

Early Mobility in Mechanically Ventilated Patients

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EARLY MOBILITY IN MECHANICALLY VENTILATED PATIENTS

ICU-M

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A PASSION FOR BETTER MEDICINE.™



Background/Significance

- Patients in ICU have higher morbidity, mortality, high cost, and decrease in functional status
- Long-term complications include (ICU)-acquired weakness and neuropsychiatric disease
 - Immobilization secondary to sedation might potentiate these problems
- Early mobility has been linked to reduce all of the above
 - Improves muscle strength, functional independence, and ability to wean from mechanical ventilation
- American Association of Critical Care Nurses- “ABCDE” bundle introduced in 2012
 - “E” - Early mobility
- In ICUs where early mobilization is not practiced, its adoption requires culture change by the multidisciplinary team

Project Goal

- Implement early mobility of ventilated patients at ICU-M
 - Open heart patients vs. mechanically ventilated patients

PICO Question

Compared to current practice, will implementing mobility protocols and providing staff education decreased patients' length of stay, decrease days on ventilator support and increase their physical mobility within 72 hours post-intubation in adult ICU mechanically ventilated patients?

- **P:** Adult ICU patients requiring mechanical ventilation
- **I:** Mobility protocols, educating staff, pre- and post-survey
- **C:** Variable current practice
- **O:** Physical mobility within 72 hours post-intubation, decreased length of stay, increased ventilator-free days

Evidence

- Search Engines used:
 - CINAHL, EBSCO Host, Google Scholar
- Keywords
 - Ventilated patients, early mobility, ICU

Evidence

- Out of 1,449 activity events in 103 patients, there was <1% activity-related adverse effects (falls, feeding tube removal, SBP > 200 and < 90, and desat<80%). No accidental extubations occurred.

(Bailey, P. et al, 2007).

- Faster return to independent functional status at discharge in intervention (59%) vs. control group (39%). Shorter duration of delirium in intervention (2 days) vs. control group (4 days). More ventilator-free days in intervention (23.5 days) vs. control group (21.1 days).

(Brahmbhatt, N., Murugan, R. & Milbrandt, E., 2010).

- 69% of patients able to ambulate > 100 feet by discharge. 89% of them were mechanically ventilated.

(Bailey, P. et al, 2007).

Evidence

- Decreased ICU-acquired paresis at discharge in intervention (31%) vs. control group (49%). Decreased length of stay in intervention (5.9 days) vs. control (7.9 days). Decreased hospital mortality in intervention (18%) vs. control (25%).
(Schweickert, W. et al, 2009).
- Approximate cost of ICU stay is \$2,179/day. Decreasing length of stay by 2 days saves \$4,358 per patient.
(Dasta, J., McLaughlin, T. Mody, S., & Piech, C., 2005).
- “Often we were limiting our patients' mobility based upon outdated notions rather than current evidence.”
(Harris, C., Shahid, S. 2014).

Pre-Survey Data

STAFF SURVEY	TECH PARTNERS	REGISTERED NURSES	RESPIRATORY THERAPISTS
How important is early mobility in the ICU to you?	33% - extremely important 66% - very important	25% - extremely important 66% - very important 5% - important 2% - not important	33% - extremely important 33% - very important 33% - important
Do you believe that early mobility in the ICU is beneficial to mechanically ventilated patients?	66% - yes 33% - no	97% - yes 3% - no	100% - yes 0% - no
How satisfied are you with the current mobility initiatives in the ICU?	33% - extremely satisfied 33% - very satisfied 33% - not sure	5% - extremely satisfied 10% - very satisfied 38% - satisfied 44% - not satisfied 5% - not sure	17% - very satisfied 17% - satisfied 67% - not satisfied
Which of the following do you feel are challenges (if any) of early mobilization of mechanically ventilated patients?	33% - Knowledge deficit 66% - Not enough staff	28% - Knowledge deficit 31% - Not enough staff 31% - Collaboration 1% - None 9% - Other*	14% - Knowledge deficit 43% - Not enough staff 43% - Collaboration
Have you ever mobilized (OOB) a mechanically ventilated patient?	33% - yes 33% - no	62% - yes 35% - no	83% - yes 17% - no
How comfortable would you be getting a mechanically ventilated patient OOB if the MD ordered it?	66% - Reluctant 33% - Willing	2% - Very willing 2% - Reluctant 39% - Cautious 2% - Neutral 54% - Willing	100% willing
How often do you perform PROM/ROM on your sedated/immobilized patient during your shift?	33% - 1-2 times 33% - 4+	35% - 1-2 times 46% - 2-3 times 19% - 4+	N/A

