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# ICU Liberation: Early Mobility and Exercise

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## Progressive Mobility Defined

A succession of activities in a progressive manner based on a patient's current ability to participate in movement to help them in returning to baseline mobility (Radius Anesthesia, 2020).

## ICU Liberation

The Society of Critical Care Medicine's (SCCM) Intensive Care Unit (ICU) Liberation Bundle was created to reduce the harmful effects of events that occur in the ICU setting. Early mobility and exercise is part "E" of the ICU Liberation Bundle; goals are to reduce ICU and hospital length of stay (LOS), prevent readmissions, reduce discharges to long term care facilities, reduce delirium and coma days, and reduce likelihood of hospital mortality (SCCM, 2021).

## Benefits

According to the Agency for Healthcare Research and Quality (AHRQ, 2017), early exercise decreases incidence of ventilator associated pneumonia, cognitive impairment, and muscle wasting.

Cooper, Gasperini and Parkosewich (2021) state that early mobilization reduces prevalence of hospital acquired pressure injuries, thromboembolic disease, insulin resistance, microvascular dysfunction, systemic inflammation, and orthostasis.

## Perceived Barriers

Cooper, Gasperini and Parkosewich (2021), identified several nurse-reported barriers to mobilizing orally intubated patients. The most common barriers reported were:

- Patient behavior (agitated, anxious, restless, combative)
- Concern about patient falls
- Scheduled procedures
- Weaning ventilator to extubate
- Competing demands of other patients
- Lack of help from other nursing staff
- Fear of harming patient
- Unstable respiratory status

## Literature Review: Key Points

- A protocol was developed at the University of Minnesota Medical Center (UMMC) utilizing an interdisciplinary approach to increase mobility. Pre- and post-intervention data was collected regarding hospital and ICU LOS as well as frequency of ambulation. There was no evidence of a decreased hospital or ICU LOS, but there was an increase in frequency of ambulation using the team approach (Linke et al., 2020).
- A randomized control trial was done at two university hospitals to examine the effects of daily sedation vacations combined with physical and occupation therapy to prevent sedative related immobility. Mobility level was increased gradually and discontinued based on patient intolerance or instability. This trial concluded that early mobility in the critically ill patient is both safe and well tolerated. No evidence of decreased hospital or ICU LOS was found. Evidence of improved functional and psychological outcomes of mechanically ventilated patients was seen (Schweickert et al., 2009).
- Twenty-three ICU experts assembled to review literature to assess respiratory, cardiovascular and physiological safety with early mobilization of ICU patients. Criteria were marked as green, yellow or red (not an issue for mobilizing, care team discussion should occur/proceed with caution, or mobility should not be performed). Many of these criteria were utilized in updating this guideline (Hodgson et al., 2014).

## Guideline

**Progressive Mobility Guidelines: Critical Care Units at St. Cloud Hospital**

Follow Patient Outcome Standards, ICU for positioning if any of the following exclusion criteria are present:

- Paralytic Infusion
- PEEP > 12 cm H<sub>2</sub>O
- PEEP > 80%
- MAP/ECMO
- Unstable Arrhythmia
- Increasing Vasopressor Needs
- Hemodynamic Instability
- Open Chest/Abdomen
- Unstable Fracture(s)
- Prolonged Prone Positioning
- Increased Death

Safety screening discussion with interdisciplinary team if any of the following yield criteria are present:

- Fall following intervention
- PEEP 10-12 cm H<sub>2</sub>O
- PEEP 80-90%
- 10min SpO<sub>2</sub> < 90%
- SpO<sub>2</sub> < 90%
- RR > 40 or < 10
- CRRT
- Decreasing vasopressor needs

If yield criteria present and not deemed safe for mobility, start with Level 1 and reassess in 12 hours.

If no yield criteria present or deemed safe for mobility, proceed with Level 1 and progress as tolerated:

**Level 1:** Clinical stability and able to move arm against gravity

- Passive ROM TID
- Turn Q2 hours
- Active resistance PT
- Sitting position 20 min TID
- Sitting on edge of bed

**Level 2:** Sitting upright and able to move leg against gravity

- Passive ROM TID
- Active resistance PT
- Sitting position 20 min TID
- Sitting on edge of bed

**Level 3:** Increased strength and stands with minimal to moderate assist

- Turn Q2 hours
- Active resistance PT
- Sitting position 20 min TID
- Sitting on edge of bed
- Active transfer to chair < 20 min 2 w/assist

**Level 4:** Strength and distance walk

- Full or assisted turn Q2 hours
- Active resistance PT
- Active transfer to chair < 20 min 2 w/assist
- Ambulation (standing in place, walking in place, walking in hall)

Signs of activity intolerance (allow for 5 minutes of recovery if able before suspending activity):

- Decreased LOC
- RR > 40
- New Arrhythmia
- HR > 120 or < 100
- MAP < 65 or > 100 mmHg

Image adapted from: <https://www.aacn.org/quality/2019/04/15/2019-04-15-01>

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