

Early mobility for mechanically ventilated patients in long-term care hospitals (LTCHs)

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Introduction

Long-term acute care hospitals (LTCHs) are facilities that specialize in the treatment of patients with serious medical conditions requiring ongoing care, who do not require intensive care. Mechanically ventilated patients, many with complex medical conditions, may prove difficult to liberate from mechanical ventilation. The incidence of neuromuscular weakness for patients requiring mechanical ventilation is reported to be 25–60%.¹ Immobile patients may experience delirium, physical disability, neuropsychiatric dysfunction² and muscular atrophy after only 72 hours of physical inactivity.³ Current clinical evidence suggests the development of an early mobility program for these patients may:

- Reduce time on the ventilator
- Improve functional status
- Potentially prevent ventilator associated complications
- Increase strength³

Schweickert and colleagues² found a reduction in duration of mechanical ventilation (*3.4 days for the intervention group vs 6.1 days for the control group after implementation*).

Patients in the intervention group had higher Barthel Index scores, a higher number of independent ADLs, and a greater unassisted walking distance at hospital discharge, compared to the control subjects.*

Many mechanically ventilated patients are perceived as too ill or fragile to tolerate any mobility.⁴ These patients typically are referred to LTCHs for continued care. The potential for continued weakness may contribute to increased time on ventilation, increased length of stay in the ICU and hospital, and decreased quality of life.⁵ Additionally, LTCH staff, concerned for patient safety and physiologic stability,⁴ may regard mobility activities such as standing, walking and exercise as an increased safety risk.

With adoption of the Patient Protection and Affordable Care Act, the Centers for Medicare and Medicaid Services (CMS) issued final rules of inpatient prospective payment systems for FY2018 and beyond. These functional-outcome measures estimate the risk-adjusted change in mobility among LTCH patients requiring ventilator support, the percentage of LTCH patients with an admission and discharge functional assessment, as well as a care plan that addresses function.⁶ These measures estimate the risk-adjusted change in mobility score between admission and discharge among LTCH patients requiring ventilatory support upon admission. The change in mobility score is calculated as the difference between the discharge mobility score and the admission mobility score.

An increasing body of evidence in recent years has reported on the safety and feasibility of early progressive mobility with a minimal risk of adverse events and risks to the patient.²

Most research in early progressive mobility is focused on intensive care units. LTCHs may face challenges in implementing an early mobility program with regard to resources, technologies available and adequate staffing.

Section 3004(a) of the Affordable Care Act requires that LTCHs submit quality measure data on all patient admissions and discharges in a time, form and manner required by the Secretary of Health and Human Services.⁷ The data collection for this quality measure started April 1, 2016.

Facilities that fail to report the required quality-measure data may incur a two percentage point reduction to their annual payment update.

*Studies limited to Acute Care Hospital Intensive Care Unit

Developing an early mobility program

Multidisciplinary team approach

To develop and implement an early mobility program, a multidisciplinary approach is instrumental. Participation from several disciplines is essential. These include:

- Nursing
- Physician(s)
- Respiratory therapy
- Physical therapy
- Occupational therapy
- Hospital administration

In addition to the multidisciplinary team approach, it is important to find a champion. An integrated, consistent approach with staff buy-in may be a strong predictor of success.

Identification of barriers

Once a multidisciplinary team is established, predicting barriers and potential solutions should be reviewed by the team members. Common barriers may be:

- Staff fear and apprehension because many of these patients are complex and fragile
- Obese patients
- Safety considerations, such as fear of dislodging tubes and catheters
- Technology and monitoring resources *(In the LTCH setting, staffing limitations and access to resources may create barriers to the mobility process.)*
- Potential physical-environment barriers to mobility, especially with moving large equipment and supplies
- Lack of training

Screening for eligibility

In the current healthcare environment, accessing and coordinating resources is a challenge. As early mobility practice and protocols are developed, routine patient screening and early mobility protocols should be developed in conjunction with routine nursing care.

