The Johns Hopkins Activity and Mobility Promotion Program

OPEN

A Framework to Increase Activity and Mobility Among Hospitalized Patients

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ABSTRACT

Background: Greater mobility and activity among hospitalized patients has been linked to key outcomes, including decreased length of stay, increased odds of home discharge, and fewer hospital-acquired morbidities. Systematic approaches to increasing patient mobility and activity are needed to improve patient outcomes during and following hospitalization.

Problem: While studies have found the Johns Hopkins Activity and Mobility Promotion (JH-AMP) program improves patient mobility and associated outcomes, program details and implementation methods are not published.

Approach: JH-AMP is a systematic approach that includes 8 steps, described in this article: (1) organizational prioritization; (2) systematic measurement and daily mobility goal; (3) barrier mitigation; (4) local interdisciplinary roles; (5) sustainable education and training; (6) workflow integration; (7) data feedback; and (8) promotion and awareness.

Conclusions: Hospitals and health care systems can use this information to guide implementation of JH-AMP at their institutions.

Keywords: hospital, immobility, interprofessional, quality improvement, Translating Research Into Practice (TRIP) model

Immobility and bed rest are common during the more than 35 million hospitalizations that occur every year in the United States.[1] Many hospitalized patients will experience negative outcomes associated with immobility, such as difficulty rising from a chair, toileting, or ambulating.[2-4] These impairments can lead to increases in hospital length of stay (LOS), morbidities such as pressure injuries, the need for postacute inpatient rehabilitation, increased utilization of postacute services, and decreased quality of life for months or years following hospital discharge.[5-9] Despite the body of evidence showing the negative outcomes associated with immobility and bed rest, these problems persist in many health care systems. Systematic approaches to minimizing in-bed time and maximizing inpatient mobility and activity are crucial to preventing these negative outcomes.

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One of the most recognized models for addressing harms associated from immobility stemmed from quality improvement studies completed in the Johns Hopkins medical intensive care unit (MICU). Those studies, focused largely on early rehabilitation and decreasing deep sedation, demonstrated it was possible to increase patient mobility levels in the MICU, which led to decreases in LOS for patients admitted to the unit.[10,11] This MICU program was built on the Translating Research Into Practice (TRIP) model, an implementation science framework designed to take knowledge, in this case the need for greater hospital patient mobility, and turn it into routine clinical practice.[12] The TRIP model directs that the health care intervention be placed in the context of the whole health system and then includes 4 steps: (1) summarize the evidence, (2) identify local barriers to implementation, (3) measure performance, and (4) ensure all patients receive the intervention through the continuous quality improvement cycle of the 4 Es (engage, educate, execute, and evaluate).

Despite the successes we observed in the MICU at our institution, these increases in mobility did not continue when patients left the MICU, a finding observed at other hospitals as well.[13-17] Mobilizing hospitalized patients outside of the MICU has unique challenges that require greater interprofessional collaboration with an emphasis on nurse-driven mobility. With this in mind, a new approach was developed, anchored in the TRIP model, focused on increasing activity and mobility among hospitalized patients on general-surgical-medicine units. The initial goals of this program included (1) mobilization of each patient 3 times per day, (2) daily documentation of patient mobility levels on the Johns Hopkins Highest Level of Mobility (JH-HLM) scale, (3) creation of daily mobility goals for patients using the JH-HLM, (4) safe patient handling training for nurses on the unit, and (5) incorporation of mobility levels and goals into daily workflows (ie, multidisciplinary rounds).

This earlier version of the Johns Hopkins Activity and Mobility Promotion (JH-AMP) program was implemented and evaluated at our institution, and data indicated it was associated with a reduction in LOS of approximately half a day on average.[18] While smaller in scale, this initial project garnered great interest from our institution and we sought to implement this program hospital-wide. We also recognized that implementing this program would require a more defined framework than the one used in our initial quality improvement study. We also used our experiences to identify barriers to implementing this program on a larger scale, such as the need for more formal nurse training and support infrastructure and a more patient-centered approach to setting individualized mobility goals. These overall efforts and program evaluation led to the development of the current JH-AMP program.

Given the importance of patient activity and mobility among hospitalized patients, it is the goal of this article to share our experiences in developing the JH-AMP program and the core components of the current JH-AMP program. The purpose of this article is to describe the core components of JH-AMP, as well as to provide recommendations for implementing each of these components to facilitate implementation at other institutions.

CORE COMPONENTS OF THE JOHNS HOPKINS ACTIVITY AND MOBILITY PROMOTION PROGRAM

There are 8 core components of the JH-AMP program, each of which was designed to address one or more steps in the TRIP model. These include: (1) organizational prioritization; (2) systematic measurement and daily mobility goal; (3) barrier mitigation; (4) local interdisciplinary roles; (5) sustainable education and training; (6) workflow integration; (7) data feedback; and (8) promotion and awareness. JH-AMP core components with their corresponding TRIP model steps are shown in the Table.

