Early Mobilization and the Stroke Patient

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According to the American Stroke Association (2012), approximately 795,000 Americans suffer a new or recurrent stroke each year. In other words, every 40 seconds there is a victim of stroke. Stroke is the fourth leading cause of death in the United States (American Stroke Association, 2012). It is widely recognized that early recognition of the signs and symptoms of stroke is a key step to a patient optimizing treatment options. Therefore, over the last decade much effort has been given in targeting education for the general public regarding the prevention and recognition of stroke. Additionally, with the implementation of specific guidelines, great strides have been made in delivering treatment options for acute ischemic stroke victims both in the field and in the emergency room. What is lacking, however, are specific guidelines addressing the care of stroke patients admitted to stroke units. Evidence-based nursing protocols are needed to standardize the continued care of patients once they are admitted to the hospital. For example, different opinions currently exist on what is the most advantageous time to mobilize acute ischemic stroke patients in order to maximize recovery (Bernhardt, Dewey, Thrift, Collier, & Donnan, 2008; Craig, Bernhardt, Langhorne, & Wu, 2010; Cumming, Collier, Thrift, & Bernhardt, 2008; Cumming, Thrift et al., 2011; Diserens et al., 2012; Stokelj, Ibeh, & Grandi, 2010; Sundseth, Thommessen, & Ronning, 2012). Therefore, my PICO question asks, “In acute ischemic stroke patients, does receiving early mobilization as compared to delayed mobilization improve the safety, independence, and psychological well-being of the patient.

In January 2013, the American Stroke Association presented “Guidelines for the Early Management of Patients with Acute Ischemic Stroke” (Jauch et al., 2013). In the lengthy, 87-page, single-spaced document, there is one small section that addresses the general care of the
stroke patient. Within that section, the following guideline exists, “Most patients are first treated with bed rest, but mobilization usually begins as soon as the patient’s condition is considered stable” (Jauch et al., 2013, p. 48). From a current observational study, it was found to be commonplace for hospitalized acute stroke patients to spend greater than 50 percent of their time on bed rest (Bernhardt et al., 2008). Fortunately, research is now being conducted on topics associated with early mobilization and the care of acute stroke patients related to increased safety, independence, and psychological well-being, as well as the feasibility of an early mobilization protocol. Registered nurses gaining a better understanding of the benefits of early mobilization for the acute stroke patient will drive the implementation of protocols. Then, the care of stroke patients will be based on best practice evidenced by current research.

Review of Literature

Researchers agreed that mobilization was defined as the stroke patient being upright and out of bed, either sitting or standing (Bernhardt et al., 2008; Craig et al., 2010; Cumming, Collier et al., 2008; Cumming, Thrift et al., 2011; Diserens et al., 2012; Stokelj et al., 2010; Sundseth et al., 2012). Yet, differences arose among the researchers as to when early mobilization needed to commence, how often it needed to occur, and for how long. Most agreed the optimum times for early mobilization to commence was within 24 hours of stroke symptom onset; occurring at least twice per day, and continuing for 14 days or discharge whichever occurred first (Bernhardt et al., 2008; Craig et al., 2010; Cumming, Collier et al., 2008; Cumming, Thrift et al., 2011; Sundseth et al., 2012). However, Diserens et al. and Stokelj et al. defined early mobilization to be after 52 hours, and within 48 hours of stroke symptom onset, respectively.

Early mobilization has been studied to determine its impact on safety and the feasibility to administer. In Bernhardt et al. (2008), the primary outcome goal for determining the safety of
early mobilization was a comparison of the number of deaths occurring at three months post-stroke for a very early mobilization group (VEM) and a standard of care group (SC). Results indicated no significant difference between the two groups (Bernhardt et al. 2008; Diserens et al., 2012; Stokelj et al., 2010). A secondary safety outcome goal focused on the total number of adverse (life threatening) events at three months post stroke. While there was a smaller total number of adverse events in the VEM (61) as compared to SC (76), there was no difference in the fall rate between the two groups (Bernhardt et al., 2008).

The primary feasibility outcome focused on the ability of the VEM to participate in more total minutes of mobilization as compared to the SC. For the VEM, a median of 167 minutes of mobilization was completed as compared to the SC at a median of 69 minutes. It is important to note that there was no maximum age restriction for the samples to accurately represent the stroke population at large (Bernhardt et al., 2008).