Current clinical evidence suggests the development of an early mobility program for these patients may:

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Functional quality measures

Patient limitations after a critical illness are increasingly prevalent as a result of improved survival rates.⁴ Adverse consequences to the chronically, critically ill in LTCH and intensive care are many, including:

- Muscle weakness
- Increased risk of blood clotting
- Increased risk of pressure ulcers
- Reduced bone mass
- Deficits in self-care and ambulation
- Cognitive impairment
- Memory impairment

Several studies have observed functional improvement among patients in the acute care setting.¹⁻⁴ An increasing body of evidence supports active utilization of an early mobility program. Here are a few:

- Improved strength and functional status
- Improved self-care
- Earlier achievement in mobilization goals
- Earlier return to functional status
- Improved exercise capacity

Quality measurements must include baseline, ongoing and at patient discharge. Patients are excluded for these reasons:

- Less than 21 years of age
- Incomplete stay due to patient discharge
- Assigned to hospice care
- Progressive neuromuscular disease, such as amyotrophic lateral sclerosis and Parkinson's disease
- Persistent coma or vegetative state
- Death

The quality measurements

Quality reporting measurements, as outlined by Section 3004(a) of the Patient Protection and Affordable Care Act of 2010, creates LTCH quality reporting requirements. Reports specific to self-care, and functional ability are outlined in form GG0130 (*self-care*) and GG0170 (*mobility*). Examples of these documents are found on pages 4–5. These required quality measurements are reported upon patient admission and discharge.

Training materials that you can use, as well as other quality reporting initiatives, can be found at

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/LTCH-Quality-Reporting/LTCH-Quality-Reporting-Training.html>

Sample form GG0130: self-care assessment

Patient _____ Identifier _____ Date _____

Section GG		Functional Abilities and Goals																			
GG0100. Prior Functioning: Everyday Activities. Indicate the patient's usual ability with everyday activities prior to the current illness, exacerbation, or injury.																					
<p>3. Independent - Patient completed the activities by him/herself, with or without an assistive device, with no assistance from a helper.</p> <p>2. Needed Some Help - Patient needed partial assistance from another person to complete activities.</p> <p>1. Dependent - A helper completed the activities for the patient.</p> <p>8. Unknown</p> <p>9. Not Applicable</p>	↓	Enter Codes in Boxes																			
	<input type="checkbox"/>	<p>B. Indoor Mobility (Ambulation): Code the patient's need for assistance with walking from room to room (with or without a device such as cane, crutch, or walker) prior to the current illness, exacerbation, or injury.</p>																			
GG0110. Prior Device Use. Indicate devices and aids used by the patient prior to the current illness, exacerbation, or injury.																					
↓ Check all that apply																					
<input type="checkbox"/>	A. Manual wheelchair																				
<input type="checkbox"/>	B. Motorized wheelchair or scooter																				
<input type="checkbox"/>	C. Mechanical lift																				
<input type="checkbox"/>	Z. None of the above																				
GG0130. Self-Care (3-day assessment period)																					
Code the patient's usual performance at admission for each activity using the 6-point scale. If activity was not attempted at admission, code the reason. Code the patient's discharge goal(s) using the 6-point scale. Do not use codes 07, 09, or 88 to code discharge goal(s).																					
