

Extubation and Weaning: Implementing a Standard Weaning Protocol

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Purpose

The purpose of this project is to determine if implementation of a standardized weaning protocol on mechanically ventilated patients affects reintubation rates and decreases adverse outcomes.

Secondary outcomes will include:

- Mortality
- Ventilator-associated pneumonia
- Multi-organ failure

Background

Standard practice for ventilator weaning involves a multidisciplinary approach of initiating a spontaneous breathing trial (SBT) and assessing patient readiness to wean.

- Current evidence-based practice does not implement standardized weaning protocols.

Established weaning protocols have been explored in research, however not yet implemented into practice.

Evidence supports:

- Daily SBT with spontaneous awakening trial (SAT) can improve weaning outcomes.
- Non-invasive ventilation post-extubation can reduce the risk of re-intubation.

Methods

Research articles on extubation and weaning were narrowed down for appraisal.

- Literature review included articles from August 2020 to May 2022.
- Databases searched were EBSCO, PubMed, Medline, and CINAHL.
- Limiting timeframe search to date back to 5 years.
- Articles were critiqued utilizing rapid critical appraisal tools.

Results

	1	2	3	4	5	6	7	8	9	10
References	Fagoni et al., 2018	Hernandez et al., 2016	Blackburn et al., 2018	Girard et al., 2008	Borges et al., 2017	Ramirez et al., 2020	Subira C, et al., 2019	Perkins G, et al., 2018	Gunther et al., 2021	Ghanbari et al., 2020
Outcome 1: RR	NE	↓	--	--	NR	NE	↓	--	--	NE
Outcome 2: SE	↑	↑	--	--	↑	↑ ¹	↑	NE, ✓	NE	↑
Outcome 3: Duration of MV	↓	NE	↓ ¹	NE	↓	↓	NE	--	↓	↓
Outcome 4: ICU Mortality Rate	NE	--	--	NE	NE	↓	↓, ✓	NR	↓	NE

Legend: ↑=increased, ↓=decreased, -- =No Change, NE = Not Examined, NR = Not Reported, ✓ applicable or present
¹ = Statistically significant, RR = Reintubation Rate, SE = Successful Extubation, MV= Mechanical Ventilation

Results

- Evidence supports standardized weaning protocols can improve extubation outcomes and reduce re-intubation rates.
- Research further supports that standardized weaning protocols:
 - Reduce mortality
 - Decrease mechanical ventilation time
 - Decrease negative outcomes, but not limited to death, ventilator-associated pneumonia, and multi-organ failure.

- Further research is needed for:
 - Specific techniques to include in a weaning protocol, and in what order to perform the steps.
 - These techniques include SBT, Non-invasive ventilation post-extubation, and ABGs prior to extubation.

Implications for Practice

- Providers working in an Intensive Care Unit setting can improve patient outcomes by utilizing guidelines for standardized weaning protocols.
- Educating providers on the literature reviewed may compel a provider to use a weaning protocol rather than their own personal practice varying from patient to patient.
- Collaborative practice is needed to achieve a standardized weaning protocol among the physician, nurse practitioners, respiratory therapist, and nursing.

References



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