



Ambulation as a Measure of Pain Control: Should We Count Steps in the Perioperative Period?



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Submission: 📅 August 09, 2017; Published: 📅 March 19, 2018

Opinion

Ambulation in the acute care setting

Ambulation, or simply walking, contributes to a healthier life. Exercise is the first step in the management of many chronic diseases, such as obesity, diabetes, and hyper lipidemia [1,2]. On a daily basis, many of us record the numbers of steps we take using a pedometer. Tracking the step count is shown to encourage more physical activity with resultant decrease in body mass index and blood pressure [3]. In the United States, the health insurance companies are now rewarding the participants in walking programs as a part of the health-contingent wellness of the Affordable Care Act [4].

While walking outside the hospital is strongly promoted, ambulation is significantly ignored in the acute care setting. One third of the patients are confined to the bed or chair in a significant part of their hospitalization [5]. Two third of the patients experience decline in their mobility during their hospitalization [6]. Surgical and medical indications are the main reasons that the hospitalized patients are not mobilized. However, only 40% of the patients have a documented medical reason for bed rest or low mobility in one study [7]. Other perceived barriers to ambulation in the hospitals are pain, safety concerns, presence of catheters and drains, hospital gowns, or lack of assistance [8]. The amplitude of the medical visits and interventions usually restricts the patients to the limited locations in the hospital wards. The low mobility in hospital setting is a significant predictor of adverse outcomes, such as decline in ADL or death [7].

Ambulation has significant benefits in the acute care setting and it is a single predictor of re-admission to hospitals [9]. Walking in the postoperative period decreases the risk of thromboembolism [10,11], improves the pulmonary function [12], and is widely believed to enhance the return of gastrointestinal function. Delayed mobilization after hip fracture surgery is associated with increased length of stay and complications, such as delirium and pneumonia [13]. Early mobilization after joint replacement has been shown to decrease the hospital length of stay with improved functional rehabilitation [14,15]. Ambulation has also been known to improve

the outcomes in hospitalizations for various medical admissions including COPD [16], community-acquired pneumonia [17], and myocardial infarction [18,19].

Ambulation as adjunct measure to the pain assessment

The pain should be assessed and treated, and no patient should unnecessarily suffer from pain. However, no perfect pain assessment tool is easily available. Detailed pain assessments are too time-consuming for frequent use. Easy-to-administer pain scales are usually unidimensional and cannot record the multiple aspects of pain, especially the impact on the day-to-day activities. Pain is subjective, and the perception is significantly shaped by psychiatric co-morbidities, as well as the patient's culture, beliefs, and communication skills. Frequent pain evaluations have not been proven to improve the pain management [20].

Ambulation can be quantified as the total number of steps that a patient walks in a specific time (hour, shift or day). This measure, the step count, can be used as an adjunct measure to pain in the acute care setting. With recent advances in step tracking technology, this quantified step count can be easily measured and charted. Most patients are able to walk at some point during their inpatient stay, and the patient's ability to walk is usually a pre-requisite for discharge to home. Evidently, this cannot be applied to the few patients who are not able to walk in the immediate postoperative period due to medical or surgical reasons.

The step counts can reflect the efficiency of pain control in the acute care setting, since walking demands optimal pain control. Among the main goals for the pain management is the functional rehabilitation, and uncontrolled pain is an important barrier to rehabilitation in the postoperative period [8]. For example, if a post-thoracotomy patient with a thoracic epidural infusion is able to walk, it can be easily concluded that the pain control is acceptable.

Other benefits of counting steps

The trend of step counts can be used as a recovery measure. Walking demands recovery of cardiopulmonary and neurological systems, and the steady increase in the step counts can signal the recovery. Step count can also serve as a safety measure. As

an example, if the patients with thoracic epidural can walk, the chance of epidural hematoma, a dire and emergent complication of epidural catheter, is very unlikely.

Counting steps can serve as a positive reinforcement for both patients and healthcare industry. First, the known encouraging effects of pedometer on physical activity [3] inspire the patients to walk more steps. Second, the step count can entice the healthcare providers and health organizations to mobilize patients earlier and more frequently. Patients rely on nursing staff and physical therapy for ambulation in hospitals. The trend in steps can serve as a performance measure for the dedication of health care providers and the organization to ambulating the patients.

The step count is tangible for the patients and can serve as a patient-centered outcome. Hospitalization is associated with decline in mobility in two-thirds of the patients [6]. For many patients, particularly elderly who wish disability-free survival, walking serves as a tangible measure of independence or disability. Moreover, the patients lose their autonomy in doing their daily activities during hospital stay. Allowing the patients to walk is the first step for them to regain their autonomy.

The step counts would be a great tool for the research on ambulation in healthcare. The ambulation is usually recorded as a dichotomous variable, ambulatory or non-ambulatory. Counting steps converts the ambulation to an interval variable that is more amenable to statistical analysis. Research on ambulation in acute care setting is at its beginning. While randomized study for immobility is not ethically feasible, the controlled trials on increased ambulation can be easily done. Unfortunately, blinding is not possible for this measure and healthier patients will be selectively included in such research.

Since tracking steps is a daily routine for many of us, one may ask why we still need to do it in the hospital. The initiation in the acute care, like other health measures such as blood pressure monitoring and blood glucose control, emphasizes to the patient that walking is a fundamental step towards faster recovery and a healthier life. The patients will ultimately enjoy the benefits.

Conclusion

In the acute care setting, quantify in ambulation as the total number of steps a patient walks in a specific time (step counts), should be initiated. The step counts, and its trend, can be an adjunct to pain as the fifth vital sign in the postoperative setting as well as acute care setting. The step counts can monitor the pain control, as well as the quality of healthcare and the patient recovery. It also entices healthcare providers and institutions to mobilize the patient. Patients will ultimately enjoy the enhanced and accelerated recovery.

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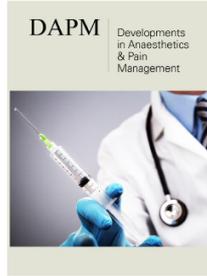
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