Organizational prioritization

Prioritizing JH-AMP across all levels of hospital leadership is a critical first step to successful implementation. Most hospital systems have several competing priorities, and quality improvement projects without appropriate support will not be successful. Achieving institutional support is accomplished by educating c-suite level leaders on the current problem (patient immobility) and the proposed solution (JH-AMP). In addition to the clinical benefits of increasing patient mobility, these leaders should be educated on the potential of JH-AMP to synergize with safety and quality initiatives (eg, falls, pressure injuries, and delirium) and strategic

Table. Matching Johns Hopkins Activity and Mobility Promotion Program Core Components With TRIP Model Steps

JH-AMP Core Components	TRIP Model Steps
Organizational prioritization	Place in the context of the whole health system Summarize the evidence
Systematic measurement and daily mobility goal	Measure performance, evaluate
Barrier mitigation	Identify local barriers to implementation
Sustainable education and training	Summarize the evidence, educate
Mobility advocate infrastructure	
Workflow integration	Engage, educate, execute, evaluate
Data feedback	
Promotion and awareness	

Abbreviations: JH-AMP, Johns Hopkins Activity and Mobility Promotion; TRIP, Translating Research Into Practice.

cost-reduction initiatives (eg, LOS, discharge planning, and readmission reductions).

Once high-level institutional support has been obtained, the central JH-AMP team should be assembled and resourced appropriately to provide technical support for local implementation. Additionally, the central team will serve as a conduit for shared best practice and opportunities to realize efficiencies in implementation. Participating hospitals should identify an executive sponsor(s) who will help ensure accountability and elevate JH-AMP as a priority. JH-AMP must also have the support of the director of nursing (or equivalent) and nurse managers for each participating unit. Each hospital must also engage a physician leader(s) and a director of rehabilitation (or equivalent) leader. We also recommend engaging informatics, clinical education, and internal communications/marketing.

Systematic measurement and mobility goal

Establishing common metrics for assessing patients' capacity for physical function and measuring their performance of mobility is an essential component of JH-AMP. Standardized measurement across clinical disciplines (eg, nurse, physicians, and rehabilitation therapists) clearly identifies changes in patient function and quantifies success of mobility and activity promotion efforts. The tools utilized as part of the JH-AMP program are the Activity Measure for Post-Acute Care (AM-PAC) Inpatient Short Forms and the Johns Hopkins Highest Level of Mobility (JH-HLM). A key component of JH-AMP is that physical capacity (AM-PAC) and actual patient performance (JH-HLM) are measured separately, allowing the clinical team to set individualized mobility goals and monitor patient progress toward these goals. Both of these tools have also been shown to have excellent interrater reliability between nursing and physical therapists.[19,20]

Individualized patient mobility goals are determined using the Johns Hopkins Mobility Goal Calculator (JH-MGC). The JH-MGC utilizes nursing AM-PAC scores to suggest a mobility goal on the JH-HLM scale (see the Supplemental Digital Content Figure, available at: http://links.lww.com/JNCQ/B52). Implementation of the JH-MGC has been associated with increases in patient mobility among hospitalized patients.[21] This goal should be communicated to all care providers, the patient, and included in multidisciplinary rounds. For successful JH-AMP implementation, the AM-PAC and the JH-HLM with goal calculator function must be built into the electronic medical record.

Barrier mitigation strategy

As with other quality improvement projects, it is important to assess potential barriers to implementing JH-AMP at individual hospitals and units. A previously developed barrier survey can be distributed to frontline providers (physicians, nurses, and rehabilitation therapists) on participating units.[22] This survey can be used to assess knowledge, attitudes, and behaviors related to keeping patients active and mobile in the hospital. Survey responses should be reviewed by the local and central teams, and then frontline staff

debriefed on the results of the survey and barrier mitigation plans prior to JH-AMP go-live. Common barriers to patient mobilization reported in the past include time constraints, lack of training, and low patient motivation.[22]

Initial and subsequent barrier mitigation plans should include: (1) prioritized actions, (2) person(s) responsible, (3) action timelines, and (4) additional stakeholders to be engaged. JH-AMP suggests establishing several recurring biweekly to monthly local and central project management meetings to monitor barrier actions. The project management teams engage essential stakeholders to drive specific barrier actions including but not limited to the electronic medical report, physical space, financing, clinical education, and clinical practice. This project management process follows the TRIP model of continuous quality improvement establishing a cycle of process evaluation, barrier identification, and solution seeking.

