

**LeBonheur Children's Medical Center
Respiratory Care Department
PICU Ventilator Weaning Protocol**

Protocol for:

Weaning from conventional mechanical ventilation

Patient Type:

Pediatric Intensive Care Patients who have been identified by the ICU attending physician to be hemo-dynamically stable and with a pulmonary condition suitable for weaning from the ventilator. An order will be written: **Wean per Respiratory Protocol**

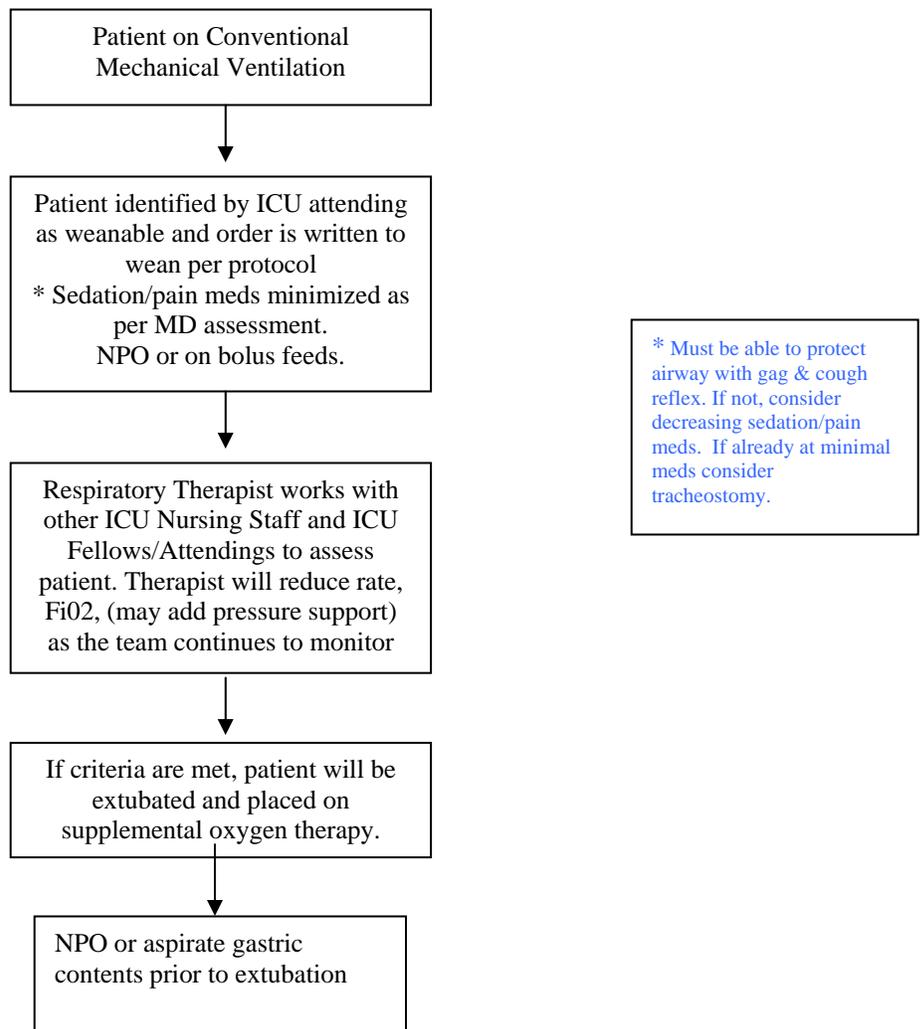
Clinical Area:

Le Bonheur Pediatric Intensive Care Unit

Equipment Needed:

Conventional Mechanical Ventilator, I-STAT, ABG kits, Stethoscope, cardio-respiratory and hemo-dynamic monitor, pulse oximeter

Basic Sequence:



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Weaning Process:

