

Clinical practices related to liberation from mechanical ventilation in Latin American pediatric intensive care units: survey of the *Sociedad Latino-Americana de Cuidados Intensivos Pediátricos* Mechanical Ventilation Liberation Group

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Appendix 1 - Questionnaire

1. Profession of the respondent
<input type="checkbox"/> Physician
<input type="checkbox"/> Respiratory therapist/Kinesiologist
<input type="checkbox"/> Nurse
2. Position in the unit (role)
<input type="checkbox"/> Heads, directors
<input type="checkbox"/> Coordinator
<input type="checkbox"/> Staff
<input type="checkbox"/> Other (please specify) _____
3. Health system where you work and are responding to this survey
<input type="checkbox"/> Public health system institution
<input type="checkbox"/> Private health system institution
<input type="checkbox"/> Other (please specify) _____
4. Type of hospital where the intensive care unit is located:
<input type="checkbox"/> General hospital
<input type="checkbox"/> Pediatric hospital
<input type="checkbox"/> University hospital
<input type="checkbox"/> Other (please specify) _____
5. Number of annual discharges from the pediatric intensive care unit as of December 2019: ____
6. Type of intensive care unit
<input type="checkbox"/> Medical
<input type="checkbox"/> Surgical
<input type="checkbox"/> Medical surgical
<input type="checkbox"/> Cardiovascular surgery
<input type="checkbox"/> All of the above
7. What is the age range of patients admitted to your unit?
• Lower limit:
<input type="checkbox"/> Admits patients from 7 days of life
<input type="checkbox"/> From 14 days of life
<input type="checkbox"/> From 30 days of life

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• Upper limit:	
<input type="checkbox"/>	Admits patients up to 14 years of age
<input type="checkbox"/>	Up to 16 years of age
<input type="checkbox"/>	Up to 18 years of age
8. Does your unit have a respiratory therapist	
<input type="checkbox"/>	Attention by call or interconsultation
<input type="checkbox"/>	Coverage of the ward 8 hours
<input type="checkbox"/>	On-call 12 hours
<input type="checkbox"/>	24-hour on-call
<input type="checkbox"/>	No respiratory therapist
9. What is the method most frequently used to assessing extubation readiness?	
<input type="checkbox"/>	Gradual reduction of ventilatory support, synchronized intermittent mandatory ventilation, pressure support reduction, etc.
<input type="checkbox"/>	Spontaneous breathing trial (T- tube, continuous positive airway pressure, etc.)
<input type="checkbox"/>	Gradual reduction of ventilatory support plus spontaneous breathing trial
<input type="checkbox"/>	Not evaluated
10. If you selected gradual reduction of ventilatory support in the previous question, which of the following methods do you use?	
<input type="checkbox"/>	Pressure support ventilation with guarantee volume
<input type="checkbox"/>	Gradual reduction of pressure support ventilation
<input type="checkbox"/>	Synchronized intermittent mandatory ventilation with gradual reduction of respiratory rate
<input type="checkbox"/>	Other
11. If the previous answer includes spontaneous breathing trial, which of the following methods do you use?	
<input type="checkbox"/>	Pressure support 5cmH ₂ O + positive end-expiratory pressure 5cmH ₂ O
<input type="checkbox"/>	Pressure support adjusted to endotracheal tube (ET) diameter + positive end-expiratory pressure 5cmH ₂ O
<input type="checkbox"/>	Continuous positive airway pressure 5cmH ₂ O
<input type="checkbox"/>	T-tube
12. In the case of using pressure support ventilation- positive end-expiratory pressure with other pressure support values, select the range of use	
<input type="checkbox"/>	< 5cmH ₂ O
<input type="checkbox"/>	Between 5 - 7cmH ₂ O
<input type="checkbox"/>	> 7cmH ₂ O
<input type="checkbox"/>	Depends on the case
13. Does your unit have a written liberation mechanical ventilation protocol?	
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
14. If yes, which of the following does it contain? Check all that apply	
<input type="checkbox"/>	Established criteria for daily assessment of the possibility of mechanical ventilation liberation
<input type="checkbox"/>	Sedoanalgesia protocol according to daily ventilatory support goals
<input type="checkbox"/>	Standardized assessment test for extubation (including disconnection in patients with tracheostomy)
<input type="checkbox"/>	Established criteria for failure of extubation
<input type="checkbox"/>	Checklist for re-evaluation of causes of failure of the extubation readiness test
<input type="checkbox"/>	Pre-established criteria for indication of noninvasive ventilation/high flow nasal cannula to prevent extubation failure