<p>CODING: Safety and Quality of Performance - If helper assistance is required because patient's performance is unsafe or of poor quality, score according to amount of assistance provided. <i>Activities may be completed with or without assistive devices.</i></p> <p>06. Independent - Patient completes the activity by him/herself with no assistance from a helper.</p> <p>05. Setup or clean-up assistance - Helper SETS UP or CLEANS UP; patient completes activity. Helper assists only prior to or following the activity.</p> <p>04. Supervision or touching assistance - Helper provides VERBAL CUES or TOUCHING/ STEADYING assistance as patient completes activity. Assistance may be provided throughout the activity or intermittently.</p> <p>03. Partial/moderate assistance - Helper does LESS THAN HALF the effort. Helper lifts, holds or supports trunk or limbs, but provides less than half the effort.</p> <p>02. Substantial/maximal assistance - Helper does MORE THAN HALF the effort. Helper lifts or holds trunk or limbs and provides more than half the effort.</p> <p>01. Dependent - Helper does ALL of the effort. Patient does none of the effort to complete the activity. Or, the assistance of 2 or more helpers is required for the patient to complete the activity.</p> <p>If activity was not attempted, code reason:</p> <p>07. Patient refused</p> <p>09. Not applicable</p> <p>88. Not attempted due to medical condition or safety concerns</p>	↓	↓	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d3d3d3;"> <th style="width: 50%; text-align: center; padding: 5px;">1. Admission Performance</th> <th style="width: 50%; text-align: center; padding: 5px;">2. Discharge Goal</th> <th style="width: 40%;"></th> </tr> <tr style="background-color: #d3d3d3;"> <th colspan="2" style="text-align: center; padding: 5px;">↓ Enter Codes in Boxes ↓</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="padding: 5px; vertical-align: top;">A. Eating: The ability to use suitable utensils to bring food to the mouth and swallow food once the meal is presented on a table/tray. Includes modified food consistency.</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="padding: 5px; vertical-align: top;">B. Oral hygiene: The ability to use suitable items to clean teeth. [Dentures (if applicable): The ability to remove and replace dentures from and to the mouth, and manage equipment for soaking and rinsing them.]</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="padding: 5px; vertical-align: top;">C. Toileting hygiene: The ability to maintain perineal hygiene, adjust clothes before and after using the toilet, commode, bedpan or urinal. If managing an ostomy, include wiping the opening but not managing equipment.</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="text-align: center; vertical-align: middle;"><input type="text"/></td> <td style="padding: 5px; vertical-align: top;">D. Wash upper body: The ability to wash, rinse, and dry the face, hands, chest, and arms while sitting in a chair or bed.</td> </tr> </tbody> </table>	1. Admission Performance	2. Discharge Goal		↓ Enter Codes in Boxes ↓			<input type="text"/>	<input type="text"/>	A. Eating: The ability to use suitable utensils to bring food to the mouth and swallow food once the meal is presented on a table/tray. Includes modified food consistency.	<input type="text"/>	<input type="text"/>	B. Oral hygiene: The ability to use suitable items to clean teeth. [Dentures (if applicable): The ability to remove and replace dentures from and to the mouth, and manage equipment for soaking and rinsing them.]	<input type="text"/>	<input type="text"/>	C. Toileting hygiene: The ability to maintain perineal hygiene, adjust clothes before and after using the toilet, commode, bedpan or urinal. If managing an ostomy, include wiping the opening but not managing equipment.	<input type="text"/>	<input type="text"/>	D. Wash upper body: The ability to wash, rinse, and dry the face, hands, chest, and arms while sitting in a chair or bed.
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<input type="text"/>	<input type="text"/>	D. Wash upper body: The ability to wash, rinse, and dry the face, hands, chest, and arms while sitting in a chair or bed.																			

