

Early Mobility Management

How To Use This Guide

This AEBP provides evidence-based actions and resources for executives, leaders, clinicians, and performance improvement specialists. This document is intended to be used as a guide for healthcare organizations to examine their own workflows, identify practice gaps, and implement improvements. In it, you'll find:

Best Practice Summary: A high level summary of evidence-based, clinical best practices.

Executive Summary: Executives should understand the breadth of the problem and its clinical and financial implications.

Leadership Checklist: This section is for senior leaders to understand common patient safety problems and their implications related to early mobility management. Most preventable medical harm occurs due to system defects rather than individual mistakes. Leaders can use this checklist to assess whether best practices are being followed and whether action is needed in their organization around early mobility management.

Clinical Workflow: This section includes more specific information about early mobility management across the continuum of care. Leaders should include the people doing the work in improving the work. This section outlines what should be happening on the frontline. Clinicians can use this section to inform leaders whether there are gaps and variations in current processes. This is presented as an infographic that can be used for display in a clinical area.

Education for Patients and Family Members: This section outlines what frontline healthcare professionals should be teaching patients and family members about early mobility management. Clinicians can inform leaders whether there are gaps and variations in the current educational processes.

Performance Improvement Plan: If it has been determined that there are gaps in current practice, this section can be used by organizational teams to guide them through an improvement project.

What We Know about Early Mobility Management: This section provides additional detailed information about early mobility management.

Resources: This section includes helpful links to free resources from other groups working to improve patient safety.

Endnotes: This section includes the conflict of interest statement, workgroup member list, and references.

Citation: Patient Safety Movement Foundation. (2022). Early Mobility Management Actionable Patient Safety Solutions. Retrieved from <https://patientsafetymovement.org/community/apss/>



Early Mobility Management

Best Practice Summary

Mobility Deterioration Prevention

- Assess, document, and discuss mobility and function during primary care visits.
- Ensure patients and family members understand the relationship between mobility, health outcomes, and healthy behaviors.
- Discuss how patients can enhance their mobility and identify any treatments that may compromise their mobility (e.g., medications).

Mobility During Hospitalization

- Understand the patient's fall risk.
- Consult physical therapy if there's a discrepancy between patient-reported level of function and clinician-reported level of function.
- Use tools such as the Barthel Index Score to guide optimal care.
- Assess a patient's mobility continuously throughout their hospital stay and communicate this status with the patient and colleagues in hand-offs, rounds, and in the medical record.
- Continuously discuss treatments and interventions that may impact a patient's mobility by using an interdisciplinary approach to care.
- Display a patient's mobility status visibly and document appropriately in the medical record.
- Debrief after all mobility-related adverse events, such as falls.

Discharge

- Help the patient set realistic goals for mobility recovery after hospitalization.
- Communicate the patient's mobility status and needs appropriately with the primary care physician.



Early Mobility Management

Executive Summary

The Problem

Although daily mobility assessments are officially a part of nearly all hospital policies, many patients do not receive routine, comprehensive mobility management and therefore, the likelihood of costly and detrimental complications, such as pressure ulcers, pneumonia, and infection, increases significantly ([Musich et al., 2018](#); [Brown et al., 2009](#)). Furthermore, certain measures that compromise mobility are implemented by default without thorough consideration of the need, risks, and benefits of these interventions in the short term and in the long term (e.g., sedating all patients on a ventilator) ([Bailey et al., 2009](#)).

The Cost

The lack of proper and routine mobility management can lead to significant muscle weakening, prolonged ICU stay, and increased mortality rates due to tangentially-related complications ([Tasheva et al., 2020](#); [English & Paddon-Jones, 2010](#)). Compared to the more active hospitalized counterparts, immobile hospitalized seniors are six times more likely to be discharged to a long-term care facility and are over 35% more likely to die in the hospital ([CMAJ, 2012](#)). The organizational resources required for routine mobility prioritization for all patients would be minimal compared to the staggering risks associated with a lack thereof.

