Early Mobilization and Stroke Patients

An Evidence-Based Practice Project

Presented to the faculty of the School of Nursing
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Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

Nursing

by

Barbara Ann Buesch

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School of Nursing
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Abstract

of

Early Mobilization of Stroke Patients

by

Barbara Ann Buesch

Statement of Problem: The purpose of the evidence based practice project was to examine the feasibility of developing an early mobilization program for an acute stroke unit.

Sources of Data: A literature review was completed using the PubMed database. Search terms included ischemic stroke, stroke rehabilitation, stroke, acute rehabilitation, stroke, intracerebral hemorrhage, and rehabilitation.

Conclusions Reached: After a presentation to staff of the stroke unit defining early mobilization, staff expressed interest in implementing a program. Several implications for practice, education and further research were identified.

Committee Chair

Dr. Amy C. N., NP, PhD

Date

4/24/12
PREFACE

If we leave the patient in the condition they are right now, is that good enough?
DEDICATION

To RMS

Thank you for always believing in me.
ACKNOWLEDGEMENTS

I would like to thank my family, especially my husband Dean and my daughters Carolyn and Katie for their tremendous support and encouragement over the past three years. I am so very lucky to have you in my life. You are the first thing I think of in the morning and the last thing I think of at night. Thank you for sticking with me the past three years.

I would also like to thank Carol Suarez and Mary Russell. When we started this program we were strangers but we are ending it as friends. I would never have made it without you guys.

Finally, thank you to my committee chair Dr. Amy Carney and members of my committee Dr Linnea Axman and Dr Jacqueline Close for their assistance and patience while I was completing this project and Dr. Denise Boren for all her help and encouragement throughout this process. Being first was not always fun but you have all been there to help us, support us, inspire us, laugh with us and cry with us. This has truly been an experience I will never forget.
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Early Mobilization and Stroke Patients

CHAPTER ONE

Cerebral Vascular Accident (CVA) or Stroke is the fourth leading cause of death and the number one cause of major disability in the United States. Each year in the United States 795,000 people suffer a stroke. Seventy-six percent or 610,000 are first strokes. Every 40 seconds someone has a stroke and approximately every four minutes someone dies. In 2006, stroke accounted for one of every 18 deaths in the United States. It is estimated that the costs of acute stroke events in 2010 were $73.7 billion including medical costs and disability. Women account for approximately six of ten stroke deaths. Within the first year after suffering a stroke, 22% of men and 25% of women will die due to complications most commonly aspiration pneumonia, urinary tract infections and falls (Lloyd-Jones et al., 2010).

Atrial fibrillation (AF) is a risk factor for stroke and accounts for approximately one out of five strokes per year. It is defined as a cardiac rhythm disturbance characterized by disorganized atrial electrical activity and absence of normal sinus node function. With this rhythm, there is absence of normal atrial contraction because the electrical impulse from the sinus node through the atria that causes contraction is replaced by ineffective chaotic electrical activity. Stroke is the most feared complication of atrial fibrillation and it carries a one-year mortality rate of 50% (Gladstone et al., 2009). The stroke is due to thrombus formation, often in the left atrial appendage breaking free and embolizing to the brain; thus blood thinning strategies to prevent stroke are an important part of AF care. As the population ages, the
prevalence of atrial fibrillation among seniors will rise. By the year 2050, it is estimated that more than 5.6 million people will have atrial fibrillation (Go et al., 2001).

Hypertension is another risk factor for cardiovascular disease. Approximately 30% of American adults are living with high blood pressure and of this group, only 68% are considered to have the blood pressure under control. More men than women have hypertension until age 45. From 55 to 64 the percentages are similar and after 65 women are more likely to have hypertension. African Americans develop high blood pressure much younger than Caucasians, have higher average pressures and are 1.8 times more likely to have a fatal stroke (Lloyd-Jones et al., 2010).

