The Benefits of Monitoring Patient Mobility

Improving Patient Outcomes, Preventing Hospital-Acquired Conditions, and Reducing Readmissions

Abstract

Studies show that encouraging hospitalized patients to move more helps them heal faster and reduces their risk for developing hospital-acquired condition (HACs), which are costly and life-threatening conditions that are considered preventable. New technology now makes it possible to electronically monitor and automatically document a patient’s mobility progression to help avoid the serious complications associated with immobility.
**Background**

The increasing focus on patient outcomes has placed a premium on maximizing the effectiveness of care and reducing the incidence of hospital-acquired conditions (HACs), which include conditions such as pressure ulcers, pneumonia, and blood clots. HACs prolong hospital stays, permanently harm patients, and can even result in death. HACs are also a leading cause of patient readmissions.

Studies show that preventable HACs are inflating the cost of care by nearly 10 percent and needlessly extending hospital stays. Other research finds that patients who develop HACs are 20 percent - 33 percent more likely to be readmitted to the hospital within 30 days of their discharge.

As a result, the cost of potentially preventable complications represents $88 billion in avoidable expenses for the United States healthcare system.

Under the Affordable Care Act, the federal government is trying to reduce the occurrence of HACs by financially penalizing hospitals where they occur too frequently.

In fiscal year 2015, the federal Hospital-Acquired Condition (HAC) Reduction Program imposed the first penalties on 724 hospitals—roughly one in five eligible institutions. Their Medicare reimbursements were reduced by 1 percent. In fiscal year 2016, the number of penalized hospitals rose to 758. In total, almost 1,500 hospitals have lost about $700 million in reimbursements.

**Benefits of Patient Mobility: Speedier Recovery**

Research shows that patient mobility speeds healing and improves patient outcomes. By improving patient mobility, many HACs like pressure ulcers, pneumonia, falls, and blood clots may be avoided.

Dr. Dale Needham, assistant professor in the Division of Pulmonary and Critical Care Medicine and Department of Physical Medicine and Rehabilitation at the Johns Hopkins University School of Medicine, did a systematic review of 24 studies that focused on ICU patients with sepsis, prolonged mechanical ventilation and multiple organ failure.

“It’s becoming clear that the safety and benefits of early mobilization are real and that it’s better to get moving sooner rather than later,” Dr. Needham wrote.

Improved patient mobility is also a good predictor of length of stay and discharge disposition for patients who have suffered a stroke. In a study conducted at the Burke Rehabilitation Hospital (Weill Medical College of Cornell University), Doctors Meheroz Rabadi and Alan Blau looked at 373 stroke patients who were consecutively admitted to a designated inpatient stroke rehabilitation unit. The patients were divided into two groups: one of fast-mobility patients, who walked faster than 0.15 meters per second, and a second group of slower patients. Ambulation velocity alone was found to be highly predictive of hospital length of stay and discharge disposition, highlighting the importance of measuring this important metric.

Numerous studies have proven the benefits of monitoring and encouraging patient mobility. Steve R. Fisher, and his colleagues at the Division of Rehabilitation Sciences,
The science is compelling. Repeated studies have shown that improved patient mobility reduces length of stay, improves outcomes, and reduces the likelihood of a hospital readmission within 30 days of discharge.

- A Cleveland Clinic study\(^\text{12}\) showed that improved patient movement (initially in bed, then progressively sitting, standing and walking) had a major impact on recovery for patients who had experienced strokes, brain tumors, and other neurologic conditions. The study from the Cleveland Clinic also found direct, indirect, and total hospital costs were reduced by nearly a third for patients who were mobilized versus those who received standard care.

- A 2012 study\(^\text{13}\) showed that early mobilization was a safe and effective intervention that can have a significant impact on functional outcomes in intensive care unit patients.

- For pregnant women, studies have shown that the labor process is shortened and the risk of caesarean birth is reduced in mothers who are upright and mobilized\(^\text{14}\) during labor. However, most mothers in labor are given epidurals and tend to lie in their labor room beds without moving frequently.