The Solution

Many healthcare organizations have successfully implemented and sustained improvements in early mobility management. This document provides a blueprint that outlines the actionable steps organizations should take to successfully improve early mobility and summarizes the available evidence-based practice protocols. This document is revised annually and is always available free of charge on our website.



Early Mobility Management

Leadership Checklist

Use this checklist as a guide to determine whether current evidence-based guidelines are being followed in your organization:

Understand attitudes and beliefs.

- Assess frontline attitudes and beliefs around patient mobilization to determine barriers ([Johns Hopkins, 2020](#)).
- Ensure adequate training and documentation of mobility competencies and skills.
- Create tools to help the frontline weigh the short term and long term risks versus benefits of mobility.
- Remain sensitive to various interpretations of 'early' and 'mobility' and standardize definitions and expectations.
- Incorporate into workflows.
- Ensure that routine mobility protocols are embedded into clinical workflows, whether electronic or paper.
- Hold staff accountable for providing the standard of care and reward success.
- Use a mobility scale suitable for the organization.
- Ensure that mobility documentation in the EHR reflects actual practice.
- Collaborate with primary care and post-hospitalization facilities to determine how to prioritize mobility into workflows across the continuum.
- Involve Patient and Family Advisory Councils (PFACs) or other patient representatives in reviewing patient-facing mobility educational materials.
- Ensure there are enough staff to effectively manage necessary sustainment, including staff members to aid in conversations around patient goal setting.

Measure progress.

- Measure and report early mobility compliance monthly. Note trends in areas with low compliance and high pressure ulcer, pneumonia, or falls incidence. Routinely reassess outcomes. Document reasons for non-compliance for additional training, workflow, and process changes.



Early Mobility Management

- Define and routinely share metrics associated with mobility (e.g., pressure ulcers) to make a case for mobility priority.
- Consider adopting virtual observation via technology tools to audit existing processes as necessary.

Improve continuously and consider how mobility management aligns with other organizational initiatives.

- Debrief on a regular basis to solicit team feedback about barriers to sustained compliance. Adjust the plan quickly and nimbly as needed.
- Ensure that leaders have a simple process to oversee mobility management improvement work while also considering how it aligns with other initiatives across the organization.



Early Mobility Management

Clinical Workflow

1. PRIMARY CARE

- Assess and document mobility and function.
- Explain to patients and family members why mobility is important and provide strategies to increase patient mobility.
- Explain any interventions that may compromise mobility (e.g., medications that impact balance)



2. ACUTE CARE ADMISSION

- Complete a falls risk assessment.
- Assess current treatments that may impact mobility.
- Recognize low mobility scores on admission.
- Complete patient reported level of function. Complete clinician reported level of function. If there's disagreement between the two values, consult physical therapy. Allow for input from extended care team (e.g., family members).



Early Mobility Management



3. ROUTINE CARE

- Establish baseline functional status and complete a falls risk assessment. Collect ambulatory status.
- Assess patient pain levels, current medications, etc.
- Complete patient reported level of function. Complete clinician reported level of function. If there's disagreement between the two values, consult physical therapy.
- Follow up on muscle waste with ultrasound muscle evaluation ([Toledo et al., 2021](#), [Cherry-Bukowiec, 2013](#)).
- Conduct early and frequent nutrition assessment ([Zhou et al., 2020](#); [Cherry-Bukoweic, 2013](#)).
- Obtain and document Barthel Index score for activities of daily living.
- Frequently use the bedside mobility assessment tool (BMS) to determine capacity for mobility (Perez, 2015).
- Select the appropriate safe patient handling equipment (Johns Hopkins, 2020).
- Verify need, risks, and benefits in the short term and in the long term for certain interventions that may compromise mobility (e.g., sedation, restraints, etc).
- Ensure mobility information is readily visible for all (e.g., posted on the door, etc).
- Document highest mobility achieved twice daily at a minimum. If a response to the below questions is “no”, maintain activity within that level. If the response is “yes”, consider moving to the next level:
 - **Level 1:** Ask the patient to move limbs and attempt rolling and turning.
 - Is the patient able to feel their arms and legs?
 - Can the patient lift their arms and legs?
 - **Level 2:** From a semi-reclined position, ask the patient to sit up to a seated position and rotate to the side.
 - Can the patient sit independently at the edge of the bed?
 - Can the patient lift legs and hold for five seconds or more
 - Can the patient sit up straight without using their arms?



