A Collaborative Approach to Weaning from Mechanical Ventilation

Hailey Waechter BSN, RN, ACAGNP-BC, DNP Student
UnityPoint Health, St. Luke’s Hospital, Cedar Rapids, Iowa

Introduction

- The problem being addressed is weaning from mechanical ventilation (MV) in adult intubated patients within the intensive care unit (ICU).
- 1/3 of all ICU patients are intubated 1
- Nearly 800,000 hospitalizations required MV in 2005 2
- Average duration of MV: 4 days 3
- 40% of ventilator time is dedicated to weaning 2
- MV mortality rate: 35% 2
- MV morbidity: 31% of MV survivors discharge home 2
- 40% of ventilator time is dedicated to weaning 2
- Average duration of MV: 4 days 3
- Nearly 800,000 hospitalizations required MV in 2005 2
- 1/3 of all ICU patients are intubated 1
- The problem being addressed is weaning from mechanical ventilation (MV) in adult intubated patients within the intensive care unit (ICU).
- Population: Adult, medical/surgical intubated patients, no cardiothoracic or pre-existing cardiovascular patients.
- Setting: 16-bed ICU, St. Luke’s Hospital, Cedar Rapids, IA
- Participants: Medical Doctors (MD), RNs, & RTs

Purpose

- Purpose: Implementation of evidence-based registered nurse (RN) & respiratory therapist (RT)-driven MV weaning protocol to improve ventilator-associated outcomes.
- Objective 1: Decrease duration of MV by 15%
- Objective 2: Decrease ICU LOS by 15%
- Objective 3: No increase in 24-hour failed extubations
- Objective 4: Adequate protocol participation (50%)
- Objective 5: Increased staff confidence (pre- & post-survey)

Methods

- Setting: 16-bed ICU, St. Luke’s Hospital, Cedar Rapids, IA
- Population: Adult, medical/surgical intubated patients, no cardiothoracic or pre-existing cardiovascular patients.
- Staff: Medical Doctors (MD), RNs, & RTs
- Participants: Pre-52 Post-58

Identification

- The Iowa Model of Evidence-Based Practice to promote quality care
- Literature search through PubMed

Development

- Protocol development utilizing Vanderbilt’s protocol
- Hospital, IRB, & MD approval was obtained
- Staff education provided
- Tools were put into place
- Pre-project survey

Implementation

- Project roll-out July 1st 2019
- Re-education throughout project
- Monthly data collection
- Data analysis: Wilcoxon rank-sum & Fischer’s exact
- Post-project survey
- Project completion October 31st 2019

Evaluation

- Pre-Implementation Average RASS: -3 (Moderate Sedation)
- Post-Implementation Average RASS: -2 (Light Sedation)
- Pre-Implementation Survey Average Score: 4 (Confident)
- Post-Implementation Survey Average Score: 5 (Very Confident)
- Increased staff confidence from a score of “Confident- 4” (n=13) to “Very Confident- 5” (n=21).
- Average sedation level was decreased from RASS -3 to -2
- Average 49% RN/RT compliance & 70% MD compliance with end implementation compliance of 90%
- No increases in the number of 24-hour failed extubations (4:2), p 0.419.
- ICU LOS decreased by 32 hours or 27.9%, p 0.01248.
- MV decreased by 27 hours or 38.6%, p 0.000802.
- Hospital LOS decreased by 39 hours
- Limitations: Small participation in the pre- and post-confidence survey, wavering staff participation, short duration of MV

Conclusions

- RN & RT-driven protocol that was statistically and clinically significant in decreasing duration of MV, ICU, & hospital LOS without increasing risks to patients
- Decrease in the average level of patient sedation
- Increased staff confidence in implementing the protocol
- Average cost savings of $7,000 per patient
- Barriers were encountered, managed, & overcome
- All of the outcomes represent the importance of implementing a collaborative bedside staff driven protocol
- This protocol is feasible & has an opportunity to improve patient outcomes while leveraging autonomy & advancing the profession
- This project will be disseminated at an evidence-based practice poster presentation April 2020 & will be presented to St. Luke’s Hospital’s protocol committee.

References


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