Safety and Barriers to Care

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Critically ill patients are often immobilized as a direct result of their illness or because of the administration of sedatives and analgesics or anesthetic agents that allow patients to receive other supportive care such as mechanical ventilation. Complications of critical illness documented in the literature include pressure ulcers, delirium, weakness, critical illness polyneuromyopathy, contractures, and decreased quality of life after hospital discharge. Moreover, critical illness polyneuromyopathy has significantly associated morbidity and increased hospital mortality. Several reports have now described the safety of organized early mobility therapy in the intensive care unit (ICU). These reports also suggest that improvements in activities of daily living and hospital length of stay were associated with the use of early mobility protocols in the ICU.

Questions often arise about the feasibility of early mobility in the ICU given the frequent need for invasive monitoring and other support apparatus such as endotracheal tubes. When
Conscious adjustments for patients’ tolerance and stability. In a recent cols for early progressive mobility have been designed with the patient sitting on the edge of the bed, then the patient resistance with physical therapy, physical therapy administered levels of the protocol included passive range of motion, active stepwise fashion based on daily assessments of the patient’s complications also may address staff perceptions. The proto- incorporation research-based strategies to address iatrogenic ICU specific inclusion and exclusion criteria. Models of care that mobility interventions with inherent daily assessments for spe- change this perception may emerge through protocolized patients, it is not uncommon for health care personnel to con- invasive and noninvasive devices are used in the care of ICU patients, it is not uncommon for health care personnel to con- sider these patients “too sick” to be moved. Opportunities to change this perception may emerge through protocolized mobility interventions with inherent daily assessments for specific inclusion and exclusion criteria. Models of care that incorporate research-based strategies to address iatrogenic ICU complications also may address staff perceptions. The protocols for early progressive mobility have been designed with adjustments for patients’ tolerance and stability. In a recent study, a protocol for early ICU mobility was administered in a stepwise fashion based on daily assessments of the patient’s ability to follow commands and the patient’s strength. The 4 levels of the protocol included passive range of motion, active resistance with physical therapy, physical therapy administered with the patient sitting on the edge of the bed, then the patient standing with step movements (see Figure).

In this study, patient safety was attained by working within the mobility protocol’s safety parameters. These safety parameters typically describe specific hemodynamic and ventilatory parameter thresholds. The safety thresholds of the early ICU mobility protocol are used to withhold the initiation of mobility or end the mobility session if a patient exceeds the safety limits (Table 1). Other reports on early ICU mobility therapies similarly indicate relatively few adverse events, such as accidental removal of devices. In an assessment of safety and feasibility of early mobility in patients with respiratory failure, Bailey and colleagues reported that a trained, dedicated group of nurses, respiratory therapists, physical therapists, and critical care technicians can safely deliver early mobility twice a day.

Barriers to early mobility may exist in multiple categories, from human and technological resources to costs (Table 2). Recent studies have demonstrated benefit with mobility protocols directed by physical therapy. In a recent report, less than 10% of responding hospitals had specific criteria guiding the timing of physical therapy interaction for ICU patients. Additionally, of protocols found in the literature, all have included the services of a physical therapist. In the future, a protocol without a physical therapy component may need to be tested to address those medical centers that lack the services of a physical therapist in the ICU. Lack of coordination among respiratory therapists, physical therapists, and bedside nurses in the ICU in delivery of patient care (eg, attainment of sedation goals, daily awakenings, spontaneous breathing trials) may impede the ability to keep early mobilization as a priority. The tendency for health care disciplines to operate in isolation lends to fragment- mentation of care and lack of teamwork, collaboration, and accountability for shared goals.