Early Mobility Management

- **Level 3:** Have the patient stand at the edge of the bed and march in place.
 - Can the patient move independently to a standing position?
 - Can the patient march in place five times?
 - Is the patient able to maintain balance when taking one step forward and one step back?
- **Level 4:** Assist the patient in taking a few steps away from the bed. Use an assistive device as needed.
 - Is the patient able to maintain balance?
- **Level 5:** Assist the patient in taking a few steps away from the bed and around the room. Use an assistive device as needed.
 - Is the patient able to walk about the room and halls?
- Review current mobility status upon all transfers and hand-offs. See Hand-Off Communication AEBP.
- Reassess Barthel Index daily and adjust mobility plan. If mobility status begins to decline, prompt early engagement from the care team.
- Help the patient set realistic goals for mobility and ensure the patient understands the importance of continued mobility for their recovery. See Education for Patients and Family Members section.



4. DISCHARGE/TRANSFER/EXIT

- Help the patient set realistic goals for physical activity maintenance and help the patient understand what to expect post-discharge in terms of daily living. See Education for Patients and Family Members section.
- Discuss changes to the home environment that may need to be made.
- Ensure the patient has all equipment necessary to support their continued mobility.
- Create a follow up plan, with rehabilitation services.
- Debrief every adverse event (e.g., falls, delirium, pressure ulcers, functional loss).



Early Mobility Management

Education for Patients and Family Members

The outline below illustrates all of the information that should be conveyed to the patient and family members by someone on the care team in a consistent and understandable manner.

- Explain the importance of mobility and risks associated with lack of mobility.
- Share how the care team will assess for mobility and when.
- Discuss the risks patients have that will compromise their ability to ambulate.
- Explain interventions that may compromise mobility and justify those interventions (e.g., sedation).
- Describe all equipment that may be used.
- Include patients and family members as part of the team. Patients and family members can:
 - Be on the lookout for pressure ulcers and alert staff if noticed.
 - Ask if the patient's mobility status has improved, declined, or remained the same.
 - Ask for clarification about the frequency of mobility assessments and ensure that these assessments actually happen.
 - Understand what equipment might be used.
 - Monitor stability and balance and speak up if there are any concerns.
 - Understand why the patient is a fall risk.
 - Ensure that people do not touch the equipment if unnecessary. If necessary, ensure that they are qualified to do so and have performed proper mobility assessments.
 - Watch for any signs of lack of stability, including loss of balance, fatigue, or issues with equipment.
- Collaborate with patients for an adequate discharge plan that includes feasible steps for mobility management.
- Help patients understand their role in early mobility and identify things they can do to continue with their mobility routine (e.g., rearrange their home to encourage mobility).



Early Mobility Management

HOW INFORMATION IS TYPICALLY CONVEYED TO PATIENTS

“Ensure you are walking at least 25 feet twice per day.”

HOW TO IMPROVE

“I want to make sure you are walking at least 25 feet in your home twice per day. But there’s a lot that can make that challenging, such as pain or energy levels. Let’s talk about what is needed to help you fulfill that recommendation, starting with your pain medication and your home environment...”