**Definitions and Assumptions**

A stroke is defined as the sudden death of brain cells due to a lack of oxygen when the blood flow to the brain is interrupted. Ischemic strokes are caused by a blockage in an artery and account for approximately 85 percent of all strokes. These blockages can be caused by a plaque rupture in a narrowed artery, or a plaque breaking off and lodging in a narrowed artery deeper in the brain. A patient in atrial fibrillation may form a clot in the left atrium that can break apart and lodge in the brain also causing an ischemic stroke. In younger patients who have a stroke, it is necessary to rule out a patent foramen ovale (PFO) or a coagulopathy if it appears there are no known risk factors that could explain the stroke.

A Transient Ischemic Attack (TIA) is defined by the American heart Association/American Stroke Association (AHA/ASA) as “a transient episode of neurologic
dysfunction caused by focal brain, spinal cord, or retinal ischemia, without infarction” (Easton et al., 2009, p. 2276). The definition also states that the symptoms resolve within 1 hour (Easton et al., 2009).

An intracerebral hemorrhage (ICH) is a stroke caused by focal bleeding inside the brain. It most often results from the rupture of a small atherosclerotic vessel in the brain weakened by chronic hypertension and accounts for the remaining 15 percent of strokes. Typical symptoms include severe headache, nausea, vomiting, focal neurologic findings and sudden alteration in consciousness.

Very Early Mobilization (VEM) is defined as any intervention delivered with the aim of reducing the time frame from stroke onset to first mobilization including first time out of bed and increasing the amount of time outside of bed performing any physical activity such as activities of daily living (ADL). The initial interventions are delivered within 24 hours of symptom onset. ADL’s include toileting, transferring, sitting out of the bed, standing and walking. Any form of activity out of bed after a stroke is considered VEM irrespective of the amount of staff and the type of assistance that is required. The duration of the intervention was not defined (Bernhardt, Collier, & Legg, 2009).

Standard care is defined as the usual multidisciplinary stroke unit care. Within this urban medial center stroke unit, patients are assessed by physical therapy, occupational therapy and speech therapy within 24 hours of admission. If the patient meets the predetermined criteria, the patient receives therapy once daily by each discipline. The patients are not allowed to eat or be out of bed without first being cleared by speech therapy and physical therapy.

**Background and Significance**
Studies have shown that up to 18% of survivors of stroke are dysphasic, up to 22% may not be able to walk, up to one third are clinically depressed and between 24% and 53% are dependent on others to assist with many or all of their activities of daily living (ADL’s) (Kalra & Langhorne, 2007). Medical complications following a stroke include falls, urinary tract infections and aspiration pneumonia. These complications not only impede or severely limit the patient’s ability to participate in rehabilitation, they can limit any meaningful recovery and may contribute to mortality. It has been estimated that complications of stroke account for up to 51% of stroke deaths within the first 30 days (Bernhardt, Dewey, Thrift, & Donnan, 2005). Many can be prevented; if detected and addressed early many are treatable. Factors that contribute to the development of these complications include the severity of the stroke, previous level of function, age, and time since the initial CVA. In addition, the presence of pre-existing medical conditions such as hypertension, hypercholesterolemia, and diabetes may affect rehabilitation efforts. Factors that can be controlled while the patient is hospitalized that can affect outcomes include the hospital environment itself, presence of an indwelling catheter, and positioning in bed. In addition, the time the patient spends in bed immobile contributes to all these complications. These factors can be impacted by hospital staff and offer the potential to limit the disability associated with a stroke (Sorbello et al., 2009).

**Problem Statement**

Mobilization of stroke patients is essential for rehabilitation and recovery. Due to the damage caused by the stroke, survivors are often completely dependent on others for long
periods of time if not forever. The longer a patient is immobile, the greater the chance of complications which can lead to further disability or even death. Therefore, the earlier the stroke patient is mobilized, the less chance of complications developing. Staff need to be aware of the benefits of early mobilization and how to implement a very early mobilization program.

