

# The Financial Benefits to Monitoring Patient Mobility

Increased mobility can reduce length of stay.

## Abstract

Patient immobility has been linked to a number of serious and costly hospital complications, including pressure injuries, pneumonia, falls, DVT/PE, and muscle deconditioning. Each year, billions of unreimbursed healthcare dollars are spent treating complications related to patient immobility. However, numerous studies have shown these complications can largely be prevented through the implementation of well-coordinated patient mobility programs. New patient monitoring technology allows hospitals to effectively manage mobility programs in order to maximize both therapeutic and financial outcomes.

## Background

Not too long ago, bed rest was considered therapeutic. As a medical treatment, bed rest can be traced back to the earliest medical writings and over the years it has been prescribed for a multitude of conditions. However, we now know that bed rest provides no therapeutic value, and in fact, it is dangerous. In 1999, a large meta-analysis involving 39 randomized controlled trials and 5,777 patients found that bed rest was not beneficial as a therapeutic intervention for any condition. Furthermore, there was strong evidence to indicate that bed rest was actually harmful. The following year, an analysis published in Evidenced Based Nursing found that early mobilization was significantly better for patients than bed rest. Over the past 15 years, there have been numerous studies further supporting the benefits of early and progressive patient mobility.

## Benefits of Patient Mobility: Speedier Recovery

By improving patient mobility, many HACs like pressure injuries, pneumonia, falls, and blood clots may be avoided.

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.

Research shows that patient mobility speeds healing and improves patient outcomes. By improving patient mobility, many HACs like pressure injuries, 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<sup>1</sup> 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<sup>2</sup> (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, University of Texas Medical Branch, found that patients who were able to increase their walking distance by at least 600 steps between their first and second hospital day, were discharged approximately two days earlier<sup>3</sup> than those who did not. Dr. Linda M. Mundy and her colleagues at the Division of Infectious Diseases, Washington University School of Medicine, found length of stay was 1.1 days shorter<sup>4</sup> in patients who were randomized to an early mobilization group.

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- A Cleveland Clinic study<sup>5</sup> 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<sup>6</sup> 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<sup>7</sup> 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.<sup>8</sup>
- 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.<sup>9</sup>
- 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.”<sup>10</sup>

Without reliable instruments to monitor patient mobility, it is difficult to effectively manage mobility protocols.

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.”<sup>11</sup>

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.”<sup>12</sup> 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 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.

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### About Leaf Healthcare, Inc.

Leaf Healthcare creates wireless patient mobility 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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