Performance Improvement Plan

Follow this checklist if the leadership team has determined that a performance improvement project is necessary:

- Gather the right project team.** Be sure to involve the right people on the team. You’ll want two teams: an oversight team that is broad in scope, has 10-15 members, and includes the executive sponsor to validate outcomes, remove barriers, and facilitate spread. The actual project team consists of 5-7 representatives who are most impacted by the process. Whether a discipline should be on the advisory team or the project team depends upon the needs of the organization. Patients and family members should be involved in all improvement projects, as there are many ways they can contribute to safer care.



Early Mobility Management

RECOMMENDED EARLY MOBILITY IMPROVEMENT TEAM

- Physical therapists
- Occupational therapists
- Nurses
- Physicians
- Anesthesia providers
- Admitting and registration staff
- Central supply
- Quality improvement specialists
- Case management
- Social workers
- Psychologists

Table 1: Understanding the necessary disciplines for an early mobility improvement team. Be sure to include representatives from across the continuum of care (e.g., primary care providers and hospitalists).

- Understand what is currently happening and why.** Reviewing objective data and trends is a good place to start to understand the current state, and teams should spend a good amount of time analyzing data (and validating the sources), but the most important action here is to go to the point of care and observe. Even if team members work in the area daily, examining existing processes from every angle is generally an eye-opening experience. The team should ask questions of the frontline during the observations that allow them to understand each step in the process and identify the people, supplies, or other resources needed to improve patient outcomes.

Create a [process map](#) once the workflows are well understood that illustrates each step and the best practice gaps the team has identified ([IHI, 2015](#)). Brainstorm with the advisory team to understand why the gaps exist, using whichever [root cause analysis tool](#) your organization is accustomed to ([IHI, 2019](#)). Review the map with the advisory team and invite the frontline to validate accuracy.





Early Mobility Management

Complete this Lean Improvement Activity:

Conduct a [SIPOC](#) analysis to understand the current state and scope of the problem. A SIPOC is a lean improvement tool that helps leaders to carefully consider everyone who may be touched by a process, and therefore, should have input on future process design.

EARLY MOBILITY PROCESSES TO CONSIDER ASSESSING

- Routine assessment and adjustment of mobility status
- Use of Barthel Index and bedside mobility assessment tool
- Documentation of mobility level
- Changing of signs on patient's room
- Patient goal setting conversations
- Orders for discharge equipment
- Patient education around continued mobility post-discharge or exit
- Follow up with rehabilitation, nutrition and the attending physician
- Mobility data collection, analysis, and review
- Decision making when other interventions are considered that may compromise mobility (e.g., restraints, sedation)

Table 2: Consider assessing these processes to understand where the barriers contributing to delayed or inadequate mobility may be in your organization

- Prioritize the gaps to be addressed and develop an action plan.** Consider the cost effectiveness, time, potential outcomes, and realistic possibilities of each gap identified. Determine which are a priority for the organization to focus on. Be sure that the advisory team supports moving forward with the project plan so they can continue to remove barriers. Design an experiment to be trialed in one small area for a short period of time and create an action plan for implementation.



Early Mobility Management

TYPICAL GAPS IDENTIFIED IN EARLY MOBILITY MANAGEMENT

- Mobility is not prioritized in the care plan.
- Early mobility management is not a priority in the primary care setting before the patient is admitted to the hospital.
- The mobility assessment is not continuously repeated or repeated with a change in patient condition.
- Clinicians do not have access to longitudinal data to understand deterioration or improvement over time.
- Mobility is not considered as an intervention to prevent deterioration in other areas (e.g., respiratory management).
- Measures that compromise mobility are implemented by default (e.g., sedation) without considering how this intervention could compromise mobility.
- Different disciplines may assess and interpret mobility status differently.
- Mobility status from hospitalization is not communicated back to the primary care provider.
- Patients and family members interpret mobility status differently than the clinician. Equipment to facilitate early mobility is not readily accessible.
- Clinicians do not acknowledge the patient's fear of falling when working to implement early mobility interventions.
- The responsibility of early mobility management is placed on one discipline.
- It is assumed that the initial mobility assessment is sufficient throughout care despite changes.
- Fall risks are not recognized.
- Mobility processes are not audited or reviewed routinely.
- The family does not know their role in continuing mobility in the home setting.
- Patients do not have help in picking up and transporting durable medical equipment.
- There's no follow up post-hospitalization.
- Lack of accountability
- Clinicians may use different assessment tools.