**Specific Aims and Objectives**

The aim of this feasibility study was to assess the knowledge level of and interest in developing a Very Early Mobilization (VEM) program for victims suffering the effects of a devastating brain injury from either an ischemic stroke or an ICH in the stroke unit of a public not for profit hospital stroke unit. The objectives for the project included (1) assessment of the knowledge base among the rehabilitation and nursing staff of VEM, (2) Establishment of a common definition of VEM for rehabilitation and nursing staff, and (3) Development of next steps in the process for creating a multidisciplinary team approach for mobilization of acute stroke patients.
CHAPTER TWO

Literature Review

Search Strategy

A literature review was completed using the PubMed database. Search terms included ischemic stroke, stroke rehabilitation, stroke, acute rehabilitation, stroke, intracerebral hemorrhage, and rehabilitation.

Inclusion/Exclusion Criteria

Inclusion criteria included studies after 2000 up to and including 2011 using the search terms noted above. Studies before 2000 and any study that focused on mobilization and rehabilitation after 14 days of the acute event were excluded.

The treatment of patients experiencing acute stroke in stroke units has been well established by the Brain Attack Coalition in 2000. This landmark study demonstrated the need for Primary Stroke Centers and established the guidelines for the creation of these units. The coalition determined that elements for primary centers should include the formation of acute stroke teams, formal stroke units, care protocols and a relationship with the local EMS system. The guidelines also state that support services such as the availability and interpretation of CT scans and rapid lab testing be available 24 hours everyday. Strong administrative and leadership support is needed to insure funding of the program elements remains available. A continuing education program for all staff involved in the care of stroke patients is mandated to remain up to date with current best practice. The adoption of these guidelines and recommendations have
been shown to increase the use of appropriate diagnostic tests and therapies and decrease complications and costs associated with stroke (Alberts et al., 2000).

The outcomes of patients suffering acute stroke and team functioning were reviewed in a study published in the Archives of Physical Medicine and Rehabilitation in 2005. The objective of the study was to “evaluate the relationship between rehabilitation team functioning and stroke patient outcomes” (Strasser et al., 2005, p. 403). The study used ten scales to gauge team member’s perceptions of functioning (task orientation, perceived effectiveness, teamness, innovation, amount of physician, involvement use of quality information in the evaluation process, communication between members, family, physicians and the patient, interpersonal relationships, order and organization and physician support). Three patient outcome variables were also used (length of stay (LOS) in the rehabilitation setting, functional improvement and discharge home). Task organization, the use of quality data, and order and organization were the three measures of team function that were significantly associated with functional improvement in patients. No team variables affected discharge destination. The study concluded that while not all aspects of team functioning predicted outcomes of acute stroke patient, improved team planning, problem solving and more effective use of feedback may improve treatment effectiveness. Effectiveness of the team was significantly associated with LOS. It was noted that one team that reported “greater formality and structure, use of feedback information to improve treatment process and placed less emphasis on practical, concrete tasks had better patient functional outcomes” (Strasser et al., 2005, p. 406). These teams were more successful at advocating for increased therapy time instead of discharging more quickly resulting in greater
functional gains for the patients. No association between patient outcomes and administrative support or supervisor expectations was found (Strasser et al., 2005).

A study in 2005 in the Archives of Physical Medicine and Rehabilitation sought to examine characteristics of patients, various therapies, medications, nutritional support and the timing of therapy initiation with functional outcomes and discharge disposition. The study reviewed the Post Stroke Rehabilitation Outcomes Project (PSROP) database and looked at Functional Independent Movement (FIM) scores and discharge destination. The authors were able to draw several conclusions from the review. Conventional treatment of stroke patients in which “one must learn to crawl before one can walk and the patient should not be challenged excessively for fear that it may induce a sense of failure or stress, if not depression and thus compromise outcome” (Horn et al., 2005, S101) was false. Patients exposed to higher order tasks earlier in their stay including gait training within the first three hours of physical therapy (PT) even when they did not appear ready to perform the specific task had better outcomes. This was especially prominent in patients who suffered severe strokes. Patients who were exposed to more minutes of gait training activities, upper-extremity control, and problem solving activities had significantly higher rates of discharge home. “Minutes of gait training in the first block of therapy was consistently the most important PT activity associated with better outcome, regardless of the total amount of PT rendered over the course of the rehabilitation stay” (Horn et al., 2005, p. S110). Conversely, patients who spent more minutes in bed working with PT on mobility and sitting, with OT on bed mobility and auditory comprehension and orientation had lower discharge FIM scores (Horn et al., 2005).
Horne et al. also looked at the effects of the acute hospitalization payment system to determine if the system favors quicker discharges to rehabilitation centers even when the patient is still in the acute phase and may not be ready. The study showed that a longer time between the stroke onset and entering rehabilitation resulted in lower FIM scores at discharge, and that even though the patient may be sicker at the beginning of therapy, they benefitted more from the therapy than patients who were more medically stable. The authors concluded that this finding may encourage rehab facilities to admit sicker patients earlier since outcome benefits have been shown (Horn et al., 2005).

