

APRV Protocol

Set Up: Calculate Predicted Body Weight (PBW)

Male = $50 + 2.3[\text{height}(\text{inches}) - 60]$

Female = $45.5 + 2.3[\text{height}(\text{inches}) - 60]$

- Set P High to achieve a Vt of 6-8 mL/kg
- Set P Low to 0 cmH₂O
- Set T High 4.0 – 6.0 sec
- Set T Low 0.7
- Pressure Support 4-5 on P High; if Ti/Ttot less than 0.3 indicates increase WOB
- Pressure Support 2-3 on Peep if T Low greater than 0.8
- Set inspiratory cycle 1-5; if there is a leak, may increase up to 40%

Ventilator Management

- ❖ Set T Low to achieve a termination of peak flow at approximately 50%
 - Start T Low at 0.7
 - Observe angle of deceleration
 - T-PEFR (Peak Expiratory Flow Rate)
 - 1.) 0.7 secs (normal lung) 45
 - 2.) 0.2-0.8 secs (restrictive lung disease) less than 45° angle of deceleration
 - 3.) 0.8-1.5 secs (obstructive lung disease) greater than 50° angle of deceleration
- ❖ Use the angle of deceleration to guide modification of T Low to achieve oxygenation and ventilation goals

Oxygenation – goal for PaO₂ greater than 60mmHg

If PaO₂ is less than 60mmHg or SpO₂ is less than 88% implement the following:

- ❖ Reassess release volume to ensure T-PEFR is greater than 50% and less than 75%
 - Check the angle of deceleration
- ❖ If T-PEFR is less than 50% decrease T Low until T-PEFR equals 75%
- ❖ Increase P High or P High and T High simultaneously
- ❖ Adjust FIO₂

Ventilation – goal for PaCO₂ is 35 – 60mmHg, higher PaCO₂ acceptable for pH greater than 7.20

- ❖ Assess for over sedation
- ❖ Reassess release volume to ensure T-PEFR 50% - 75%
 - If T-PEFR greater than 75% and oxygenation acceptable, consider increasing T Low by 0.05 – 0.1 increments to achieve 50% T-PEFR (Extending T Low may lead to derecruitment)
 - If T-PEFR less than 50% decrease T High and increase P High simultaneously

Assess for weaning every 4 hours (See Weaning Criteria)

- ❖ Observe for and increase Vt
- ❖ Adjust P High to achieve a Vt of 6-8mL/kg

Weaning Criteria

- ❖ As lung compliance improves tidal volume will increase
- ❖ FiO_2 less than 50%
- ❖ pH 7.3 – 7.5
- ❖ PaCO_2 30 – 50mmHg
- ❖ Spontaneous respiratory rate 10-25bpm
- ❖ Systolic blood pressure greater than 90 on minimal or no vasopressors
 - 1.) Simultaneously decrease P High by 2-3cmH₂O increments and increase T High in 0.5 - 2.0sec increments. Goal: P High less than 16cmH₂O; T High 10sec
 - 2.) When patient is on P High less than 16cmH₂O and T High greater than 10sec
 - 3.) Place patient on CPAP less than 16 maintaining the same MAP and add PS 5
 - 4.) Wean CPAP to 5cmH₂O every 1 hour by increments of 3-5cmH₂O if tolerated (See weaning intolerance below and monitor MAP to prevent a significant drop causing derecruitment)