Table 3: By identifying the gaps in early mobility compliance, organizations can tailor their project improvement efforts more effectively

Early Mobility Management

The action plan should include the following:

- Assess the ability of the culture to change and adopt appropriate strategies
- Revise policies and procedures
- Redesign forms and electronic record pages
- Clarify patient and family education sources and content
- Create a plan for changing documentation forms and systems
- Develop the communication plan
- Design the education plan
- Clarify how and when people will be held accountable



- Evaluate outcomes, celebrate wins, and adjust the plan when necessary.** Measure both process and outcome metrics. Outcome metrics include the rates outlined in the leadership checklist. Process metrics will depend upon the workflow you are trying to improve and are generally expressed in terms of compliance with workflow changes. Compare your outcomes against other related metrics your organization is tracking.

Routinely review all metrics and trends with both the advisory and project teams and discuss what is going well and what is not. Identify barriers to completion of action plans, and adjust the plan if necessary. Once you have the desired outcomes in the trial area, consider spreading to other areas ([IHI, 2006](#)).

It is important to be nimble and move quickly to keep team momentum going, and so that people can see the results of their labor. At the same time, don't move so quickly that you don't consider the larger, organizational ramifications of a change in your plan. Be sure to have a good understanding of the other, similar improvement projects that are taking place so that your efforts are not duplicated or inefficient.

[Read this paper](#) from the Institute for Healthcare Improvement to understand how small local steps



Early Mobility Management

EARLY MOBILITY MANAGEMENT METRICS TO CONSIDER ASSESSING

Process Measures

Mobility assessment and fall risk assessment upon admission

- Number of in-patient records with mobility assessment and fall risk assessment documented at the point of admission/Number of in-patient records*100%

Team communication of mobility score

- Number of patients with a visual indicator on the door of mobility status/Number of patients*100%

Bedside mobility assessment rate

- Number of in-patient records with bedside mobility assessment documented/Number of in-patient records*100%

Sedation vacation

- Appropriateness of sedation vacations

Patient mobility education during hospital stay

- In a post-discharge patient survey, ask questions such as “During your hospital stay, did your provider discuss the items above with you?”

Pre-discharge preparation

- Whether the patient received comprehensive pre-discharge preparation, which includes:
 - Patient education on setting realistic goals for physical activity maintenance and helping the patient understand what to expect post-discharge in terms of daily living
 - Helping patient set up home environment
 - Helping patient get access to the equipment or devices needed for their home-based recovery
 - Help patient navigate community resources
 - Scheduling consult with physical therapy and nutrition

Outcome Measures

Patient safety reports

- The percentage of patient safety events reported related to mobility (e.g., pressure ulcers, delirium, and falls, etc)

Table 4: Consider evaluating related metrics to better understand early mobility presence and contributing factors

Early Mobility Management

What We Know About Early Mobility Management

Early Mobility Management

Mobility refers to the physical activities necessary to maintain physical functioning of the patient. Managed mobility maintains muscle function and reduces the risk for falls. Without frequent and routine mobility, critically-ill patients are at a high risk for delirium, pressure ulcers, central venous catheter infections (CLABSI), catheter-associated urinary tract infections (CAUTI), sleep deprivation, decreased vital capacity, increased risk of aspiration, pneumonia, and other complications ([Providence Health & Services, 2020](#)).

Older adults are most susceptible to risks due to lack of mobility, as hospitalized seniors lose up to 5% of their muscle strength daily. Compared to their more active hospitalized counterparts, immobile hospitalized seniors are six times more likely to be discharged to a long-term care facility and are over 35% more likely to die in the hospital ([CMAJ, 2012](#)).