In 2002, the Brain Attack Coalition (BAC) published the landmark study showing the importance of organized stroke centers. Kalra and Langhorne noted that while this system addresses the immediate needs of the stroke victim, “organized rehabilitation remains the cornerstone of recovery from stroke” (Kalra & Langhorne, 2007, p. 97). Among the key issues noted in this review, the concept of brain plasticity suggests that depending on the type and amount of stimulation provided, and the timing of the therapy, the brain has the ability for significant recovery (Kalra & Langhorne, 2007).

It had been feared in the past that moving patients too early after an acute stroke would result in hypoxia and increase the size of the stroke and result in poor outcomes. In 2004, Tyson examined the effects on position of the patient on oxygen saturation in acute stroke and found if the patient had no pre existing respiratory co-morbid conditions they could adopt any position without harmful effects. However, the study noted that patients with any respiratory pre existing conditions should be positioned upright whenever possible (Tyson, 2004).
Arias and Smith in 2005 studied 99 health care providers, including 39 physicians, 39 nurses and 21 physiotherapists to examine their understanding of the definition of ‘early mobilization’. The group identified four conclusions from their research. First, further research is needed to develop an understanding of what physiologic monitoring is needed to monitor the patient during the activity. Second, health care providers caring for acute stroke survivors need to better understand complications such as falls, bed sores and painful shoulders and the effects they have on recovery. Third, the plan for early mobilization must be made within a multidisciplinary stroke team. Last, the researchers determined that the evidence base for early mobilization was lacking in terms of intensity, frequency, duration, and risks and benefits of the therapy (Arias & Smith, 2005).

A multicenter study conducted by the University of Melbourne in Australia was the first to document physical activity patterns of stroke patients cared for in acute stroke units. The purpose of the study was to determine these activity patterns and use them to further develop an early mobilization protocol. The study looked at 64 stroke patients admitted to five metropolitan stroke units. Trained observers watched the patients and recorded their activity between the hours of 8 AM and 5 PM for two consecutive days. The patients were in the first 14 days of their acute stroke. The observations were made at 10 minute intervals and looked at physical activity, location, and other people present during the interaction. The various activities were recorded by therapists conducting the therapy. Fifty eight patients completed the study. The patients completing the study spent greater than fifty percent of time resting in bed and 28 percent sitting out of bed. Only 13 percent of time was spent in activities that could potentially prevent complications and improve mobility. In addition, the study noted that patients spent greater than
60 percent of time alone. The authors concluded that there was a need to conduct controlled trials to determine the effects of increased activity early after a stroke compared to the current standard of care (Bernhardt et al., 2005).

In a subset analysis of the above data published in the Journal of Rehabilitation Medicine, Bernhardt et al focused on the physical rehab received by the patients and the identification of factors that may contribute to the amount of therapy the patients receive. The study noted that only 17% of patients received therapy from more than one therapist. If the patient did receive multiple therapies, 24 minutes was spent with physical therapy, 23 minutes with occupational therapy and 33 minutes with speech therapy. The treatment times were longer and more intense if family members were present. Patients were the most active when with a therapist or nurse. When the patient was alone, they spent less than 10% of their time standing or walking. Those patients unable to ambulate spent 98% of their day in bed but even those survivors who were able to walk independently still spent 40.5% of their day in bed. Seven patients were thought by staff to be at risk for falls. However, this group of patients was noted to be standing or walking alone 10.5% of the time they was alone in their rooms, highlighting safety issues inherent in stroke patients. Ninety-eight percent of the therapy was done at the bedside with the remainder occurring in the hallway. The majority of therapy occurred during the hours of 0900 and 1230 and it was rare that the same therapist saw the patient on consecutive days. Patients who were being discharged to a skilled nursing facility (SNF) were often considered already at the level of care appropriate for SNF and unable to progress further. The patient was then considered a lower priority for therapy resulting in the patient being triaged by the rehabilitation staff when there was not enough staff available. The study concluded that more research is needed to look
at the timing, intensity and frequency of therapy especially in the first 7 days after an acute event (Bernhardt, Chan, Nichola, & Collier, 2007).

