

# PICU INVASIVE VENTILATOR WEANING PROTOCOL

## Criteria for Initiation of ventilator Weaning Algorithm:

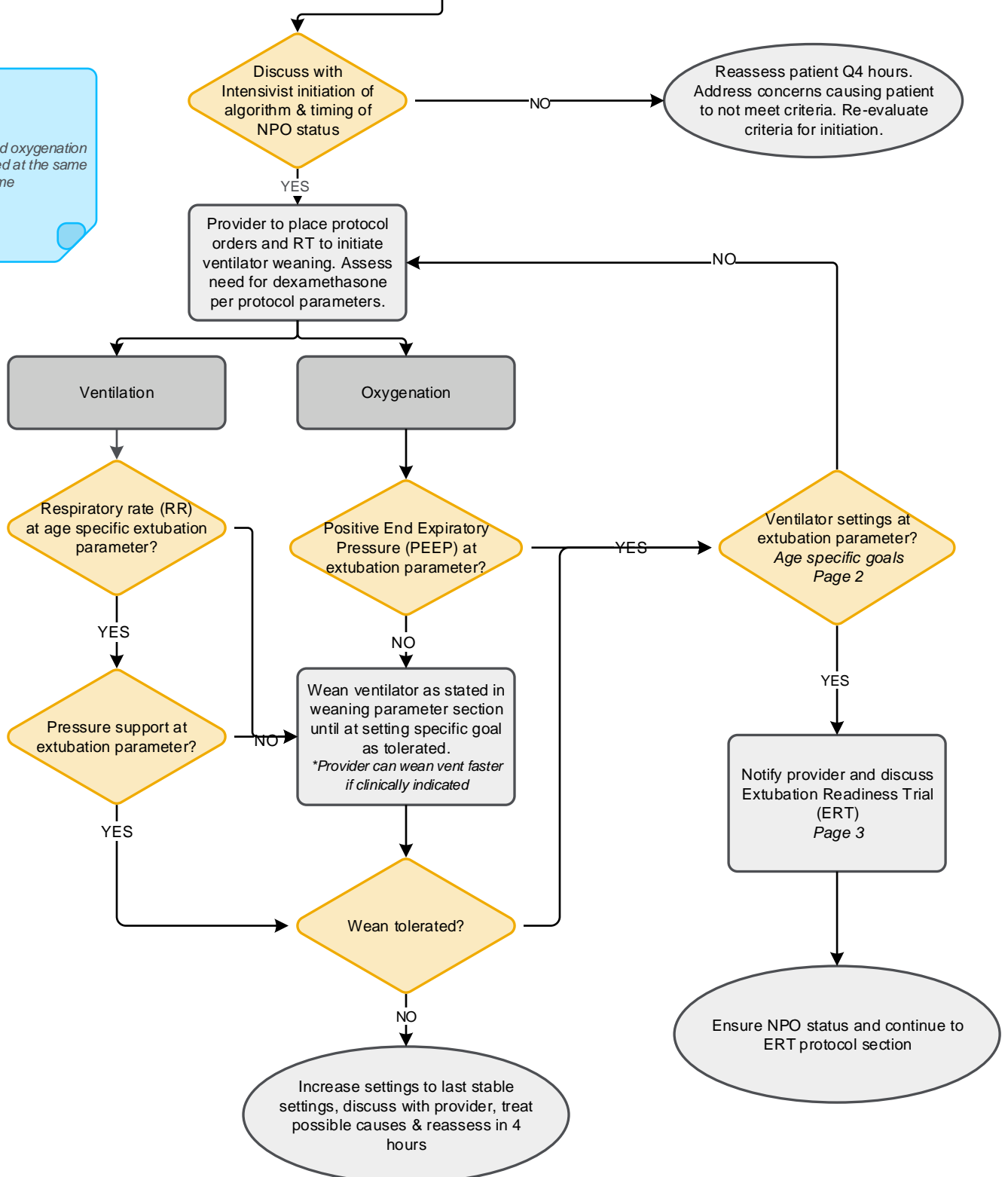
- Vital signs (VS) within ordered parameters and acceptable work of breathing (WOB)
- Tolerating State Behavioral Scale (SBS) goal of (-) 1 to 0
- Off neuromuscular blockade for >6 hours
- Spontaneously breathing: triggering breaths on the ventilator or above set rate
- Ventilator settings: maintained for at least 6 hours in SIMV mode
  - Tidal Volume (TV) 6-8ml/kg; Mean Airway Pressure < 18; Peak Inspiratory Pressure (PIP) < 30, FiO<sub>2</sub> ≤ 40%, Oxygenation Index (OI) ≤ 6 or Oxygenation Saturation Index (OSI) ≤ 5
- Blood gases: maintained within acceptable range & discussed with Intensivist
- End tidal CO<sub>2</sub> monitor (EtCO<sub>2</sub>) or Transcutaneous monitor (TCM) within set goals

## Significant event:

If at any point during the protocol, the patient has a significant change in status (eg. code, ECMO, OR, sepsis): discontinue the protocol. Discuss with provider.