Each day of bed rest in the ICU lowers muscle strength between 3-11% in the following months ([John Hopkins, 2014](#)).

Cost

Inadequate mobility is a known risk factor for falls ([Growdon, Shorr & Inouye, 2017](#)). In 2015, the estimated medical costs attributable to both fatal and nonfatal falls was approximately \$50 billion. For nonfatal falls, Medicare paid approximately \$28.9 billion, Medicaid paid \$8.7 billion and private and other payers paid \$12 billion. Overall medical spending for fatal falls was estimated to be \$754 million ([Florence et al., 2018](#)).

Over the 20-year period from 2012 to 2030, the lifetime medical cost of treating falls is projected to increase from \$35 billion to over \$101 billion. These significant increases in costs cannot be absorbed by our current healthcare system. Fortunately, primary care physicians are well positioned to actively respond to the problem of older adult falls. There are evidence-based solutions but public recognition to the problem is urgently needed to implement these measures ([Houry et al., 2015](#)).

Early Mobility Management

Resources



- [American Physical Therapy Association: Elderly Mobility Scale](#)
- [CDC: Timed Up and Go](#)
- [Berg Functional Balance Scale](#)
- [Promoting Mobility and Reducing Length of Stay in Hospitalized General Medicine Patients: A Quality-Improvement Project](#)
- [Mobility Programs for the Hospitalized Older Adult: A Scoping Review](#)
- [AHRO: Nurse-Driven Early Mobility Protocols](#)
- [Johns Hopkins: Activity and Mobility Promotion \(JH-AMP\)](#)
- [Early Mobility in the Intensive Care Unit: Facilitator Guide](#)
- [North of England Falls in Care Home Programme](#)
- [Occupational therapy in the prevention and management of falls in adults: practice guidelines](#)
- Podcast: Walking Home from the ICU

For General Improvement:

- [CMS: Hospital Improvement Innovation Networks](#)
- IHI: A Framework for the Spread of Innovation
- The Joint Commission: Leaders Facilitating Change Workshop
- IHI: Quality Improvement Essentials Toolkit
- [SIPOC Example and Template for Download](#)
- [SIPOC Description and Example](#)



Early Mobility Management

Endnotes

Conflicts of Interest Disclosure

The Patient Safety Movement Foundation partners with as many stakeholders as possible to focus on how to address patient safety challenges. The recommendations in the APSS are developed by workgroups that may include patient safety experts, healthcare technology professionals, hospital leaders, patient advocates, and medical technology industry volunteers. Workgroup members are required to disclose any potential conflicts of interest.

Workgroup

| | |
|--------------------------------|---|
| Olivia Lounsbury | Patient Safety Movement Foundation |
| Michele Holt | Florida State College at Jacksonville |
| Anganette Cisneros | University of California, Irvine |
| Donna Prosser | Patient Safety Movement Foundation |
| Olabanji Mikail | Premier HIjrah Nigeria |
| Kali Dayton | Critical Care Consultant, LLC |
| Zaheer Ahmed | Manager Kanad Hospital |
| Sherry Henricks | Henricks Coaching & Consulting; Diagnotes, Inc. |
| Sarah Knowles | University Hospitals Cleveland Medical Center |
| Ernesto Arriaga Morales | Hospital San Ángel Inn Sur |