In the A Very Early Rehabilitation Trial (AVERT) phase II safety and feasibility study presented at International Stroke Conference in 2008, seventy one patients from two stroke units were randomized to early exercise or usual care after hospitalization for confirmed stroke. Exercise therapy consisted of getting up and out of bed, standing, and walking as much as possible with staff assistance with rest periods as needed. This routine was continued every day until discharge or up to day 14. Usual therapy was defined as either bed rest for the first few days or out of bed once daily with assistance. Participants were 54 percent male and the average age was 74.7 years old. Eighty seven percent of participants suffered ischemic strokes and 58 percent had a National Institutes of Health Stroke Scale (NIHSS) severity score of seven or more at the time of their admission. Patients with a pre existing severe disability, severe co-morbidities or requiring palliative care were excluded. The researchers found that patients in the intervention group had no significant mortality increase, severe adverse events, severe falls or an inability to continue with activities due to unstable blood pressures (Bernhardt, Dewey, Thrift, Collier, & Donnan, 2008).

A secondary analysis study completed using the original AVERT I trial data showed that any actions that prevent complications may decrease the length of stay of patients in stroke units. This analysis was the first to look at the numbers and types of complications experienced by stroke patients from the onset of symptoms to three months after. In addition it looked at the relationship to mobilization and complications. The study showed that every extra day in the hospital was associated with a 5.3% increase in complications. In addition, an increase in one
point on the NIHSS was associated with an increase in the number of complications by 3%. At three months, 33% of the standard care (SC) patients and 52.6% of the very early mobilization (VEM) patients were free of mobility related complications. This difference was not statistically significant. Thirty four percent of patients fell one or more times and was the number one complication noted in the analysis. No injuries were reported. Urinary tract infections were the second most common complications reported during the first 14 days after stroke. Four were in the SC group and one in the VEM group. Mobility related complications were not statistically different between the groups even when stratified by the severity of the stroke. Complications by stroke severity were also reviewed. Patients in the VEM group had more complications including more deaths due to stroke or recurrent stroke but these were not statistically significant. The increased number of deaths in the VEM group may be related to the mobilization and a larger study is currently underway. NIHSS at baseline and a history of smoking were more likely to be associated with stroke related complications. Increased length of stay and older age were more associated with immobility related complications (Sorbello et al., 2009).

A study published in 2010 looked at the functional outcomes of patients with early and intense therapy who were admitted to stroke intensive care units. This aspect had not been previously studied. The prospective study followed 154 patients admitted to a Taiwan hospital intensive care unit with a diagnosis of stroke. Functional outcome was measured by the Barthel Index score (BI) and walking function at discharge. Walking function was scored as independent or non-independent. A previous study demonstrated that patients admitted to a stroke unit who were mobilized as early as 0.33 days after the stroke and this mobilization was
associated with early discharge to home. Results of the study showed that five variables are significant predictors of BI and walking function at discharge. They are admission NIHSS score, admission BI score, age, timing of the initiation of rehabilitation therapy and the intensity of therapy. For patients with the most severe strokes, rehabilitation intensity was the best predictor of their functional outcome at discharge and the benefits from the rehab therapy were greater. For all patients in the study, early rehabilitation initiation and intensity of the therapy led to improved functional outcomes. By starting rehab therapy one day earlier, the researchers noted a 0.65 point increase in the BI score. ICU patients who were given one additional rehab session a day had a 27-fold increase in the possibility of being able to walk alone and a 2.77 point increase in BI score. Patients who received more intense therapy had an 8-fold increase in the chance of independent walking than those who received less intense therapy. The most important aspect of this study was the addition to the body of knowledge on early mobilization and intensiveness of therapy it provided. (Hu, Hsu, Yip, Jeng, & Wang, 2010).

