

Pediatric Ventilator Wean and Extubation Protocol

Exclusion Criteria

- PCICU patients
- Presence of tracheostomy tube
- Neuromuscular disease
- Severe TBI
- Patients with critical airway and deemed 'PCAT'
- Patients on high frequency ventilation

Meets criteria for ventilator weaning (assess every 4 hours)

- Underlying reason for intubation resolving/resolved
- Stable ventilator settings (non-escalated) for 4 hours
- Mean airway pressure (MAP) ≤ 15
- Stable FiO₂ ($\leq 50\%$) for greater than/equal to for 4 hours
- Tolerating SBS goal of -1 or 0
- Spontaneous breathing
- Not under neuromuscular blockade

Pediatric Ventilator Wean and Extubation Protocol

Exclusion Criteria

- PCICU patients
- Presence of tracheostomy tube
- Neuromuscular disease
- Severe TBI
- Patients with critical airway and deemed 'PCAT'
- Patients on high frequency ventilation

Meets criteria for ventilator weaning (assess every 4 hrs):

- Underlying reason for intubation resolving/resolved
- Stable ventilator settings (non-escalated) for 4 hours
- Mean airway pressure (MAP) ≤ 15
- Stable FiO₂ ($\leq 50\%$) for greater than/equal to 4 hours
- Tolerating SBS goal of -1 or 0
- Spontaneous breathing
- Not under neuromuscular blockade

↓
Begin wean (after RT/MD/RN discussion)

Perform leak test daily – consider dexamethasone when within 12 hours of extubation

Setting	Weaning Parameter	Frequency	Comments	Goals
Respiratory Rate (RR)	2-6 breaths/min	2-4 hours	Wean if normal RR for age	<u>Ventilation</u> Maintain EtCO ₂ /Tcom similar to prior (≤ 5) Maintain Minute Ventilation Minimize work of breathing
Pressure Support (PS)	2-4 cm H ₂ O	2-4 hours	Wean to maintain target pressure support tidal volume: Vt > 5 mL/kg	
PC (if in Pressure Control Ventilation)	2 cm H ₂ O	4-8 hours	Wean to maintain delta P such that target tidal volume: Vt $> 6-8$ mL/kg	
PEEP (positive end expiratory pressure)	1-2 cm H ₂ O	4-8 hours		<u>Oxygenation</u> Maintain FiO ₂ $\leq 50\%$ Maintain SpO ₂ $\geq 90\%$

Fail wean criteria

- Increased FiO₂ $\geq 50\%$ for > 4 hrs
- Tachycardia > 25 BPM from baseline
- Tachypnea $> 20\%$ increase for > 2 hrs
- Asynchrony with ventilator
- Increased work of breathing
- Increased EtCO₂/PaCO₂

- ↓
- Pause wean
 - Return to prior settings
 - Address failure
 - Re-evaluate in 4 hours

RT q4h assessments of wean tolerance

Achieve Settings (≥ 2 hrs)
RR = 15-20 PS ≤ 10 PEEP ≤ 6

Ensure NPO status
Perform ERT/SBT

↓
PASS
EtCO₂/Tcom ≤ 5 from baseline
RR normal for age
Exhaled Vt ≥ 5 mL/kg

↓
No anatomic and/or neurologic impairment

↓
NPO
(4 hrs breast milk, 6 hrs formula)

↓
EXTUBATE
(after RT/MD/RN discussion)

Tolerate – continue wean

Age related RR ranges

Age	RR
< 6mo	20 - 60
6 mo to 2 yrs	15 - 45
2 to <5 yr	15 - 40
≥ 5 yr	10 - 35

↓
FAIL
Return to prior settings
Discuss with medical team
Address failure
Retry ERT/SBT in 8 hrs

ERT/SBT (2 hours)
 FiO₂ 50%
 PEEP 5
 PS 10 for ETT 3.0-3.5 cm
 PS 8 for ETT 4.0-4.5 cm
 PS 6 for ETT ≥ 5.0

Anatomic/Neurologic Impairments
 Evidence of airway trauma/edema
 Absence of gag and/or cough reflex
 Evidence of tracheomalacia
 Recent airway surgery
 Neuromuscular weakness
 Presence of EVD and/or elevated ICP
 Active seizures



Medical Legal Disclaimer:

Welcome to the UC Davis Health, Department of Pediatrics, Clinical Practice Guidelines Website. All health and health-related information contained within the Site is intended chiefly for use as a resource by the Department's clinical staff and trainees in the course and scope of their approved functions/activities (although it may be accessible by others via the internet). This Site is not intended to be used as a substitute for the exercise of independent professional judgment. These clinical pathways are intended to be a guide for practitioners and may need to be adapted for each specific patient based on the practitioner's professional judgment, consideration of any unique circumstances, the needs of each patient and their family, and/or the availability of various resources at the health care institution where the patient is located. Efforts are made to ensure that the material within this Site is accurate and timely but is provided without warranty for quality or accuracy. The Regents of the University of California; University of California, Davis; University of California, Davis, Health nor any other contributing author is responsible for any errors or omissions in any information provided or the results obtained from the use of such information. Some pages within this Site, for the convenience of users, are linked to or may refer to websites not managed by UC Davis Health. UC Davis Health does not control or take responsibility for the content of these websites, and the views and opinions of the documents in this Site do not imply endorsement or credibility of the service, information or product offered through the linked sites by UC Davis Health. UC Davis Health provides limited personal permission to use the Site. This Site is limited in that you may not:

- Use, download or print material from this site for commercial use such as selling, creating course packets, or posting information on another website.
- Change or delete propriety notices from material downloaded or printed from it. · Post or transmit any unlawful, threatening, libelous, defamatory, obscene, scandalous, inflammatory, pornographic, or profane material, any propriety information belonging to others or any material that could be deemed as or encourage criminal activity, give rise to civil liability, or otherwise violate the law.
- Use the Site in a manner contrary to any applicable law.

You should assume that everything you see or read on this Site is copyrighted by University of California or others unless otherwise noted. You may download information from this Site as long as it is not used for commercial purposes, and you retain the proprietary notices. You may not use, modify, make multiple copies, or distribute or transmit the contents of this Site for public or commercial purposes without the express consent of UC Davis Health.