Bernhardt et al.’s (2008) study included only 38 VEM participants and 31 SC participants. A limitation of the research was the small sample size, therefore, studies with a larger sample size are needed to validate the results. The results of the study indicated early mobilization was safe because the primary outcome goal of fewer deaths was met. However, neurological decline was not included in this study. Data on this aspect would have further strengthened the cause-effect relationship of mobilization as it pertains to safety.

“Motor impairment is common after stroke, and a critical factor influencing the patient’s ability to live independently” (Stinear, Ackerley, & Byblow, 2013, p. 2039). By using the data from A Very Early Rehabilitation Trial (AVERT Phase II), a study was conducted with a primary outcome goal of determining the number of days required for a post-stroke patient to return to walking 50 meters unassisted (Cumming, Thrift et al., 2011). It is significant to report
“on admission, 86% of the sample was unable to walk or required hands-on assistance to walk short distances” (Cumming, Thrift et al., 2011, p. 156). Results of the study were favorable for the VEM with a median of 3.5 days required to walk 50 meters unassisted. The SC had a median of seven days required to perform the same activity. At the end of two weeks, 67% of the VEM were walking independently as compared to 50% of the SC walking independently (Cumming, Thrift et al., 2011).

A future area of interest might be to look at family interaction with the VEM compared with the SC. Research questions might be: (1) Does family involvement contribute to VEM/SC reaching distance walked goals in a more timely manner; and (2) How much family involvement is optimum for VEM compared to SC to achieve distance-walked goals?

A meta-analysis by Craig et al. (2010) pooled the data results of the primary and secondary outcomes of the AVERT trial and the Very Early Rehabilitation or Intensive Telemetry after Stroke (VERITAS) trial. Both AVERT and VERITAS were randomized trials and inclusion/exclusion criteria of the 103 participants were comparable.

Results of the primary and secondary outcomes of the meta-analysis indicated greater benefits for improved early mobilization outcomes for stroke patients than the trials reported individually (Craig et al., 2010; Cumming, Thrift et al., 2011). Specifically, at three months VEM were three times more likely to be independent, 49% less likely to have complications, and experienced higher levels of activities of daily living than compared to SC (Craig et al. 2010; Cumming, Thrift et al., 2011).

Further areas of interest in meta-analysis studies would categorize all participants into specific age groups to determine if early mobilization should be adjusted to accommodate
advancing years as compared to other age groups. A limitation of this study was VEM and the impact on complications, such as pneumonia, was not studied (Craig et al., 2010).

“Thirty-three percent of all patients who suffer stroke experience depressive symptoms” (Cumming, Collier et al., 2008, p. 609). Early mobilization may contribute to psychological well-being in the stroke patient. Cumming, Collier et al. (2008) utilized the AVERT Phase II data to study primarily the effects of early mobilization as compared to standard of care (SC) on levels of depression and anxiety. The Irritability, Depression and Anxiety (IDA) questionnaire was the instrument used at seven days post-stroke and at 12 months to determine the findings. Results indicated less depression in the VEM group (8%) as compared to the SC group (15%). There were no differences in levels of anxiety between the two groups (Cumming, Collier et al., 2008, p. 609).

Further study is needed to evaluate early mobilization as it relates to levels of depression and anxiety. A study of interest may be to determine how much does early mobilization by itself impact levels of depression and anxiety versus how much does the increased interaction with staff while participating in early mobilization impact levels of depression and anxiety (Cumming, Collier et al., 2008).

“Stroke is one of the most frequent causes of long-term disability in the Western World” (Sundseth et al., 2011, p. 1). Sundseth, in the Akershus Early Mobilization in Stroke (AKEMIS) study, examined 56 stroke patients primarily to determine if early mobilization compared to delayed mobilization reduced dependence at three months. Twenty-seven patients were randomized into a very early mobilization group (VEM), and 29 patients were randomized into a delayed mobilization control group (CG). On admission, the groups were statistically equal based on age and initial neurological assessment using the National Institutes of Health Stroke
Scale (NIHSS). It was hypothesized that post-stroke, “early mobilization out of bed would enhance improvement” (Sundseth et al., 2011, p. 2). The modified Rankin instrument (mRA) was selected to evaluate the level of dependence. An mRA score of 0-2 was predetermined to indicate a good outcome, and an mRA of 3-6 was a poor outcome. At 3 months, 60% scored 3-6 in the VEM group as compared to 39.3% in the CG (Sundseth et al., 2011).