A lack of adequate equipment that enhances patients’ mobility (eg, availability of bedside chairs or portable ventilators) also may impose barriers. Time constraints, multiplicity of invasive and noninvasive devices, and obesity are potential

**Table 1** Criteria to withhold early mobility protocol

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
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<tr>
<td>Hypoxia with frequent desaturations below 88%</td>
<td>withhold protocol</td>
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<tr>
<td>Hypotension (mean arterial pressure &lt; 65 mm Hg)</td>
<td>withhold protocol</td>
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<tr>
<td>Administration of a new vasopressor agent</td>
<td>withhold protocol</td>
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<td>New myocardial infarction documented by electrocardiography and changes in enzyme levels</td>
<td>withhold protocol</td>
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<tr>
<td>Dysrhythmia requiring the addition of a new antiarrhythmic agent</td>
<td>withhold protocol</td>
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<tr>
<td>Increase in the positive end-expiratory pressure on the ventilator or change to assist control mode</td>
<td>withhold protocol</td>
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barriers to mobility.14 Staff education on the complications of “immobility” may lead to an elevation of ICU mobility within daily patient care priorities. With such knowledge about the potential risks of immobility, coordination of sedation may be improved through the use of sedation and analgesia scales, daily interruption of sedative infusions, spontaneous breathing trials, and accommodation of ICU mobility within the many competing ICU priorities. With the safety data now available, an opportunity exists for a reduction of staff perceptions that ICU patients are too sick to receive ICU mobility.

Last, hospital administrators may be reluctant to justify expenditures for work force and equipment related to ICU mobility. However, a recent publication7 reported that early ICU mobility administered by a dedicated mobility team following a protocol was associated with significantly fewer days in bed, and reduced ICU and hospital length of stay for survivors without increasing ICU and hospital costs. Bailey et al8 demonstrated no increase in staffing for work force and equipment related to ICU mobility, and hospital length of stay for survivors with or without early ICU mobility protocols may contribute to improved outcomes, but must weigh costs for multiple competing priorities. Further data demonstrating a meaningful financial impact of the use of early ICU mobility will be helpful to hospital administrators who seek optimal patient outcomes, but must weigh costs for multiple competing programs throughout the ICU and hospital.

### Summary

The detrimental sequelae of immobility associated with critical illness have a profound effect on patients and the health care system. Reports of beneficial outcomes associated with early ICU mobility protocols may contribute to improved patient outcomes and utilization of scarce health care resources. Early ICU mobility is feasible and safe when protocolized to include hemodynamic and ventilator thresholds. Changes in environmental culture that support multidisciplinary collaboration and coordination of activities to ensure mobility therapy as a priority can be accomplished.

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### Table 2 Barriers to early mobility

<table>
<thead>
<tr>
<th>Barriers</th>
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<tbody>
<tr>
<td>Lack of specific protocols or policies to address mobility in the intensive care unit</td>
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<tr>
<td>Fragmented care among multidisciplinary health care providers</td>
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<td>Adequate equipment</td>
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<tr>
<td>Culture of the intensive care unit—mobility not seen as a priority and staff perceptions of patient as too ill</td>
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<tr>
<td>Morbid obesity</td>
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<tr>
<td>Lack of education on the complications of immobility</td>
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<td>Excessive sedation</td>
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<td>Delirium</td>
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<td>Multiplicity of invasive devices</td>
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<tr>
<td>Resistance to change</td>
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<tr>
<td>Time constraints</td>
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<tr>
<td>Costs</td>
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### References


### Financial Disclosures

One of the authors, Amelia G. Ross, has received honoraria from Hill-Rom for presentations, but not for this study.
1. What is the major long-term complication resulting from the physical deconditioning that takes place during a patient’s stay in the intensive care unit (ICU)?
   a. Loss of orthostatic tolerance/disturbed equilibrium
   b. Onset of depressive mood disorders
   c. Diminished quality of life after discharge
   d. Improved function of the body’s autonomic feedback loop

2. Which of the following is the result of a patient’s developing "gravitational equilibrium"?
   a. Increased orthostatic tolerance
   b. Difficulty adapting to a change in position
   c. Stabilization of the plasma volume reduction that occurs during the first few days of bed rest
   d. Improved function of the body’s autonomic feedback loop