The Financial Implications: Cost Savings

The financial benefits of improving patient mobility are clear. When patients experience therapeutically beneficial movement, they not only heal better—they can often trim a day or two from their hospital stays. Reducing the hospital length of stay reduces their real hospitalization costs and lowers the likelihood that they will be exposed to complication-causing infections from other patients (i.e. C-Diff, pneumonia, etc.).

Studies have found:

- In patients with community-acquired pneumonia (CAP), improved mobility during their hospitalization can significantly decrease their length of stay. In these patients, even small decreases in length of stay can reduce hospitalization costs up to $846 per episode of CAP, which equates to $500 million - $900 million in annual cost savings across the US.\(^\text{15}\)

- Rapid mobilization of total joint replacement patients can be accomplished safely and reduces the overall length of hospital stay in more than 70 percent of patients.\(^\text{16}\)

- Encouraging early mobility in patients recovering from primary total hip arthroplasties—combined with other adjustments in perioperative care to intensify the team approach—can "effectively cut hospital LOS in half across all surgical areas without causing an associated increase in readmissions. Given the imminent reimbursement pressures by the Affordable Care Act and Accountable Care Act
and Accountable Care Organizations to reduce cost, optimize quality and minimize risk, we have demonstrated a safe reduction in hospital stay associated with incremental perioperative protocol improvements.”

The findings have encouraged a growing consensus on the value of improving patient mobility. But the financial value can only be maximized with the development of appropriate goals, reliable monitoring methods, and strategic plans to promote patient mobility, said Christiane Perme and Rohini Chandrashekar in their study, “Early mobility and walking program for patients in intensive care units: creating a standard of care.”

Equally important is broader use of “reliable and valid instruments [that can isolate] the effects of mobility interventions, and such mechanisms are lacking,” wrote Dr. Ji Yeon Choi and her colleagues in “Mobility Interventions to Improve Outcomes in Patients Undergoing Prolonged Mechanical Ventilation: A Review of the Literature.” Without reliable instruments to monitor patient mobility, it is difficult to effectively manage mobility protocols.

**The Challenge is Making Sure Patients Move Enough**

Until recently, there have not been reliable ways to accurately monitor a patient’s progress along the mobility continuum.

Historically, clinicians have relied on personal experiences, patient self-reports, and their best guesses about a patient’s ability to move—and whether those movements are actually occurring. Today, for the first time, technology is available to electronically monitor patient mobility and automatically document a patient’s progress along a prescribed mobility protocol. The Leaf Patient Monitoring System is the first technology available to track patient movement and activity—whether those patients are bed-bound, chair-bound, or ambulatory.

The Leaf system continuously analyzes all patient movements in order to help ensure that prescribed mobility goals are being met. The easy-to-use system is composed of three main components:

- **Patient Sensor:** A wireless, disposable sensor attaches to patients using an industry-leading, medical-grade adhesive. The sensor automatically recognizes when it is attached to a patient and immediately begins monitoring the patient’s position and activity.

- **Wireless Network and Data Server:** All patient movement data, including turns in bed, number of bed-exits, steps taken, distance traveled, time spent sitting, and time spent ambulating is transmitted wirelessly, via a plug-and-play wireless network, to any web-enabled device (i.e. wall displays, desktop computers, tablets, smartphones, etc.).

- **User-Interface:** The Leaf user-interface provides useful information at a glance, with patient turn priority, progress toward mobility goals, and alerts to actionable items clearly displayed in a visual manner that avoids contributing to nuisance alarms and alarm fatigue.

The Leaf Patient Monitoring System allows care providers to reliably monitor a patient’s current mobility status and overall progress. This monitoring tool enables more effective

Without reliable instruments to monitor patient mobility, it is difficult to effectively manage mobility protocols.
coordination of patient mobility protocols, which streamlines workflows and improves staff efficiency. By maximizing patient mobility, patients will leave the hospital faster, healthier, and far less likely to require readmission.

References

5. CMS. “Hospital Acquired Condition (HAC) Reduction Program. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program.html

About Leaf Healthcare, Inc.
Leaf Healthcare creates wireless patient monitoring solutions for health care providers who are seeking more efficient and cost effective ways to improve patient safety and clinical outcomes.

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