1. When the patient has been completely assessed and the order for "Wean per Respiratory Protocol" has been verified, the respiratory therapist may begin to decrease the respiratory rate, peep (if above 3 cmH₂O) and FiO₂. Each change will be made in accordance with the protocol and discussed with the patient's bedside nurse.
2. **Changes in Respiratory Rate:**
 - Rate changes will be made in no more than 4 breath increments and no more frequently than every 20 - 30 minutes
 - When the ventilator rate is reduced to 5-10, rate weaning will cease and the patient will be evaluated for extubation.
3. **Changes in FiO₂:**
 - FiO₂ can be weaned in increments of 5-10% with other parameters
 - The SpO₂ will be maintained at 95% or greater unless the patient has a known shunt and lower baseline saturations
 - When the FiO₂ is weaned to 0.40, FiO₂ weaning will cease and the patient will be evaluated for extubation
4. **Changes in PEEP:**
 - If PEEP is greater than 3 cmH₂O, it may be weaned in increments of 2 cmH₂O at least 30 minutes apart.
 - When PEEP is weaned to 3-5 cmH₂O, PEEP weaning will cease and the patient will be evaluated for extubation.
5. **Arterial Blood Gases:**
 - Obtained prior to extubation and 30 -45 minutes post extubation
 - Obtained PRN during weaning – determined by changes in patient status
6. **Pressure Support:**
 - May be added by the respiratory therapist when or before the patient begins spontaneous breathing.
 - The pressure support will be titrated between 5 and 15 cmH₂O to achieve a spontaneous exhaled V_t of 4-6 ml/kg.

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1. Assessment Failure Criteria

- A. The weaning process will be interrupted and the patient returned to previous settings by the respiratory therapist if any of the following occur:**
- Arterial blood gases results are out of range (Ventilator change results in **sustained** heart rate change of 20% or greater
 - Ventilator change results in **sustained** mean arterial pressure change of 20% or greater.
 - Significant dysrhythmias
 - Ventilator change results in **sustained** respiratory rate change of 20% or greater
 - Patient shows other signs of not tolerating the weaning process
- B. The patient will be stabilized and reevaluated. After physician approval, the weaning process will continue.**
- C. The attending physician will be notified if any of the following occur:**
- If at any point, the patient displays persistent difficulty maintaining hemodynamic or respiratory values
 - After a patient does not tolerate weaning, is returned to previous settings, and remains unstable
 - Any team member feels the attending should be notified

2. Extubation:

- After the patient's ventilator parameters have reached: rate = 5-10, PEEP = 3-5, FiO₂ = 0.40, and an acceptable ABG has been drawn on these settings the following parameters should be verified:
- Spontaneous V_t = at least 5 ml/kg
- Respiratory rate < 40 bpm, but > 12 bpm (age appropriate)
- Hemo-dynamic values are stable
- Negative inspiratory force is > 20 cmH₂O (if applicable)
- Patient can protect airway (cough / gag)
- ICU fellow or attending physician has been notified
- Have difficult airway box at bedside.

After the appropriate criteria have been met, and a physician's order is obtained, the patient will be extubated in accordance with the Respiratory Care policy, and supplemental oxygen therapy will be provided via a nasal cannula or face mask at the same FiO₂ as pre extubation.

Post-extubation Care:

- A. Patients will be evaluated upon extubation for the following:
- Heart rate and oxygen saturation changes
 - Respiratory rate changes
 - Increase in respiratory distress
 - Changes in air exchange/breath sounds
 - Stridor or upper airway congestion (if stridor is present, an aerosol treatment with racpinephrine 0.5 ml (11.25 mg/0.5ml) will be administered and the physician notified).
 - If patient is demonstrating mild to moderate respiratory distress please place patient on one of the following:
 - BiPAP
 - Nasal CPAP
 - Hi Flow Oxygen
 - Heliox
 - Notify physician of modality and patient's response to therapy
- B. The respiratory therapist may adjust and wean the FiO₂ to maintain SpO₂ @ 93% or greater unless the patient has a known shunt or lower baseline saturations.