Local interdisciplinary roles

Every hospital unit that deploys JH-AMP should create its own multidisciplinary mobility team. This includes unit nurse managers, nurse educators, and frontline nursing staff identified as *mobility advocates*. Nurse managers monitor unit performance (eg, percentage of patients meeting mobility goals), disseminate feedback regarding unit performance to unit staff, and identify and address unit-level barriers to meeting these goals. Nurse educators ensure that all staff, including new hires, complete required JH-AMP training and provide training to address unit-level barriers to mobilizing patients. Frontline nursing staff selected to be mobility advocates receive specialized training (described in the following section).

Mobility advocates serve as just-in-time resources at the bedside and on the unit. Additionally, mobility advocates serve as a direct link to nursing leadership. Each unit should identify a primary and secondary mobility advocate, which should be nurses. Additional mobility advocates can be technicians or nursing aides. The number of mobility advocates on each unit should be equivalent to 10% of unit nursing staff or at least 4 mobility advocates. This number of mobility advocates is recommended to ensure availability across different shifts and to mitigate risks associated with staff turnover. Frontline staff who champion fall prevention, safe patient handling, delirium prevention, or pressure injury prevention taskforces are highly encouraged to be mobility advocates as well to ensure integrative efforts to promote safe mobility.

Rehabilitation therapists serve as both consultants and interventionalists within the acute hospital; however, they are rarely able to consult and follow up on all patients. To optimize resources, therapists should serve as content-area experts regarding patient mobility and support the needs of mobility advocates and frontline personnel through just-in-time training and consultation. This enables nursing to independently manage high-functioning patients not requiring rehabilitation therapists and to best support patients with rehabilitation plans of care beyond the rehabilitation visit. It also enables rehabilitation therapists to increase resources dedicated to patients with the greatest functional impairment.[23]

Physicians help to ensure that patient mobility remains a unit-level priority during rounds by integrating patient mobility goals and performance into care plan objectives. Physicians specifically promote mobility by setting the expectation for the patient and caregivers that mobility is a priority and minimalizing barriers to mobility (eg, reducing lines, tubes, drains; pain management).

Sustainable education and training

Formal education and training are essential to implementation efforts, as this helps promote consistency between individual providers and can also be used to address identified barriers to implementation. The educational components of JH-AMP consist of (1) *mobility advocate training* and (2) *frontline clinician and staff training*. Mobility advocate training is required of all mobility advocates. It includes a combination of asynchronous and synchronous training on the importance of activity and mobility for hospitalized patients, using functional assessment tools (AM-PAC, JH-HLM) and the JH-MGC, mobilizing patients safely and using safe patient handling equipment, using appropriate techniques and equipment to engage patients in mobility activities including addressing patient refusals, and using teach-back methods to communicate the importance of hospital activity and mobility. At the conclusion of training, all participants must complete a mobility advocate skills competency to receive certification as a mobility advocate.

General frontline clinician and staff training is shorter in length and is performed using asynchronous learning. The JH-AMP team created a course composed of 6 online education modules on the importance of activity and mobility for hospitalized patients; use of the AM-PAC, JH-HLM tools and JH-MGC tools; overcoming patient refusals; and moving patients safely. Frontline staff training concludes with a frontline mobility skills competency (eg, correctly scoring AM-PAC, demonstrating safe mobilization techniques), which should be repeated annually in a format deemed appropriate by local leadership.

Workflow

For effective implementation, JH-AMP needs to be incorporated into existing electronic and human workflows for nursing, physicians, rehabilitation therapists, and case management. Team members should communicate patient mobility levels and goals during clinical handoffs, multidisciplinary rounds, and bedside rounding, with goals displayed in highly visible areas (eg, white boards and signage). All team members should know the patient's mobility goal, their progress toward the goal, and address barriers to reaching this goal (eg, minimizing lines, tubes, and drains; managing pain). Patient mobility status and whether patient has been meeting goals should be included on all census reports and patient lists. Patients should be educated on the importance of activity and mobility during admission and the importance of working toward daily mobility goals. Lastly, AM-PAC scores should be utilized early during inpatient stays to identify patients likely to require postacute placement.[7,24]

Data feedback

A critical component of implementing JH-AMP is to provide data feedback to stakeholders and frontline clinical staff. The JH-AMP program includes 3 key performance indicators (KPIs): (1) AM-PAC and JH-HLM documentation compliance, (2) mobility goal achievement as determined by the JH-MGC, and (3) rehabilitation consult utilization. These KPIs should be built into recurring unit meetings. During these sessions, nursing units should review the proportion of patients on the unit meeting goals, identify ongoing barriers to meeting goals, and review potential solutions to these barriers.

