), cardiac arrest, hypotension (SBP < 60mmHg for > 5min), or elevated ICP (> 25mmHg for > 5 minutes)

Relative Contraindication to Paralysis:

- ICP > 25mmHg or CPP < 60mmHg

Criteria to Stop Paralysis:

- Clinical judgement at > 48h of paralysis based on patient response to therapy
- Persistent bradycardia

ECMO INCLUSION CRITERIA

- One of the following:
 - PaO₂:FiO₂<50 with FiO₂>0.8 for >3h
 - PaO₂:FiO₂<80 with FiO₂>0.8 for >6h
 - pH<7.25 for >6h with RR increased to 35/min and Pplat<32cmH₂O
- Reached appropriate step on protocol
- Age < 70 years
- Attempt at temperature control < 38.5C
- Transfusion to HGB > 12g/dL (if able)
- Recruitment maneuver
- Optimal PEEP trial

ECMO EXCLUSION CRITERIA

- Mechanical ventilation >7d
- Cannot be systemically anticoagulated
- Terminal disease with short expected survival
- Underlying moderate to severe chronic lung disease
- Advanced multiple organ failure syndrome
- Unresponsive septic shock
- Uncontrolled metabolic acidosis
- Central nervous system injury
- Severe immunosuppression
- Morbid obesity (BMI > 45kg/m²)

RESCUE THERAPIES

- Diuresis or ultrafiltration
- Drain pleural effusions
- Transfusion to HGB > 12g/dL
- Consider use of APRV or BiVent
- Consider inhaled epoprostenol [Veletri] or nitric oxide
- Infuse sodium bicarbonate to compensate for acidemia
- Consider aborting pressure limited volume control and use elevated pressures
- Reconsider any contraindications to prone or paralysis treatment
- Evaluate goals of care with family and consider change in code status to DNR if appropriate

ARDSnet Goals and PEEP Titration

PaO₂ = 55-80mmHg
 SpO₂ = 88-95%
 pH = 7.30 – 7.45
 Pplat < 30cmH₂O
 Tidal Volume = 6mL/kg PBW

FiO ₂	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5-0.8	0.8	0.9
PEEP	5	8	10	12	14	14	15	16	18	20	22	22-24

Predicted body weight:

Males: 50 + 2.3 [height (in) – 60]
Females: 45.5 + 2.3 [height (in) – 60]