Depression is prominent among stroke survivors but is often not reported by patients or family members and is often not treated by the rehab team. It is estimated that 11 percent of older people are depressed (Salaycik et al., 2007) and approximately 33 percent of patients who have suffered a debilitating stroke suffer from depression also (Hacket, Yapa, Parag, & Anderson, 2005). Symptoms of depression are still noted in approximately 17 percent of stroke survivors at 5 years (Paul, Dewey, Sturm, Macdonell, & Thrift, 2006).

Using the Irritability, Depression and Anxiety (IDA) scale, a subset analysis of patients in AVERT demonstrated that mobilization early in the hospitalization may reduce depressive symptoms in stroke patients at 7 days post stroke. The patients were reassessed at 12 months.
The researchers hypothesized that the reduction in physical disability associated with early mobilization would result in less anxiety and depression. Exercise has been shown by many studies to result in an increase in endorphins leading to mood elevation (Cumming, Collier, Thrift, & Bernhardt, 2008).
CHAPTER THREE

Implementation Strategy

Setting

A feasibility study was conducted to determine whether or not an early mobilization program can be successfully implemented in the stroke unit of a public not for profit hospital stroke unit.

Description of Intervention

Rehabilitation and nursing staff on a combined orthopedic-neurology unit at the hospital were surveyed to assess the knowledge of VEM of stroke patients and interest in developing a VEM program for acute stroke patients. A presentation of information contained in this paper was presented to the groups. A post survey was administered to determine the knowledge level and interest change immediately after the presentation. A total of 20 staff members completed the three steps.

Research Design

The research design used in this pilot was a quantitative descriptive design. A pre-test/post-test design was used for the survey.

Sample

The study was completed using a convenience sample population of 20 participants. Participants included members of the rehabilitation department and the nursing staff of the stroke unit of a non profit hospital. The rehabilitation department was represented more than the nursing department.
Data Analysis Plan

Descriptive statistics were used to describe the sample. Frequency distributions and Chi-square ($\chi^2$) tests including degrees of freedom (df) for difference using Friedman’s nonparametric test were used to illustrate and explore differences between participants at time one and time two using the knowledge survey using the statistical software SPSS 18. Friedman’s test was used because the data was ordinal data to test the null hypothesis of no difference (LoBiondo-Wood & Haber, 2006, p. 374). Statistical significance was set at $p < .05$ for all tests unless otherwise noted.

Organizational Issues

There were no barriers identified to implementation of this feasibility study. Limitations to implementing a VEM program will be discussed in Chapter V.

Data Collection

The participants were given a pre and post survey using a 3 point Likert scale. The data was collected using a paper form with closed-ended questions. Questions were used to gather data from the participants regarding their knowledge of VEM and attitudes towards using the principals to implement the program at the hospital.
**Human Use Approvals**

Human participants were used in the study. Education as required by the California State University was completed prior to seeking Investigational Review Board (IRB) approval. After appropriate paperwork was submitted to both committees, the project was approved by both the Investigational Review Boards of the hospital and California State University San Marcos prior to implementation.

**Timeline**

The project was completed in one day. Three separate presentations of the currently available research on VEM was given during the regular work day to the group at three different times. Staff was invited to attend any of the sessions.
Chapter IV

Results

Description of Sample

The sample population for this study included 20 participants. Fifteen participants were members of the rehabilitation staff (five PT, five OT, four ST) and five were nurses from the stroke unit. Forty percent of those surveyed were in their profession less than five years, 35% between five and ten years and 25% percent over ten years. Sixty percent had been employed at the hospital less than five years, 35% between five and ten years and five percent greater than ten years. The sample size was small and did not allow for robust statistical analysis.