References

- American Physical Therapy Association. (2013). Elderly Mobility Scale (EMS). Retrieved from <https://www.apta.org/patient-care/evidence-based-practice-resources/test-measures/elderly-mobility-scale-ems>
- AMP Toolkit. (2020). Dropbox. https://www.dropbox.com/sh/zq1k86xfuk59e8b/AAAADey_a0MePm-bxKpJd5WNNa?dl=0&preview=Barriers+Survey+AMP.pdf
- Barthel, & Mahoney. (1965). The Barthel Index. Retrieved from <http://www.strokecenter.org/wp-content/uploads/2011/08/barthel.pdf>
- Brown, C. J., Redden, D. T., Flood, K. L., & Allman, R. M. (2009). The Underrecognized Epidemic of Low Mobility During Hospitalization of Older Adults. *Journal of the American Geriatrics Society*, 57(9), 1660–1665. <https://doi.org/10.1111/j.1532-5415.2009.02393.x>

Early Mobility Management

- CDC. (2013). Timed Up & Go. Retrieved from https://www.cdc.gov/steady/pdf/TUG_Test-print.pdf
- CDN. (1992). BERG FUNCTIONAL BALANCE SCALE. Retrieved from <https://cdn.ymaws.com/www.fpta.org/resource/resmgr/imported/Balance%20Assesments.pdf>
- Cherry-Bukowiec, J. R. (2013). Optimizing Nutrition Therapy to Enhance Mobility in Critically Ill Patients. *Critical Care Nursing Quarterly*, 36(1), 28–36. <https://doi.org/10.1097/cnq.0b013e31827507d7>
- Clay, K. (2021, June 5). How to Complete the SIPOC Diagram. Sixsigma DSI. <https://sixsigmadsi.com/how-to-complete-the-sipoc-diagram/>
- CMS. (2020). Partnership for Patients. Retrieved from <https://innovation.cms.gov/innovation-models/partnership-for-patients>
- English, K. L., & Paddon-Jones, D. (2010). Protecting muscle mass and function in older adults during bed rest. *Current Opinion in Clinical Nutrition and Metabolic Care*, 13(1), 34–39. <https://doi.org/10.1097/mco.0b013e328333aa66>
- Florence, C. S., Bergen, G., Atherly, A., Burns, E., Stevens, J., & Drake, C. (2018). Medical Costs of Fatal and Nonfatal Falls in Older Adults. *Journal of the American Geriatrics Society*, 66(4), 693–698. <https://doi.org/10.1111/jgs.15304>
- Growdon, M. E., Shorr, R. I., & Inouye, S. K. (2017). The Tension Between Promoting Mobility and Preventing Falls in the Hospital. *JAMA Internal Medicine*, 177(6), 759. <https://doi.org/10.1001/jamainternmed.2017.0840>
- Heinemann, A. W., Wilson, C. S., Huston, T., Koval, J., Gordon, S., Gassaway, J., Kreider, S. E., & Whiteneck, G. (2012). Relationship of psychology inpatient rehabilitation services and patient characteristics to outcomes following spinal cord injury: The SCIREhab Project. *The Journal of Spinal Cord Medicine*, 35(6), 578–592. <https://doi.org/10.1179/2045772312y.00000000059>
- Hopkins Medicine. (2014). Longer Stay in Hospital ICU Has Lasting Impact on Quality of Life. Retrieved from https://www.hopkinsmedicine.org/news/media/releases/longer_stay_in_hospital_icu_has_lasting_impact_on_quality_of_life
- Houry, D., Florence, C., Baldwin, G., Stevens, J., & McClure, R. (2015). The CDC Injury Center's Response to the Growing Public Health Problem of Falls Among Older Adults. *American Journal of Lifestyle Medicine*, 10(1), 74–77. <https://doi.org/10.1177/1559827615600137>
- Institute for Healthcare Improvement. (2006). A Framework for Spread: From Local Improvements to System-Wide Change. Retrieved from <http://www.ihl.org/resources/Pages/IHIWhitePapers/AFrameworkforSpreadWhitePaper.aspx>
- Institute for Healthcare Improvement. (2017). QI Essentials Toolkit. Retrieved from <https://drive.google.com/file/d/1P4oii152wJufOb78ILeSgUt9RaOTFL2/view>
- Institute for Healthcare Improvement. (2019). Patient Safety Essentials Toolkit. Retrieved from <http://www.ihl.org/resources/Pages/Tools/Patient-Safety-Essentials-Toolkit.aspx>
- Joint Commission Center for Transforming Healthcare. (2020). Leaders Facilitating Change Workshop. Retrieved from <https://www.centerfortransforminghealthcare.org/products-and-services/leaders-facilitating-change-workshop/>