Sample form GG0170: mobility assessment

Patient _____ Identifier _____ Date _____

Section GG Functional Abilities and Goals

GG0170. Mobility (3-day assessment period)

Code the patient's usual performance at admission for each activity using the 6-point scale. If activity was not attempted at admission, code the reason. Code the patient's discharge goal(s) using the 6-point scale. Do not use codes 07, 09, or 88 to code discharge goal(s).

CODING: Safety and Quality of Performance - If helper assistance is required because patient's performance is unsafe or of poor quality, score according to amount of assistance provided. <i>Activities may be completed with or without assistive devices.</i>	1.	2.	
	Admission Performance	Discharge Goal	
	↓ Enter Codes in Boxes ↓		
	<input type="text"/>	<input type="text"/>	A. Roll left and right: The ability to roll from lying on back to left and right side, and return to lying on back.
06. Independent - Patient completes the activity by him/herself with no assistance from a helper.	<input type="text"/>	<input type="text"/>	B. Sit to lying: The ability to move from sitting on side of bed to lying flat on the bed.
05. Setup or clean-up assistance - Helper SETS UP or CLEANS UP; patient completes activity. Helper assists only prior to or following the activity.	<input type="text"/>	<input type="text"/>	C. Lying to sitting on side of bed: The ability to safely move from lying on the back to sitting on the side of the bed with feet flat on the floor, and with no back support.
04. Supervision or touching assistance - Helper provides VERBAL CUES or TOUCHING/ STEADYING assistance as patient completes activity. Assistance may be provided throughout the activity or intermittently.	<input type="text"/>	<input type="text"/>	D. Sit to stand: The ability to safely come to a standing position from sitting in a chair or on the side of the bed.
	<input type="text"/>	<input type="text"/>	E. Chair/bed-to-chair transfer: The ability to safely transfer to and from a bed to a chair (or wheelchair).
	<input type="text"/>	<input type="text"/>	F. Toilet transfer: The ability to safely get on and off a toilet or commode.
03. Partial/moderate assistance - Helper does LESS THAN HALF the effort. Helper lifts, holds or supports trunk or limbs, but provides less than half the effort.			<input type="checkbox"/> H1. Does the patient walk? 0. No , and walking goal is not clinically indicated → <i>Skip to GG0170Q1. Does the patient use a wheelchair/scooter?</i> 1. No , and walking goal is clinically indicated → <i>Code the patient's Discharge Goal(s) for items GG0170I, J, and K. For Admission Performance, skip to GG0170Q1. Does the patient use a wheelchair/scooter?</i> 2. Yes → <i>Continue to GG0170I. Walk 10 feet</i>
02. Substantial/maximal assistance - Helper does MORE THAN HALF the effort. Helper lifts or holds trunk or limbs and provides more than half the effort.			
01. Dependent - Helper does ALL of the effort. Patient does none of the effort to complete the activity. Or, the assistance of 2 or more helpers is required for the patient to complete the activity.	<input type="text"/>	<input type="text"/>	I. Walk 10 feet: Once standing, the ability to walk at least 10 feet in a room, corridor or similar space.
	<input type="text"/>	<input type="text"/>	J. Walk 50 feet with two turns: Once standing, the ability to walk 50 feet and make two turns.
	<input type="text"/>	<input type="text"/>	K. Walk 150 feet: Once standing, the ability to walk at least 150 feet in a corridor or similar space.
If activity was not attempted, code reason: 07. Patient refused 09. Not applicable 88. Not attempted due to medical condition or safety concerns			<input type="checkbox"/> Q1. Does the patient use a wheelchair/scooter? 0. No → <i>Skip to H0350. Bladder Continence</i> 1. Yes → <i>Continue to GG0170R. Wheel 50 feet with two turns</i>
	<input type="text"/>	<input type="text"/>	R. Wheel 50 feet with two turns: Once seated in wheelchair/scooter, the ability to wheel at least 50 feet and make two turns.
			<input type="checkbox"/> RR1. Indicate the type of wheelchair/scooter used. 1. Manual 2. Motorized
	<input type="text"/>	<input type="text"/>	S. Wheel 150 feet: Once seated in wheelchair/scooter, the ability to wheel at least 150 feet in a corridor or similar space.
			<input type="checkbox"/> SS1. Indicate the type of wheelchair/scooter used. 1. Manual 2. Motorized

Functional quality measures (*cont'd*)

Some patients may be excluded, such as:

- Patients with incomplete stays
- Patients discharged to hospice
- Patients with progressive neurological conditions, including amyotrophic lateral sclerosis, multiple sclerosis, Parkinson's disease and Huntington's chorea
- Patients in a coma or a persistent vegetative state
- Patients with complete tetraplegia and locked-in syndrome
- Patients younger than age 21
- Patients who are coded as independent on all the CARE mobility items at admission

Measure Description:

This measure estimates the risk-adjusted change in mobility score between admission and discharge among LTCH patients requiring ventilator support at admission.

Bringing it all together

Development and implementation of an early mobility program is a challenging project, as many disciplines are involved. Changing the culture of a patient care environment and shifting a paradigm requires patience, training, staff buy-in and careful planning and management. Mobility protocols may require adjustment and monitoring with careful follow-up.

Safety considerations

Respiratory

- Airway protection, check patency and security
- Mobile oxygen needs
- Ventilator setting guidelines—The need to alter settings and oxygen concentrations during mobility activities should be carefully evaluated by medical, respiratory and nursing staff. Generally, the ventilation settings in LTCH facilities are lower than for intensive care patients, as these patients generally have a more stable oxygenation and ventilation status, and baseline settings for oxygen and positive end expiratory pressure (PEEP). Physicians, nurses and respiratory therapists should establish institutional guidelines.
- Ventilator—If the patient is not on a satisfactory mobile platform, a mobile ventilator should be placed on the patient prior to activities. There may be subtle differences between devices, and placing the patient on the ventilator to be used during mobility activities should assist in identifying potential problems.
- Catheters, drains, infusion lines and other connected devices—These should have specific guidelines for staff when mobility procedures are active.

Cardiovascular

- Blood pressure
- Potential arrhythmias
- Perfusion

Neurologic

- Level of consciousness
- Spinal precautions
- Seizure activity

Orthopedic

A thorough physical therapy assessment should be performed.

