

The Case for Mobility Assessment in Hospitalized Older Adults: American Geriatrics Society White Paper Executive Summary

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ABSTRACT: Mobility can be defined as the ability to move or be moved freely and easily. In older adults, mobility impairments are common and associated with risk for additional loss of function. Mobility loss is particularly common in these individuals during acute illness and hospitalization, and it is associated with poor outcomes, including loss of muscle mass and strength, long hospital stays, falls, declines in activities of daily living, decline in community mobility and social participation, and nursing home placement. Thus, mobility loss can have a large effect on an older adult's health, independence, and quality of life. Nevertheless, despite its importance, loss of mobility is not a widely recognized outcome of hospital care, and few hospitals routinely assess mobility and intervene to improve mobility during hospital stays. The Quality and Performance Measurement Committee of the American Geriatrics Society has developed a white paper supporting greater focus on mobility as an outcome for hospitalized older adults. The executive summary presented here focuses on assessing and preventing mobility loss in older adults in the hospital and summarizes the recommendations from that white paper. The full version of the white paper is available as Text S1. *J Am Geriatr Soc* 00:1–6, 2018.

Key words: mobility; measurement; hospital care; aged

Mobility, a component of overall function, can be defined as the ability to move or be moved freely and easily. In older persons, mobility impairments are common and are associated with risk of additional loss of function. Declines in mobility are particularly common during acute illness and hospitalization.^{1,2} Of hospitalized older adults, 17% experience functional decline, defined here as mobility loss, during hospitalization, and 18% have experienced such declines before hospitalization.³

Mobility loss has a large effect on the health, independence, and quality of life of older adults.^{1,2} Immobility rapidly leads to loss of muscle mass and strength.⁴ Older adults, who often enter the hospital with lower baseline muscle strength and mass than younger adults, can lose 5% to 10% of muscle strength per week of bed rest during hospitalization.^{5,6} Immobility also can lead to ongoing declines in function—more than one-third of adults aged 70 and older are discharged from the hospital with a major disability that was not present before admission,⁷ and the effects of deconditioning and weakness can extend well beyond the hospitalization.⁸ Moreover, low mobility, defined as being restricted to bed or transferring only from bed to chair, has been associated with a reduction in life-space, which is defined as the extent of a person's movement and is a measure of community mobility and social participation.^{6,9} Mobility loss is associated with longer ventilator days; longer hospital stays; and adverse outcomes during and after hospitalization, including falls, declines in activities of daily living (ADL), and nursing home placement.^{2,10} Thus, mobility loss is critical in the “cascade” to dependency.¹¹ It is also associated with decline in caregiver health¹² and higher acute and post-acute care costs.^{13,14}

Despite its importance, mobility loss is not recognized widely as an outcome of hospital care. Regulators and accreditation agencies, such as the Centers for Medicare

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and Medicaid Services (CMS) and the Joint Commission, do not specifically address mobility or functional status in their quality metrics for acute care hospitals.^{15–17} Consequently, there is no financial or quality incentive for hospitals to assess and improve inpatient mobility. In addition, hospital culture typically does not value or prioritize mobility, as evidenced by a lack of the staffing, equipment, and standardized and validated processes needed to encourage safe mobility during hospital stays.^{18–20} Tools to assess risks of pressure ulcers or falls, the use of which the Joint Commission mandated, have mobility assessments embedded in them. Thus, nursing staff assess mobility, but it is likely that they do not understand the validity, reliability, and utility of the measures they use. Nurses have cited lack of confidence as one reason that ambulation is frequently not encouraged during inpatient care,^{21,22} and routine assessment and improvement of mobility, if done, is often the purview of physical therapy departments. Thus, it is likely that there is an overdependence on physical therapy consultations for measurements and interventions that could bedside nurses could perform.²² Moreover, existing mobility assessments have been developed primarily for the post-acute or rehabilitation care setting and translate poorly to acute care hospitals. They are often aligned poorly with other acute care priorities such as falls prevention²³ and therefore can be burdensome to an already overburdened staff. Symptoms and restraining devices such as urinary catheters and intravenous lines further hamper assessments of and improvements in mobility. In addition, the average hospital stay is short, limiting the opportunity for mobility assessment and improvement.