*Other challenges listed: Risk of injury, lack of guidance/recommendations, lack of PT presence

General Comments Shared By Interdisciplinary Staff

“I worked in several ICU's & LTAC. They walked their [ventilated] patients 1-3 times a day. For those who can't walk, they are moved from bed to chair at least once a day. It helps improve strength and accelerates their weaning.”

“Mobilizing patients should also be a night shift responsibility as well as a day shift responsibility.”

“There is a strong practice of mobilizing open heart patients, but there is a deficit and neglect of mobilizing MICU/SICU patients.”

“Collaboration of the interdisciplinary team is key.”

“Specific guidelines are needed and PT/OT is needed.”

“We need to place ventilated patients on open heart or EZ-wider beds in order to trial them.”

Pre-Implementation Data

30% of patient census were mechanically ventilated

Current Practice at LVHN

- No specific mobility protocols or algorithms in place for mechanically ventilated patients.
- Varying practice at ICU-M
- Lack of PT/OT involvement
 - MICU/SICU comparison

Implementation

1. Process Indicators and Outcomes

- There are varying practices regarding early mobilization of ventilated patients, no mobility protocol/algorithm to follow

2. Baseline Data

- See pre-survey and pre-implementation results in next slides

3. Design (EBP) Guideline(s)/Process

- Pre-survey conducted on staff perception. Pre-implementation data collected, education provided to interdisciplinary staff

4. Implemented EBP on Pilot Units

- Implemented project on ICU-M

5. Evaluation (Post data) of Process & Outcomes

- Post-survey conducted, post-implementation data collected.

6. Modifications to the Practice Guideline

- Meetings with PT/OT, goal to have dedicated PT/OT on our floor, will continue to use mobility algorithm and educate staff

7. Network Implementation

Implementation

DATE: _____

PLACE PATIENT
STICKER HERE

FOR PATIENTS ON MECHANICAL VENTILATION ONLY

- Does your patient meet the mobility protocol criteria?
(Refer to the **Mobility Algorithm** sheet).
 - YES NO
- If **NO**, check the reason(s) why. If **YES**, skip this question
 - Acute myocardial ischemia/dysrhythmia HR > 130
 - O2 sat < 88% for 5 mins Increased vasopressor within 2 hrs
 - Patient requires moderate to heavy sedation- **You are still able to perform PROM on your patient!**
 - Other (please specify)
- Which level is the patient at the start of your shift?
 - 1 2 3 4 5 6
- What activity were you able to do with your patient? Please fill out table.
 - If activity attempted & you were **UNSUCCESSFUL** in completion, answer question 5.

Activity L = Level	For how long? (mins)
L1 - Passive ROM	
L1 - Active ROM	
L2 - Supported sitting (chair mode, slinging)	
L2 - Dangling	
L3 - Standing at edge of bed	
L4 - Pre-gait exercises	
L5 - Ambulation	
Please specify how far they ambulated → _____ ft	

- If **UNSUCCESSFUL**, what happened?
 - Not applicable De-sat Extubated Unsteady gait
 - HR > 130 Other (please specify):

Outcomes

- Average LOS decreased by 2.21 days
- Average days spent on ventilator decreased by 0.82 days

