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

Protocol for:
Weaning from conventional mechanical ventilation

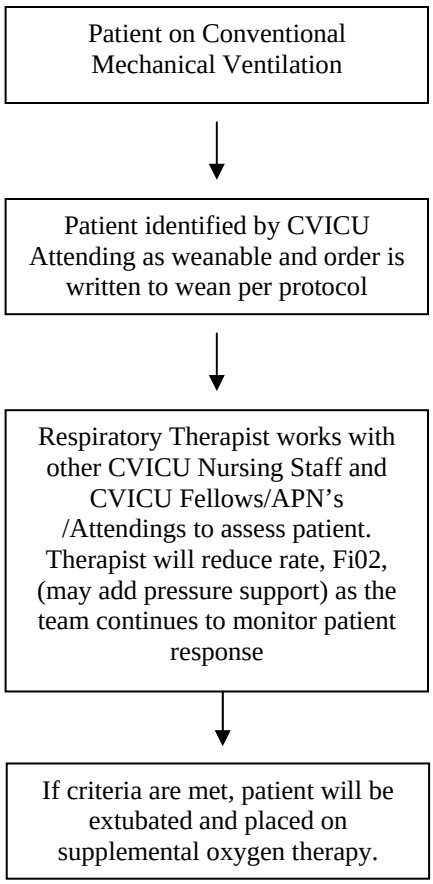
Patient Type:
Cardiovascular Intensive Care Patients who have been identified by the CVICU attending physician to be hemo-dynamically stable and with a pulmonary condition suitable for weaning from the ventilator. An order will be written: **Wean per Respiratory Protocol**

Clinical Area:
Le Bonheur Cardiovascular Intensive Care

Equipment Needed:

Conventional Mechanical Ventilator (Servo –i), 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 5 cmH20) and Fi02. 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 Fi02:

- Fi02 can be weaned in increments of 5-10% with other parameters
- The Sp02 will be maintained at 95% or greater unless the patient has a known shunt and lower baseline saturations
- When the Fi02 is weaned to 0.40, Fi02 weaning will cease and the patient will be evaluated for extubation

4. Changes in PEEP:

- If PEEP is greater than 5 cmH20, it may be weaned in increments of 1 cm H_20 at least 60 minutes apart.
- When PEEP is weaned to 5 cmH20, 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 cmH20 to achieve a spontaneous exhaled Vt of 6-8 mls/kg.
- For patients in PRVC mode addition of pressure support is not necessary.

7. Mode Change:

- When weaning form PRVC once reached a rate of 10 the ventilator will be switched to Volume Support mode for patients with poor effort (NIF$\leq$ 2)at the same tidal volume, PEEP and FiO2.
- CPAP trial will be used at the following settings:
  PEEP 3-5, PS 12 for 30 minutes x 1 then 1 hour x 1 q 2hr.
- NIF of $\geq$ 12 x 2 will meet criteria for extubations.

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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 <u>any</u> 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 dysrrhymias
- 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 hemo-dynamic 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 = 5, Fi02 = 0.40, and an acceptable ABG has been drawn on these settings the following parameters should be verified:
- CPAP trial at physician discretion.
- Spontaneous Vt = at least 6 ml/kg
- Respiratory rate < 40 bpm, but > 12 bpm (age appropriate)
- Hemo-dynamic values are stable
- Patient is awake enough to breath
- Negative inspiratory force is > 20 cmH20 (if applicable)
- Patient can protect airway (cough / gag)
- CVICU fellow/APN or attending physician has been notified
- Patient may receive doses of Dexamethasone 0.5 mg/kg/dose at the physician discretion.

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 bi-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 racepinephrine 0.5 ml (11.25 mg/0.5ml) will be administered and the physician notified).

B. The respiratory therapist may adjust and wean the Fi02 to maintain Sp02 @ 93% or greater unless the patient has a known shunt or lower baseline saturations.

CVICU Extubation Protocol