3. Progressive mobility is defined as a series of planned movements in a sequential manner with what final goal?
   a. Returning to the patient’s baseline level of mobility
   b. Achieving 75% of the patient’s pre-ICU activity level
   c. Prevention of ventilator- and hospital-acquired pneumonia
   d. Patient’s ability to ambulate for a distance of at least 100 feet by the time of ICU discharge

4. What was the main cause of functional limitations occurring in patients within 1 year after discharge from the ICU?
   a. Heart muscle deconditioning
   b. Skin breakdown/delayed wound healing
   c. Joint contractures
   d. Muscle wasting

5. When do this article’s authors recommend assessing each ICU patient’s readiness for mobility?
   a. During the initial nursing assessment following admission
   b. Each time a patient’s condition changes significantly
   c. Daily
   d. At the time of initiation of a progressive mobility protocol

6. The decreased muscle mass that occurs in critically ill patients is most pronounced in what area of the body?
   a. Upper limbs
   b. Lower limbs
   c. Diaphragm
   d. Abdomen

7. Patients receiving continuous lateral rotation therapy (CLRT) should have the continuous rotation for how many hours per day?
   a. 12
   b. 14
   c. 16
   d. 18

8. Which of the following is a recommendation included in all pressure ulcer prevention guidelines?
   a. Repositioning of patients at least every 2 hours
   b. Use of a therapy bed with a low-density foam surface
   c. A planned repositioning schedule tailored to each individual patient
   d. Use of a sling transfer aid when turning and/or repositioning patients

9. Which of the following statements regarding the use of CLRT is true?
   a. CLRT alone—right and left rotation of 20°–40°—is the only pressure ulcer prevention therapy necessary if the CLRT bed has a pressure distribution mattress.
   b. Bolsters, pillows, and other positioning devices may be used during times when CLRT is stopped, but they should be removed before use of active CLRT.
   c. CLRT is designed specifically for supporting pulmonary toileting, and should not be used for patients who are at high risk for developing pressure ulcers.
   d. Incontinent patients receiving CLRT should have diapers and specially designed pads placed between them and the surface of the CLRT bed.

10. Which of the following is the definition of the beach chair position?
    a. Elevation of the patient’s head of bed to 90° and the foot of bed at a -90° angle
    b. Elevation of the patient’s head of bed to 75° and the foot of bed at a -75° angle
    c. Elevation of the patient’s head of bed to 70° and the foot of bed at a -75° angle
    d. Elevation of the patient’s head of bed to 90° and the foot of bed at a -70° angle

11. Evidence-based practices to facilitate daily delivery of early ICU mobility include best practices in which of the following areas?
    a. Management of sedatives and analgesics; promotion of sleep for ICU patients
    b. Using physical therapists to initiate progressive mobility programs; prioritization of procedures by ICU nurses
    c. Use of beds that allow for patients to be positioned with backrest, hips, and knees angled at 90° without getting out of bed; protocols that include daily passive range of motion exercises
    d. Physician-ordered “out-of-bed” activity (early mobility); staff education regarding the complications associated with immobility and bed rest

12. The study designed to evaluate staff perceptions of patient readiness for mobility found that the most common facilitator identified by the nurses who planned out-of-bed activity for their patients was which of the following?
    a. “Adequate staffing today”
    b. “Physician order”
    c. “Patient is cooperative”
    d. “New beds make getting the patient out of bed easier”

Program evaluation
Objective 1 was met ✗ Yes ✗ No
Objective 2 was met ✗ Yes ✗ No
Objective 3 was met ✗ Yes ✗ No
Content was relevant to my nursing practice ✗ Yes ✗ No
My expectations were met ✗ Yes ✗ No
This method of CE is effective for this content ✗ Yes ✗ No
The level of difficulty of this test was: easy ✗ medium ✗ difficult ✗
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