Neurological function on admission for the VEM was a median NIHSS of 5.3 as compared to the CG median NIHSS of 4.4. The three-month post-stroke NIHSS was improved for both groups. However, a greater improvement in NIHSS was found in the CG (median 2.2) as compared to the VEM (median 3.6) (Sundseth et al., 2011).

Further explanation of the data is necessary to determine the exact correlation between delayed mobilization and greater improvement in NIHSS. The reported data is of limited value due to the fact that the specific items of the NIHSS are not resulted in this study. A total NIHSS score only was reported both in the admission NIHSS scores and in the three-month NIHSS scores. More precise information is needed for validation. Again, this study has too small of a sample size as evidenced by remarks of “study had limited power to draw reliable conclusions” (Sundseth et al., 2011, p. 6).

**Summary**

The previous articles identify the significance of considering early mobilization for the acute stroke patient. First of all, it is important to note that early mobilization does not increase the number of deaths or the number of falls of acute stroke patients. In fact, due to the favorable results of the feasibility study, acute stroke patients need not spend the reported one-half of the hospital day in bed. An initial activity order of bed rest as recommended by the American Stroke
Association appears to be unnecessary and perhaps detrimental in the recovery of the stroke patient as evidenced by the research.

Secondly, in one study early mobilization clearly impacted the ability of the stroke patient to return to independent living. Research showed that 17 percent more of the patients who received early mobilizations as compared to delayed mobilization were able to walk independently at the end of two weeks. “Regaining independence in activities such as walking after stroke is thought to be one of the most important rehabilitation goals for patients” (Craig et al., 2010, p. 2635).

In contrast, however, another smaller study indicated poorer outcomes related to independence and early mobilization. Neurological function was also found to be decreased in the early mobilization sample. It is of value to note that the authors of this study stated, “the low power attributable to the small sample size is a limitation of the present study and requires that the results are interpreted with caution” (Sundseth et al., 2012, p. 5-6).

Thirdly, early mobilization contributed to the psychological well-being of the stroke patient. Research reported nearly one out of every three patients suffered from depression post-stroke (Cumming, Collier et al., 2008). According to the data, implementing standardized protocol for early mobilization could potentially decrease the incidence of depression by 50 percent for patients post-stroke.

Further research studies are needed to replicate the findings of these early mobilization trials. The AVERT Phase III trial began in July of 2006, and is currently at greater than 80 percent of its recruitment goal of 2,104 participants. The AVERT Phase III trial includes hypotheses addressing early mobilization related to safety, feasibility, recovery of physical
independence, and psychological well-being after stroke (Stroke, 2013). With the larger sample size, AVERT Phase III will attempt to validate the findings of earlier trials.

Is it possible the acute stroke patient would be safer, more independent, and experience psychological well-being if mobilized within the first 24 hours of symptom onset? Is it possible this treatment is actually achievable by the stroke patient, and the only thing standing in the way of implementation is the lack of a nursing protocol? Bernhardt et al. (2008) states, “early mobilization may be one of the simplest yet most important components of effective stroke unit care” (p. 395).

According to the Standards of Professional Nursing Practice, “the registered nurse integrates evidence and research findings into practice” (Nursing, 2010). It is time for nursing to implement a small test of change regarding early mobilization and to pilot some specific guidelines that address the care of patients admitted to stroke units. The time is now to develop evidence-based nursing protocols based on research to begin to standardize the continued care of acute stroke patients admitted to the hospital. Acute ischemic stroke patients are entitled to healthcare aimed at improving the safety, independence, and psychological well-being of the patient with the implementation of an early mobilization protocol.
References


Stinear, C., Ackley, S., & Byblow, W. (2013). Rehabilitation is initiated early after stroke, but most motor rehabilitation trails are not a systematic review. *Stroke, 44*(7), 2039-2045. doi: 10.1161/STROKEAHA.111.0000968