The Four E's

The four E's represent an implementation model.³ These are excellent guidelines that address the new process.

Engage—All stakeholders should be engaged in a mobility program. It is important to convince all stakeholders that implementing a strong early mobility program offers significant value to the patient, family and staff members. Understand that there will likely be apprehension and anxiety. Stay engaged throughout the process. Share the research, documentation and outcomes data.

Educate—The implementation of a mobility initiative will require educating a wide audience. Involve subject matter experts and use a variety of training tools. Keep education evidence-based, informative and provide a clear explanation of the subject matter. Engage the medical staff to participate in education events. Include mobility status in patient rounds. Also:

- Keep educational resources on hand.
- Keep safety considerations at the forefront.
- Develop educational materials for the patient and family. After a critical illness, there may be considerable anxiety with increasing the level of activity.

Execute—When executing a new initiative, there will likely be a number of factors that will influence the staff and family. Keep safety factors in clinical education at the forefront. Understand that modifications to a new initiative will likely be needed. The goal is to create a new acceptable standard. Make mobility a daily goal, with documented progress, status and goal achievement. Verify that institutional policies are aligned with the early mobility practices.

Evaluate—Evaluating progress allows you to observe your success. As monthly reporting of quality outcomes is a requirement, perform intermittent audits to keep on track. Report all outcome information to your staff, as success will likely result in a more proactive response.

Summary

- There is ample clinical evidence that an early progressive mobility program for mechanically ventilated patients reduces ventilator days and may reduce hospital length of stay. Much of the clinical research with early progressive mobility is intensive-care based, so LTCH facilities should consider this when developing an early mobility protocol.
- The Centers for Medicare and Medicaid Systems (CMS) have outlined requirements and reporting guidelines for LTCHs regarding progressive early mobility quality measures.⁶
- A multidisciplinary team approach encourages staff buy-in. Find a leader and champion. Keep your staff informed and engaged. Share your success.
- The benefits of an early progressive mobility program usually outweigh significant potential risks; however, a strong safety message must be conveyed.
- An early progressive mobility program will likely benefit the patient first and foremost.

Tools you can use

- ICU Delirium and Cognitive Impairment Study Group: An excellent resource for educational materials and resources for delirium management and assessment, including the ABCDEF Bundle. www.icudelirium.org
- The American Association of Critical-Care Nurses: Implementing the ABCDE Bundle at the Bedside. <http://www.aacn.org/wd/practice/content/actionpak/withlinks-abcde-toolkit.pcms?menu=practice>
- LTCH Quality Reporting Measures Information: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/LTCH-Quality-Reporting/LTCH-Quality-Reporting-Measures-Information.html>
- Implementing the ABCDE Bundle at the bedside: A great resource for implementing the new quality initiatives. <https://innovations.ahrq.gov/qualitytools/implementing-abcde-bundle-bedside>

References

1 Hodgson CL, Berney S, Harrold M, Saxena M, Bellomo R. Clinical Review: Early patient mobilization in the ICU. *Critical Care*. 2013, 17(1):207. doi: 10.1186/cc11820. 2 Schweickert WD, Polman MC, Pohlman AS, et al. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. *Lancet*. 2009;30:373(9678):1874-82. doi: 10.1016/S0140-6736(09)60658-9. 3 Adler J, Malone D. Early mobilization in the intensive care unit: a systematic review. *Cardiopulm Phys Ther J*. 2012;23(1):5-13. 4 Bailey P, Thomsen GE, Spuhler VJ, et al. Early activity is feasible and safe in respiratory failure patients. *Crit Care Med*. 2007;35(1):139-45. 5 Zomorodi M, Topley G, McAnaw M.; Developing a Mobility Protocol for Early Mobilization of Patients in a Surgical/Trauma ICU. *Crit Care Research and Practice*. 2012 Article ID 964547. doi.org/10.1155/2012/964547. 6 Centers for Medicare and Medicaid Services. *Long-Term Care Hospital Quality Reporting Program - Specifications for the Quality Measures Adopted through the Fiscal Year 2016 Final Rule*. Accessed on April 1, 2016 at https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/LTCH-Quality-Reporting/Downloads/LTCH-QRP-Measure-Specifications_August-2015.pdf 7 Centers for Medicare and Medicaid Services. *Payment Adjustment Information*. Accessed on April 1, 2016 at <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/Payment-Adjustment-Information.html>

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