Protocol Exemptions Page 4

Ventilation and oxygenation can be weaned at the same time



## PICU Invasive Ventilator Weaning Parameters

Setting	Weaning Parameter	Frequency	Extubation Parameters	RT Clinical Assessment
Respiratory Rate (RR)	4 breaths per minute (bpm)	Every 2 hours	<5 y.o. = 10 bpm ≥5 y.o. = 5 bpm	Monitor VS, WOB, TV and RR Maintain ordered CO <sub>2</sub> range by blood gas, ETCO <sub>2</sub> or TCM
Pressure Support (PS)	2 cmH <sub>2</sub> O	Every 2 hours	<5 y.o. = 8 cmH <sub>2</sub> O ≥5 y.o. = 5 cmH <sub>2</sub> O	Maintain TV ≥ 4 mL/kg on spontaneous breaths Monitor VS and WOB Maintain ordered CO <sub>2</sub> range by blood gas, ETCO <sub>2</sub> or TCM
Positive End Expiratory Pressure (PEEP)	1 cmH <sub>2</sub> O	Every 8 hours	5 cmH <sub>2</sub> O	Maintain FiO <sub>2</sub> ≤ 40% Maintain O <sub>2</sub> sats > 90%

## Dexamethasone Criteria

Discuss initiation of dexamethasone for extubation if following criteria are present:

- Intubated patient <1 year of age
- No leak present at >20 cmH<sub>2</sub>O within 24 hours prior to planned extubation

Initiation of dexamethasone:

- 12 hours prior to planned extubation
  - Goal: at least 2 doses given to patient prior to extubation
- Dose: 0.5mg/kg IV q6h x 4 doses (max dose: 4mg/dose)
- Adjunct medications:
  - Racemic Epi to be at bedside for extubation
    - Dose: 0.25-0.5ml of 2.25% racemic epinephrine diluted in 3ml