The goal for the first KPI is that each patient will have a documented nursing AM-PAC score and JH-HLM score at least once per day. This documentation is critical as the AM-PAC mobility score is used to set the mobility goal for the day on the JH-HLM scale. The achievement of the goal is documented as their JH-HLM score. Without documentation of these metrics, goals cannot be set, and goal achievement cannot be measured. Target for documentation should be set and shared with the staff to be effective in tracking the progress. The second KPI focuses on the number of patients meeting their daily mobility goals, set using the JH-MGC. This provides insight on the level of mobility of patients compared with their physical capacity and is reported for each hospital unit and/or department. These reports are built with patients stratified by JH-HLM goal ranges (3-5, 6, and 7-8) to provide feedback on patient goal achievement among those with similar mobility levels.

The third KPI focuses on the number of rehabilitation therapist (physical and occupational) consults used on each unit stratified by AM-PAC scores. Previous studies have found that nursing AM-PAC scores can help to identify lower-value rehabilitation consults and that reducing the number of consults for patients with the maximum AM-PAC score of 24 (no impairment) allows therapists to spend more time with patients at higher levels of physical impairment.[23] We advocate that higher AM-PAC values (eg, 23 and 24) should be considered guidelines and not absolute cut points to trigger or prevent therapy consultations.

Promotion and awareness

Promotion and awareness are critical components of sustaining effort in all quality improvement projects. JH-AMP includes promotion and messaging materials to bolster program visibility and prevent momentum loss. Central and local promotion and awareness plans are required for patients, caregivers, and clinicians. JH-AMP utilizes the #everyBODYmoves brandmark and consistent design and color schemes to assure message consistency and awareness.

The JH-AMP promotion and awareness strategy focuses on both clinicians and patients. For clinicians, the message strategy includes 3 key messages: (1) evidence supporting the benefits of mobility and the harms of immobility; (2) JH-MGC and patient daily goal awareness; and (3)

for a given JH-HLM level, what activities could be performed. For patients, the message strategy focuses on (1) the benefits of mobility and harms of immobility, (2) the expectation that mobility is essential to recovery, and (3) specific activities that patients can perform throughout the day to achieve their mobility goal. Tactics to increase awareness include public LCD screens, posters, computer screen savers, and mousepads. Materials are translated as needed within the organization based on need. Examples can be found in the Supplemental Digital Content Appendix (available at: http://links.lww.com/JNCQ/B53).

Additionally, regularly occurring mobility advocate meetings allow for exchange of grassroots best practices among units and hospitals to drive awareness. The creativity of mobility advocates is encouraged and has resulted in the development of patient and clinician games/competitions, in-room signage, patient education, and videos, which have been disseminated as best practices across other units and hospitals.[25] At a system level the central JH-AMP has developed the #everyBODYmoves Mobility-a-Thon, a focused 72-hour event focused on "making mobility a priority." This event is supported by executive leadership rounding, unit-based competitions, and social media. This event creates a rallying point for all stakeholders from the bedside to the boardroom to focus on the mobility quality improvement effort.

DISCUSSION

In this article, we have provided an overview of the core components of the JH-AMP program and recommendations for implementing the JH-AMP program. However, it is important to recognize that the level of detail needed to actually implement this program at a specific location or in a specific health system is beyond the scope of this article. Each site and health system brings unique challenges to this process, and the method used to implement each of the JH-AMP core components should be tailored to the individual site or health system. It is our intent that this article serve as a framework rather a complete guide to implementation.

It is also important to recognize that there are other programs developed to combat the immobility harm among hospitalized patients. In contrast to JH-AMP, these programs often focus on specific patient groups or specific patient outcomes. For example, the Hospital Elder Life Program (HELP) includes interventions focused on improving patient mobility as part of preventing delirium among older adults.[26] The STRIDE program is an inpatient mobility program developed and tested in Veterans Affairs Medical Centers promoting supervised walking among older veterans.[27,28] The Ban Bedcentricity program focuses on improving inpatient mobility primarily through the use of patient and clinician education on the harms of immobility and the benefits of physical activity.[29] The Mobilization of Vulnerable Elders (MOVE) program is a mobility promotion program based out of Canada that focuses on progressive daily activity and mobility for vulnerable older adults.[30] Each of these programs takes a different approach to improving activity and mobility levels based on their target audience and patient population. Hospitals and health systems should identify the program that best fits their needs and goals.

CONCLUSIONS

Systematic inpatient mobility programs are needed to increase mobility among hospitalized patients, improve patient outcomes, and decrease the cost of care. The JH-AMP program is an evidence-based solution to increasing patient mobility that can be implemented at other hospitals utilizing the core components detailed in this article.

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