Early Mobility Management

- Little, K., & Barbati, M. (2015). 5 Steps for Creating Value Through Process Mapping and Observation. Retrieved from <http://www.ihi.org/communities/blogs/5-steps-for-creating-value-through-process-mapping-and-observation>
- Longer stay in hospital ICU has lasting impact on quality of life - 04/02/2014. (2014). Johns Hopkins Medicine. https://www.hopkinsmedicine.org/news/media/releases/longer_stay_in_hospital_icu_has_lasting_impact_on_quality_of_life
- Measurement Tools - English. (2021). Dropbox. https://www.dropbox.com/sh/zq1k86xfuk59e8b/AAD4gdeodl4J5TJRdbjRWf_Ga/Measurement%20Tools%20-%20English?dl=0&preview=-Johns+Hopkins+AMP+Safe+Patient+Handling+JH-SPHM+Guide+User+Manual.pdf&subfolder_nav_tracking=1
- MediaBrains Inc. (2020). Patient Mobility Aids. Retrieved from <https://www.medical-equipment-and-supplies.com/category/patient-mobility-aids>
- Momsen, A., Rasmussen, J., Nielsen, C., Iversen, M., & Lund, H. (2012). Multidisciplinary team care in rehabilitation: An overview of reviews. *Journal of Rehabilitation Medicine*, 44(11), 901–912. <https://doi.org/10.2340/16501977-1040>
- Musich, S., Wang, S. S., Ruiz, J., Hawkins, K., & Wicker, E. (2018). The impact of mobility limitations on health outcomes among older adults. *Geriatric Nursing*, 39(2), 162–169. <https://doi.org/10.1016/j.gerinurse.2017.08.002>
- Providence Health & Services. (2020). Early Mobility Benefits Patients in the Critical Care Unit. Retrieved from <https://oregon.providence.org/forms-and-information/e/early-mobility-benefits-patients-in-the-critical-care-unit/>
- Perez, A. (2015). BMAT- Bedside Mobility Assessment Tool. Retrieved from <https://www.uclahealth.org/nursing/workfiles/ContinuingEducation2015/TeachBack/UmoveBMAT-TrainingPresentation.pdf>
- SIPOC Diagrams. (2020). SIPOC Templates. Retrieved from <https://sipoc.info/templates/>
- Stall, N. (2012). Tackling Immobility in Hospitalized Seniors. doi:10.1503/cmaj.109-4281
- Tasheva, P., Vollenweider, P., Kraege, V., Roulet, G., Lamy, O., Marques-Vidal, P., & Méan, M. (2020). Association Between Physical Activity Levels in the Hospital Setting and Hospital-Acquired Functional Decline in Elderly Patients. *JAMA Network Open*, 3(1), e1920185. <https://doi.org/10.1001/jamanetworkopen.2019.20185>
- Toledo, D. O., Freitas, B. J. D., Dib, R., Pfeilsticker, F. J. D. A., Santos, D. M. D., Gomes, B. C., & Silva-Jr, J. M. (2021). Peripheral muscular ultrasound as outcome assessment tool in critically ill patients on mechanical ventilation: An observational cohort study. *Clinical Nutrition ESPEN*, 43, 408–414. <https://doi.org/10.1016/j.clnesp.2021.03.015>
- Zhou, W., Shi, B., Fan, Y., & Zhu, J. (2020). Effect of early activity combined with early nutrition on acquired weakness in ICU patients. *Medicine*, 99(29), e21282. <https://doi.org/10.1097/md.00000000000021282>