Thus, regardless of their mobility levels before hospitalization, people spend an excessive portion of their hospitalization in bed rather than seated, standing, or ambulating.^{19,24} Of older adults with prehospital independence in mobility, an estimated 16% to 19% experience low mobility during hospitalization,^{1,2,25} although these estimates may be low, because studies have excluded adults with disabling diagnoses or significant impairments in overall function and cognition. Accelerometer data indicate that previously ambulatory hospitalized older adults spend 13% of their hospital stay sitting, 4% standing or walking, and 83% in bed, even though fewer than 5% of these individuals have physician orders for bed rest.¹⁹⁷

Some hospitals and health systems emphasize mobility, and some have developed stand-alone programs focused on routine mobility assessment. Nurses at Johns Hopkins Hospital administer the Johns Hopkins Highest Level of Mobility Scale during each shift, and they and physical and occupational therapists conduct the Activity Measure for Post-Acute Care (AM-PAC) 6-Clicks upon admission and 3 times a week. An interdisciplinary mobility care program at the Cleveland Clinic uses the AM-PAC 6-Clicks measure to assess prehospitalization and current mobility levels.²⁶ Nurses at Duke University Hospital use the Banner Mobility Assessment Tool²⁷ to assess mobility during every shift and generate an individualized mobility plan.²⁸ Mobility is also an important component of multifactorial intervention programs designed to prevent hospital-acquired conditions and enhance postoperative recovery.²⁹ One such program is Up Campaign, which the Health Research and Educational Trust Hospital Improvement Innovation Network has

designed to simplify safe care. The Up Campaign emphasizes sedation and opioid safety, progressive mobility for all patients, hand hygiene, and optimization of inpatient medications.³⁰

A writing group of the Quality and Performance Measurement Committee (QPMC) of the American Geriatrics Society (AGS) has reviewed the literature, including several systematic reviews,^{31–34} and developed a white paper supporting greater focus on mobility during acute care and routine mobility assessments and interventions for hospitalized older adults. The full QPMC reviewed the draft white paper, which underwent peer review by the American Physical Therapy Association, Gerontological Advanced Practice Nurses Association, National Alliance for Caregiving, and Society for Hospital Medicine. The AGS Executive Committee also reviewed and approved it on behalf of the AGS Board of Directors in April 2018. The white paper summarizes the literature on mobility loss during hospitalization, discusses the implications of low mobility, describes the current state of mobility assessment in acute and post-acute care settings, summarizes mobility assessment tools and intervention strategies, and makes recommendations to promote routine mobility assessments in older hospitalized adults. In the executive summary, presented here, the AGS writing group focuses on assessing and preventing mobility loss in older adults in the hospital and summarizes the recommendations from that white paper.

ASSESSING AND PREVENTING MOBILITY LOSS IN THE HOSPITAL: THE WHO, WHAT, WHEN, WHERE, AND HOW

The goal of a mobility assessment is to guide interventions supporting mobility and, thus, to improve care. Evidence supporting the use of mobility assessments and interventions in the acute care setting is growing, but it is difficult to interpret because it encompasses several outcome measures, interventions, and settings within the hospital. In addition, multicomponent interventions, such as Acute Care for the Elderly services, can include mobility interventions and might improve certain functional outcomes, but they can be difficult to implement in settings with constrained resources. Thus, we focus specifically on mobility in the medical and surgical hospital population.