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15.	What is the duration of the liberation mechanical ventilation process?
<input type="checkbox"/>	< 30 minutes
<input type="checkbox"/>	30 minutes
<input type="checkbox"/>	1 hour
<input type="checkbox"/>	2 hours
<input type="checkbox"/>	> 2 hours
<input type="checkbox"/>	Other (please specify) _____
16.	What parameters do you monitor during the extubation readiness test?
<input type="checkbox"/>	Heart rate
<input type="checkbox"/>	Respiratory rate
<input type="checkbox"/>	Respiratory effort
<input type="checkbox"/>	Exhaled CO ₂
<input type="checkbox"/>	SpO ₂
<input type="checkbox"/>	SpO ₂ /FiO ₂ ratio
<input type="checkbox"/>	Level of consciousness
<input type="checkbox"/>	Tidal volume
<input type="checkbox"/>	Other (please specify) _____
17.	Do you perform any of the following tests?
<input type="checkbox"/>	Presence of cough pattern
<input type="checkbox"/>	Swallowing
<input type="checkbox"/>	Cuff leak test
<input type="checkbox"/>	Evaluation of muscle strength
18.	If the patient fails the extubation readiness test, how long is another attempt made?
<input type="checkbox"/>	The same day
<input type="checkbox"/>	After 12 hours
<input type="checkbox"/>	After 24 hours
<input type="checkbox"/>	After 48 hours
19.	How is successful weaning from mechanical ventilation defined in your workplace?
<input type="checkbox"/>	Patient not requiring reintubation within 24 hours
<input type="checkbox"/>	Within 48 hours
<input type="checkbox"/>	Within 72 hours
<input type="checkbox"/>	Patient not requiring reintubation or noninvasive ventilation support within 24 hours
<input type="checkbox"/>	Within 48 hours
<input type="checkbox"/>	Within 72 hours
20.	Do you consider extubation failure when the patient?
<input type="checkbox"/>	Is reintubated
<input type="checkbox"/>	Receives noninvasive ventilation
<input type="checkbox"/>	Receives high flow nasal cannula
21.	Does your department use cuffed endotracheal tubes?
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

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22.	If yes, is there a cuff pressure control protocol?
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
23.	Indicate your routine practice regarding prophylaxis of upper airway obstruction with corticosteroids
<input type="checkbox"/>	Administer corticosteroids before extubation and continue after extubation in all patients
<input type="checkbox"/>	Prophylactic corticosteroids before extubation to patients at risk (previous extubation failure, laryngeal airway abnormalities, difficult intubation, etc)
<input type="checkbox"/>	Do not give corticosteroids
<input type="checkbox"/>	I do not know how to report
<input type="checkbox"/>	Post-extubation nebulisation with epinephrine
24.	When noninvasive support is indicated as a rescue to avoid reintubation, what is the established support in your pediatric intensive care unit?
<input type="checkbox"/>	High flow nasal cannula
<input type="checkbox"/>	Continuous positive airway pressure
<input type="checkbox"/>	Bi-level positive airway pressure
<input type="checkbox"/>	Decision of attending physician
25.	In your opinion, experience and knowledge, what is the term that should be used in a standardized way to refer to the process of weaning from invasive mechanical ventilation?
<input type="checkbox"/>	Weaning
<input type="checkbox"/>	Withdrawal
<input type="checkbox"/>	Liberation
<input type="checkbox"/>	Other (please specify) _____

Appendix 2 - Definitions, terms and nomenclature

1.	Liberation from mechanical ventilation (LMV): the process enabling the transition from invasive mechanical ventilation (MV) to spontaneous breathing and removal of the endotracheal tube (ETT).
2.	Gradual reduction of ventilatory support (GRVS): phase describing the transition from a controlled respiratory mode to other modes assisting the patient's inspiratory effort. This occurs due to patient improvement and/or stabilization.
3.	Spontaneous breathing trial (SBT): objective assessment of the patient's ability to independently maintain minute ventilation and adequate gas exchange without excessive respiratory effort using minimal pressure support (PS) or positive end-expiratory pressure (PEEP)/continuous positive airway pressure (CPAP).
4.	Extubation readiness test (ERT): bundle of elements used to assess the patient's eligibility for liberation from invasive mechanical ventilation. In addition to the SBT, ERT may include assessment of sedation level, adequacy of neurologic control of the airway (ie, cough and gag), likelihood of post-extubation upper airway obstruction, assessment of respiratory muscle strength, magnitude of airway secretions, hemodynamic status, and a plan for post-extubation respiratory support.
5.	Extubation failure: need for reintubation within 48 hours of extubation, excluding use for temporary procedures.
6.	Noninvasive ventilatory support (NRS): Refers to all respiratory supports without the need for an artificial airway: HFNC, noninvasive ventilation (NIV), CPAP, excluding conventional oxygen therapy.
7.	High-flow nasal cannula (HFNC): flow that is delivered through a heated humidified nasal cannula circuit and interface at a flow rate which is > 1L/kg/minute for patients up to 10kg; and > 10L/minute for patients above 10kg.
8.	Continuous positive airway pressure: CPAP that can be delivered via ETT, tracheostomy, or non-invasive interface (e.g., nasal mask, nasal cannula, full-face mask, or helmet).
9.	Noninvasive ventilation: ventilatory mode delivering positive pressure at different levels without the need for an artificial airway, e.g., nasal mask, nasal cannula, full-face mask, or helmet. For example, bi-level positive airway pressure (BiPAP).
10.	Respiratory therapist (RT): in Latin American UCIs the respiratory therapist is a physiotherapist who functions as a critical care practitioner, taking responsibility for managing patients with acute respiratory conditions or those requiring respiratory support in critical care settings. The outlined responsibilities include respiratory assessment, ventilator management, airway management, oxygen therapy, respiratory rehabilitation, and continuous monitoring, in collaboration with the whole ICU team.
11.	Cuff: the balloon of the endotracheal tube that seals the trachea to prevent aspiration of contents from the pharynx.