Patient	Date of ICU Admission	Date of Intubation	Were they mobilized within 72 hours post-intubation ?	Were they mobilized within 72 hours of admission to ICU?
1	8/29/15	Intubated pre-hospital	No	Yes - 8/31/15
2	9/10/15	Intubated pre-hospital	No	Yes - 9/12/15
3	9/20/15	Intubated pre-hospital	No	Yes - 9/21/15
4	9/23/15	9/23/15	No	No
5	9/3/15	9/3/15	Yes	Yes - 9/3/15
6	9/15/15	9/15/15	No	Yes - 9/16/15
7	9/17/15	9/17/15	No	Yes - 9/18/15
8	9/1/15	9/1/15	No	No

Post-Survey Data

STAFF SURVEY	TECH PARTNERS	REGISTERED NURSES	RESPIRATORY THERAPISTS
How important is early mobility in the ICU to you?	33% - extremely important 66% - very important	22% - extremely important 68% - very important 5% - important 0% - not important	33% - extremely important 33% - very important 33% - important
Do you believe that early mobility in the ICU is beneficial to mechanically ventilated patients?	75% - yes 25% - no	100% - yes 0% - no	100% - yes 0% - no
How satisfied are you with the current mobility initiatives in the ICU?	33% - extremely satisfied 33% - very satisfied 33% - not sure	5% - extremely satisfied 10% - very satisfied 38% - satisfied 44% - not satisfied 5% - not sure	17% - very satisfied 17% - satisfied 67% - not satisfied
Which of the following do you feel are challenges (if any) of early mobilization of mechanically ventilated patients?	25% - Knowledge deficit 75% - Not enough staff	25% - Knowledge deficit 32% - Not enough staff 34% - Collaboration 0% - None 9% - Other*	14% - Knowledge deficit 43% - Not enough staff 43% - Collaboration
Have you ever mobilized (OOB) a mechanically ventilated patient?	33% - yes 33% - no	62% - yes 35% - no	85% - yes 15% - no
How comfortable would you be getting a mechanically ventilated patient OOB if the MD ordered it?	60% - Reluctant 40% - Willing	2% - Very willing 57% - Willing 0% - Reluctant 39% - Cautious 1% - Neutral	100% willing
How often do you perform PROM/ROM on your sedated/immobilized patient during your shift?	23% - 1-2 times 67% - 4+	35% - 1-2 times 46% - 2-3 times 19% - 4+	N/A

Post-Implementation Data

32% of patient census were mechanically ventilated

Practice Change

- An established mobility algorithm becomes available to nurses as an established resource on all ICU units throughout the network
- Increased collaboration of interdisciplinary staff involvement in patient's care

Unexpected Results

- Mortality rate decreased by 24.29%
 - Different factors
 - Diagnoses, underlying medical history, patient census
- 65% compliance rate
 - Current culture of the unit
 - More education required
- Out of 33 patients, only 8 patients met mobility protocol
 - Most common reason why mobility was not done: “requires heavy sedation”
 - More defined definition/focus on decreasing sedation use in the future
- We specified that PROM can be performed on ALL ventilated patients
 - PROM only done 31/48 times...why?

Unexpected Results

Reasons Why Patient Did Not Meet Mobility Protocol	# of responses
Hemodynamically unstable	5
Increased vasopressor use	6
*Requires heavy sedation	*23
Restraints	2
Agitation	5
Contraindicated (line in groine, IABP)	3
No ambulation per MD order	2
Other	5

Implications for LVHN

Lessons Learned

This project has helped us make nurses on our units more aware of their role in mobilizing mechanically ventilated patients.

With this project, a mobilization algorithm was created and made available to nurses with positive feedback from most RN's that they would like to see the algorithm become an official resource in the future. The hope is that a more well informed nursing staff and a more practiced nursing staff will be the driving factor in bettering the outcome of our ICU mechanically ventilated patient population. The next step would be to roll out the data and algorithm to the doctors, residents and PT/OT to truly make this a collaborative effort.

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Make It Happen

Questions/Comments?

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