THE WHO

Stakeholders in improving inpatient mobility include patients; nurses; nurse's aides; physical, occupational, and speech therapists; physicians and providers, including hospitalists; social workers; and discharge planners. Each of these stakeholders plays an integral role in changing the hospital culture to prioritize mobility from the time of admission. Patients are the primary beneficiaries of such a change. It is likely that physicians, providers, nurses, and therapists will serve as the architects of that change by developing mobility programs for their hospitals. It is likely that nurses, nursing aides, and therapists will conduct the mobility assessment and interventions.

Studies of mobility interventions for hospitalized individuals outside the intensive care unit (ICU) have focused on several strategies. Some studies have assessed mobility

interventions in specific populations, such as frail older adults or individuals with specific diagnoses, others have assessed these interventions in unselected medical populations, and others have stratified patients and adjusted the type and intensity of interventions based on mobility level. Reviews have concluded that mobility interventions should target individuals at moderate to high risk of mobility loss, rather than unselected populations.^{35,36} In particular, a reanalysis of data from 2 studies found that individuals requiring assistance with ambulation at the time of hospitalization were more likely than other older adults to benefit from additional exercise.^{34,37}

THE WHAT

Hospital-based mobility intervention protocols tend to focus on progression from basic to more advanced movement based on pre-morbid function and mobility at the time of assessment. Typical progressions begin with bed exercises and move on to sitting, standing, walking, and climbing stairs. Some protocols also incorporate resistance training, balance and flexibility, education, and behavioral interventions.

Although studies of progressive mobility protocols have been small, they suggest that protocols aimed at assessing and improving mobility lead to positive outcomes. In the Strategies to Reduce Injuries and Develop Confidence in Elders Study, hospital stays were shorter, and participants who underwent mobility assessments within 24 hours of hospital admission, were educated on the importance of ambulation, and ambulated 20 minutes per hospital day were more likely to be discharged home than to a skilled nursing facility than demographically matched controls.³⁸ In another study of 100 older hospitalized adults, community mobility, as measured by life-space assessment, 30 days after hospital discharge improved in those randomized to a progressive mobility protocol and a behavioral intervention consisting of daily goal-setting, identification of barriers to mobilization and solutions, and a diary for self-monitoring,³⁹ whereas participants assigned to usual care experienced a clinically meaningful decline. The Hospital Elder Life Program, which aims to prevent delirium and functional decline during hospitalization and includes mobility improvement as one of its core interventions, has been shown to decrease delirium, falls, and hospital lengths of stay.⁴⁰⁻⁴² The program also appears to be safe and cost-effective. A 12-month pilot study of the Johns Hopkins inpatient mobility program found more days of ambulation, increases in the proportion of individuals whose mobility levels improved over their hospital stay, and shorter hospital stays in individuals participating in the program.⁴³ A cohort study demonstrated the feasibility of the SIT to STAND program, which employs a progressive model of loaded sit-to-stand exercises to prevent loss of muscle strength in hospitalized men.⁴⁴ This program has not been tested in a randomized controlled trial.

THE WHEN AND WHERE

Because the average hospital stay is so short, many studies of mobility assessment and intervention have focused on those occurring within 48 hours of hospitalization, although an increasing number of protocols are adding home-based interventions for up to 30 days after discharge.

In a study of 128 older medical patients, those randomized to the intervention underwent a training program comprising resistance training and balance and flexibility exercises beginning within 72 hours of hospitalization and continuing 2 to 3 times per week in the hospital and 3 to 4 times per week at home for 24 weeks after discharge. Four weeks after discharge, these individuals showed greater improvements in walking outcomes and ADLs and less use of emergency primary care visits and hospital admissions than those randomized to usual care.⁴⁵ Although this combination approach may have more of an effect than shorter interventions, it may be more difficult to implement.³² For example, current insurance reimbursement structures reinforce the separation of acute and post-acute care, creating barriers for mobility programs that try to bridge the 2 domains. Model 2 of the Medicare Bundled Payments for Care Improvement initiative (acute + post-acute care) creates incentives to bridge that gap.⁴⁶