Implementation Challenges

There were two challenges noted to giving the presentation and surveys. First, there was no common time everyone was able to get away from the unit at the same time so the presentation was given three times. Second, during two of the three times, the presentation was given using just paper copies of the power point and not an overhead projector system.

Statistical Results

Statistical results are reported below for the major aim which was to assess whether or not an early mobilization program could be successfully implemented in the stroke unit of a public not for profit hospital stroke unit. This was accomplished by utilizing a pre-test post-test strategy and an evidence-based educational intervention.

The face validity of the four-item questionnaire developed for this EBP project has been demonstrated through literature review and expert opinion. Additionally exploratory factor
analysis using varimax rotation demonstrated a two factor solution that explained more than 91 percent of the variance; factor one explaining 49.7%, factor two explaining the remaining 42%, thus we conclude that the eight questions form two common scales. The reliability of the questionnaire was evaluated using internal consistency (alpha). The reliability coefficient for this eight-item measure was calculated to be .90, which is excellent for a new scale.

As illustrated in Figures 1 and 2, there was a statistically significant difference between answers to both questions (How knowledgeable do you feel about early mobilization of stroke patients? and How likely are you to participate in early mobilization of stroke patients given your current level of knowledge?) between time one and time two ($X^2 7.364, 1 df, Asymp Sig.007$). Asymptotic difference is a nonbiased estimate of the $p$ value used with the $X^2$ test for difference.
Question 1
How knowledgeable do you feel about early mobilization?

Note. $\chi^2 7.364 1df$, asymp.sig .007 (Friedman’s Test)

Question 2
How likely are you to participate in early mobilization of stroke patients given your current level of knowledge?

Note. $\chi^2 9.000 1df$, asymp.sig .003 (Friedman’s Test)

With regard to questions three and four (How beneficial do you think an early mobilization program would be to the patients? and How beneficial do you think an early mobilization program would be to the patient’s family?) (Figures 3 and 4) no statistically significant differences were found.
With regard to questions five and six (How interested are you in learning more about an early mobilization program? and How familiar are you with multidisciplinary care offered at our facility?) (Figures 5 and 6) no statistically significant differences were found.
Question 5
How interested are you in learning more about an early mobilization program

Note. Mean rank equivalent 1.0, unable to calculate $\chi^2$ (Friedman’s Test)

Question 6
How familiar are you with the multidisciplinary stroke care currently used at our facility

Note. $\chi^2$ 7, df 1, asymp. Sig .008 (Friedman’s Test)
Figure 7

**Question 7**
How interested are you in participating in an early mobilization program on the stroke unit?

![Bar chart showing responses to Question 7]

*Note. Mean rank equivalent 2.0 Unable to calculate $\chi^2$ (Friedman’s Test)*

Figure 8

**Question 8**
Given the opportunity to participate in an early mobilization program, how likely are you to participate?

![Bar chart showing responses to Question 8]

*Note. $\chi^2$, df1, Asympt Sig .025 (Friedman’s Test)*
Chapter V

Discussion

Patients suffering from the most severe stroke symptoms on the stroke unit had been receiving therapy within the first 24 hours after suffering an acute event for the past 18 months but no one had really explored the evidence behind the practice nor had anyone really assessed the knowledge level of the staff participating in the activities.

Interpretation

A statistically significant difference was found between answers to questions one and two (How knowledgeable do you feel about early mobilization of stroke patients? and How likely are you to participate in early mobilization of stroke patients given your current level of knowledge?) between time one and time two. The more the staff knew about early mobilization the more likely they were to participate in a mobilization program.

With regard to questions three and four (How beneficial do you think an early mobilization program would be to the patients? and How beneficial do you think an early mobilization program would be to the patient’s family?) (Figures 3 and 4) no statistically significant differences were found. The majority of the participants were somewhat likely or very likely to believe that early mobilization helped both the patients and families both before and after the presentation so the presentation did not influence their attitude.