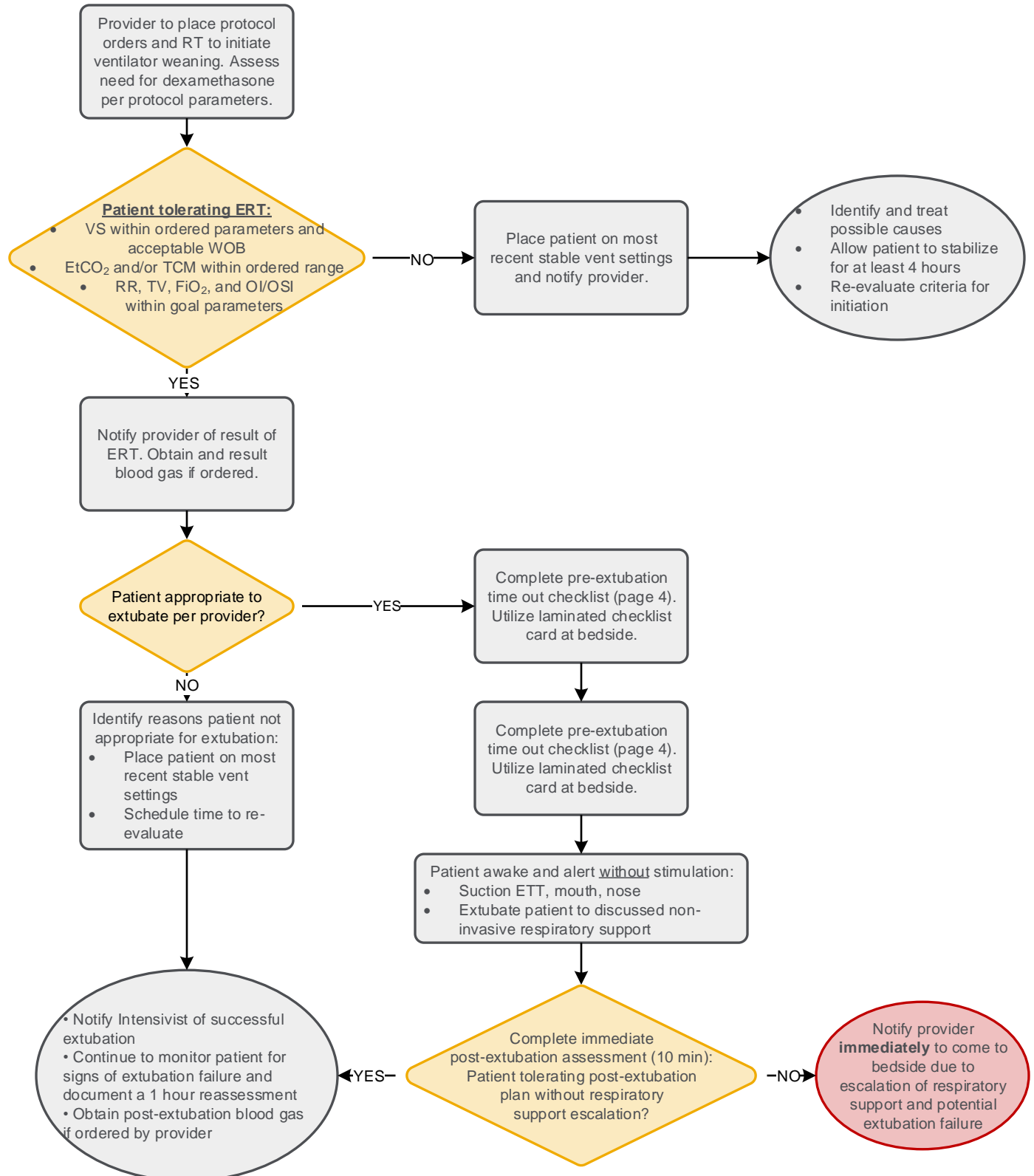
# Extubation Readiness Trial (ERT)

## Criteria for initiation of ERT:

- Vital signs within ordered parameters
- Patient at SBS goal of (-)1 or 0 with appropriate respiratory rate
- Patient NPO status and timing verified
- Ventilator settings at extubation parameters for age and tolerated for  $\geq 2$  hours
- Acceptable work of breathing
- Blood gases, End tidal CO<sub>2</sub> monitor (EtCO<sub>2</sub>) and/or Transcutaneous monitor (TCM) within set goals & discussed with Intensivist
- Cough and gag present

## ERT Vent Settings:

- <6mos: 20-60 breaths/min
- 6mos-2yrs: 15-45 breaths/min
- 2-5yrs: 15-40 breaths/min
- >5yrs: 10-35 breaths/min



## Pre-Extubation Checklist

### Intensivist to define the following:

- Intensivist present at bedside for extubation?
  - If no, does Intensivist want APP or Resident present?
- Verify peri-extubation plan
- Determine post-extubation respiratory support plan

### Nursing:

Emergency equipment ready at bedside prior to extubation attempt:

- Emergency med sheet present
- Med-line identified, function verified and readily available
- Suction set-up, functioning and ready
- Self-inflating bag attached to oxygen with proper mask size attached

### Respiratory Therapy:

- Airway cart outside of room
- Re-intubation supplies verified available in cart:
  - ETT/LMA
  - Stylet
  - Waveform ETCO2
  - Tube tape/duoderm available
  - Laryngoscope/C-Mac with appropriate blade available
  - Oral airway available
  - Flow-inflating (anesthesia) bag in cart

## Protocol Patient Exemptions

### Following patient populations are exempt from this protocol:

- Congenital heart disease: Single ventricle or cyanotic mixing lesion with baseline saturation < 90%
- Current ECMO patient
- Trisomy 13 or 18 patient

### Following patient populations ARE exempt from the extubation only section of this protocol:

- Critical or difficult airway

### Following patient populations MAY be exempt from the extubation only section of this protocol:

- Neuromuscular weakness (eg. SMA1, Myasthenia gravis)
- Post-op oropharyngeal surgical patients (eg. LeFort, mandibular distraction)
- Post-op ENT airway surgical patients (eg. laryngotracheal reconstruction (LTR), tracheal slide)
- Patient being extubated to RAM or Bipap, not on non-invasive positive pressure support at baseline
- Patients intubated for non-respiratory causes (eg. ingestions, post-epileptic respiratory depression)