THE HOW

Standardizing mobility programs across all hospitals is difficult and perhaps unnecessary. Hospital cultures widely vary, and each mobility program should fit the culture of the hospital, yet a culture shift that is needed in all hospitals involves overcoming the fear of patients falling. Promoting mobility in the hospital might help prevent injurious falls.⁴⁷ The success and sustainability of a mobility assessment and intervention program depends on a culture that emphasizes the importance of mobility assessment at the time of admission and the designation of a management-level champion to spread this message and ensure that the necessary resources are in place.^{24,48} All stakeholders must benefit from such a program, but the program should cause only minimal additional work for those tasked with conducting it.^{24,48} In addition, stakeholders directly involved in assessments and improvements should be able to screen patients and make appropriate referrals to providers such as nurses and therapists.^{24,48}

Although physical therapists serve as the mainstay of mobility treatment, reflexive consultation of physical therapists might lead to their overuse and, because of staffing constraints in many physical therapy departments, delays in appropriate care. With those constraints, and in light of the importance of nurses in daily care, it is likely that nurses will play a critical role in mobility assessment and intervention, but the nursing community is divided between nurses who collaborate with physical therapists because they see it as their role to encourage patient independence and well-being and those who do not identify mobility as their responsibility and therefore defer to others for direction.⁴⁹ Furthermore, nurses typically engage only a subset of their patients in mobility efforts, and most of those efforts are low level, of short duration, and usually initiated by patients.⁵⁰ Evidence suggests that mobility assessment and intervention programs can be administered successfully with nurses conducting assessments and nursing assistants managing ambulation.⁵¹

Of the many validated mobility assessments and global function measures described in the literature,^{27,35,36,52-63} 6 are particularly promising for acute care hospitals, and most of those are designed for nurses to lead (Table 1). These assessments are free, but some, such as the AM-PAC

6-Clicks, might have proprietary restrictions. A pilot study found that the Mobilizing Older adult patients Via a Nurse-driven intervention, a multicomponent systems mobility intervention conducted by nurses, increased the frequency of ambulation and the distance that patients walked in a single medical unit.⁶⁴ Alternatively, a nurse-driven mobility protocol in the ICU and step-down settings succeeded in mobilizing patients within 72 hours of hospital admission, with the proportion of mobile patients improving from 6.2% in the ICU and 15.5% in the step-down setting before protocol implementation to 20.2% in the ICU and 71.8% in the step-down setting after implementation.⁶⁵ Mobility became a priority in care plans as physicians and nurses saw the benefits of early mobilization. Because of the

success of this program in the ICU, the study hospital will institute early-mobility programs in other units.⁶⁵

THE PATH FORWARD

Low mobility in hospitalized individuals is associated with adverse outcomes in the hospital and in the weeks to months after hospitalization. Although mobility loss is common and predictable, it is poorly recognized and inadequately addressed. Despite the availability of several valid mobility assessment tools, there is no consensus on mobility assessment in the inpatient setting, nor is there a mandate for implementation of such tools. Thus, mobility is often missed as an outcome of care.

