Appendix VII

BiVent (APRV) Quick Guide

Goals of BiVent Mode:
- Provide lung protective ventilation
- Use an “open lung” approach
- Minimize alveolar overdistension
- Avoid repeated alveolar collapse and re-expansion
- Restore FRC through recruitment
- Maintain FRC by creating intrinsic PEEP

When to Consider BiVent:
- Bilateral Infiltrates
- PaO2/FIO2 ratio <300 and falling
- Plateau pressures greater than 30 cmH2O
- No evidence of left heart failure
- ARDS/ALI

Possible Contraindications:
- Unmanaged increases in intracranial pressure
- Large bronchopleural fistulas
- Obstructive lung disease

Initial Settings:
- **P High** – set at plateau pressure measured on conventional mode
  - Typically 20 – 25 cmH2O
  - In patients with Pplateau at or above 30, set at 30 cmH2O
  - Exceptions for higher settings: morbid obesity, decreased thoracic or abdominal compliance
- **T High** – 4 – 6 seconds (5.5 seconds good starting level for most adult patients)
- **PEEP** – recommend setting at zero (difference b/w P High and PEEP influences tidal volume)
- **T PEEP** – 0.5 second – 0.8 second Should be set to avoid collapse of alveoli. Set T PEEP so that expiratory flow from patient ends at about 50 to 75% of peak expiratory flow. This can be determined by saving a screen and calculating peak expiratory flow. Or, if optimal PEEP level is known prior to initiation, then intrinsic PEEP may be measured by performing an expiratory hold and measuring total PEEP.
- **Pressure Support** – As needed with special attention given to PIP/ Zero to minimal if possible until weaning stage

Respiratory rate
Spontaneous breathing encouraged. (May subtract release rate from respiratory rate to estimate patient’s true rate) Rate may be higher than rate in conventional mode however should be managed at an acceptable level to ensure effectiveness
Management of CO2:
Delta P (P High – PEEP) determines flow out of the lungs and volume exchange

To decrease PaCO2:
• Increase p High to increase delta P and volume exchange
• Check T PEEP—if possible increase T PEEP to allow more time for exhalation (being mindful to avoid alveolar collapse (not allowing expiratory flow to return to zero)
• Decrease T High (being mindful that decreasing T High will decrease mean airway pressure and therefore oxygenation)

Management of PO2:
To increase PaO2:
• Increase FIO2
• Increase MAP by increasing P High in 2 cmH2O increments
• Increase T High slowly (0.5 sec/change)
• Recruitment maneuvers
• Consider shortening t PEEP to increase PEEPi in .01 sec increments (this may reduce VT and affect PaCO2)

Weaning from BiVent:
• FIO2 SHOULD BE WEANED FIRST (target < 50% with SpO2 appropriate)
• Reducing P High, by 2 cmH2O increments until the P High is below 20 cmH2O
• Increasing T High
• Add pressure support judiciously, add to P High in order to decrease WOB while avoiding overdistention (P High + PS < 30 cmH2O)

Guide for reference:
P High 28     T High 5.5
P High 26     T High 6.0
P High 24     T High 7.0
P High 22     T High 8.0
P High 20     T High 9.0
P High 18     T High 10.0