Table 1. Promising Mobility Assessments for Hospital Use

Measure	Intended User or Assessor	Population or Setting	Description
Activity Measure for Post-Acute Care 6-Clicks ³⁵	PTs, OTs, nurses	Hospital	Assesses need for assistance with bed mobility, sitting and standing from chair, transfer from bed, moving from chair, climbing stairs, walking in hospital room; takes minutes to complete
Banner Mobility Assessment Tool ²⁷	Nurses	Hospital	Assesses ability to move from lying in bed to sitting, raise arm across midline, raise leg and extend kneed, bend ankle and point toes, stand, walk in place, step forward and back; includes recommendations for safe patient handling based on observed mobility level and individual environment
de Morton Mobility Index ^{36,52}	Staff	Older adults in acute care	Assesses bed mobility, chair, static balance, walking, dynamic balance
Hierarchical Assessment of Balance and Mobility ⁵⁷	PTs, OTs, nurses	Frail older adults	Assesses balance while sitting, standing, and walking; independence for transfers; maximal distance patient can walk; assistance needed while walking; rating criteria too complex to memorize
Johns Hopkins Highest Level of Mobility ⁵⁸	Multiple disciplines, including nurses, rehabilitation therapists, physicians	Hospital	Assesses lying in bed, movement in bed, sitting, transferring to a chair, standing, walking ≥ 10 steps, walking ≥ 25 feet, and walking >250 feet; nurses record mobility over course of their shifts
Minimum Data Set 3.0 version 1.14, Section G ⁵⁹	PTs, OTs, nurses	Skilled nursing facility	Assesses level of independence in bed mobility, transferring, walking in room, walking in corridor, locomotion on and off unit; not developed for acute care
Minimum Data Set 3.0 version 1.14, Section GG ⁶⁰	PTs, OTs, nurses	Post-acute-care settings	Assesses level of independence in sitting to lying, lying to sitting, sitting to standing, transferring, walking 50 feet, walking 150 feet, self-propelling in a wheelchair; will replace Section G; not developed for acute care

OT = occupational therapist; PT = physical therapist.

In light of the availability of mobility assessment tools and a growing body of evidence on effective interventions, the AGS QPMC proposes the following recommendations to integrate mobility programs into hospital care for older adults.

Recommendation 1: Promote mobility assessment in acute care. Regulators such as CMS should provide incentives for the use of standard, validated mobility assessments that are harmonized with other mandated assessments to minimize the work burden placed on care providers.

Recommendation 2: Advocate for more research funding. Federal agencies such as the Agency for Healthcare Research and Quality and units of the National Institutes of Health, such as the National Institute on Aging, should prioritize translational research in mobility assessment, quality measurement, and implementation of mobility intervention programs.

Recommendation 3: Develop consensus on standard methods to assess mobility. CMS and other stakeholders should promote development of consensus on an assessment that is validated, appropriate for acute care settings, and clinically meaningful to providers and patients.

Recommendation 4: Minimize the burden of mobility measurement. Efforts should focus on optimizing workflow and documentation and minimizing redundancy by specifying the roles of various healthcare professionals, such as nurses and physical therapists; the use of existing clinical data in the electronic health record; and the use of innovative technological solutions.

Recommendation 5: Evaluate the feasibility of a mobility quality measure. CMS should develop a mobility quality measure to encourage hospitals, staff, and providers to intervene actively to prevent loss of mobility in hospitalized older adults.

Recommendation 6: Reframe the current regulatory focus on falls in acute care to a focus on safe mobility. In the face of little evidence of the effectiveness of strategies to prevent falls in acute care, falls or falls with injury should be reconsidered as quality indicators in the absence of a balancing measure for mobility.

Recommendation 7: Develop resources for acute care providers. AGS and strategic partners should consider creating tools, processes, and strategies to assist providers and hospitals with rapid, efficient, sustainable implementation of evidence-based practices for mobility assessment and intervention in real-world settings.

AGS supports the development and implementation of standardized mobility assessments for these individuals in a manner that optimizes workflow and minimizes redundancy with other aspects of care. Development of a mobility quality measure will facilitate assessments of the success of mobility interventions and mobility outcomes in older adults in acute care.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article.

Supplementary Appendix S1: The Case for Mobility Assessment in Hospitalized Older Adults: A White Paper from the American Geriatrics Society. In this White Paper, the American Geriatrics Society summarizes the literature on mobility loss during hospitalization in older adults and discusses the implications of low mobility. The Society also describe the current state of mobility assessment in acute and post-acute care settings, provides a narrative summary of mobility assessment tools and intervention strategies, and makes recommendations to promote routine mobility assessment.