With regard to questions five and six (How interested are you in learning more about an early mobilization program? and How familiar are you with multidisciplinary care offered at our facility?) (Figures 5 and 6) no statistically significant differences were found. Most of the
participants were already interested in a VEM program before the presentation was delivered so there was no real change in their attitude. More participants were familiar with the multidisciplinary team approach after the presentation but the change didn’t reach statistical significance.

**Methodological Limitations**

This was an evidence based practice project; however, research methodology was used to evaluate the effect of the educational intervention on knowledge and attitudes. There were several limitations to the study. The study consisted of a convenience nonrandom sample of staff working on the neuro unit of the hospital on the day of the presentation. The sample size was small and did not allow for robust statistical analysis.

**Sample Population**

As part of the multidisciplinary team, nurses need to be aware of other team member’s roles and how their interactions affect the patient. Only 25% of the participants were registered nurses and there were no Certified Nursing Assistants (CNA) in the group. The survey did not measure knowledge of specific roles of team members by other team members. For example, it is not possible to measure what the nurse knows about what interventions an occupational therapist may use with a stroke patient. (The OT looks at a comb in a completely different way than a nurse or CNA does. The OT will ask the patient to name the item and show them how it is used. The RN or CNA will comb the patient’s hair for them.) Communication is another example of the need for the nursing staff must interact with the ST. They will provide techniques to communicate with the patient depending on what type of aphasia the patient is
suffering. Communication and eating are very important in everyday life and the loss of these functions are often devastating to the individuals and their families.

**Related Research Findings**

The project was very well received by all participants involved. However there were two limitations to the pilot. First, the staff had been working on the stroke unit since it’s inception in 2008. In addition, the unit was also the orthopedic unit and staff care for all the elective joint replacement patients so participants were familiar with the effects of mobilization and immobility.

Second, the rehabilitation staff had many pieces of a mobilization program already in place. Staff was already selecting patients with large, severely disabling strokes during their initial evaluations and informally working together to provide organized care to these patients. For example, after assignments were made, the rehab staff assigned to the patient would find a mutually agreeable time to deliver therapy. Physical therapy would work with the patient first and get them out of bed into a chair or wheelchair. Speech therapy would come next and work with the patient on swallow and cognitive issues. Occupational therapy would then see the patient and assist them back to bed with the help of the nursing staff or the physical therapist. Using this model, the patient was out of bed approximately one to one and a half hours at a time which is roughly equal to two rehab sessions per day. Patients generally receive rehab therapy once a day. Since these patients are at high risk for falls, the rehab department engaged the help of the Clinical Care Extenders (CCE) to provide assistance with therapy and to stay with the patients until the next therapist was available. This allowed the patient to stay
out of bed for longer periods of time during the day. In addition, the CCE gained valuable experience working with patients and an introduction to the rehabilitation profession.

**Implications for Practice**

Formation of a multidisciplinary team approach to this process is essential. Short, informal meetings in the room with staff (rehabilitation, nursing, and physician), family and patient known as huddles are used by staff to remind everyone that the patient is the center of the process and the most important member on the team. This huddle will serve many purposes: to determine the plan of care and personal goal of the patient for the day, to adjust individual staff schedules to best meet the schedule of the patient, and to insure family will be available to assist with therapy. While this process may seem like it would take more time, if administered correctly, it may save time by knowing when the patient is available instead of looking for the nurse, making sure the patient and other therapists are available, and needing to come back when family is available. This team approach will facilitate better overall family involvement and communication among staff.

The literature review showed the increased benefits of more than one therapy session per day in the acute stroke patient. Currently patients receive rehabilitation evaluations within 24 hours of admission to the stroke unit. The rehabilitation therapists then recommend therapy based on the evaluation. However, due to lack of staff, the therapists are only able to provide therapy once a day. The current equipment is not optimal for gait training and the therapists work with both orthopedic and stroke patients. The hospital is moving to a new
facility in the summer of 2012 and this move will provide new equipment and space for gait training and a rehabilitation gym for patients.

The physical therapy plan needs to be reviewed by the RN and CNA so they are aware of the physical limitations the patient may have and how to position and safely move them. Prevention of complications such as contractures, painful shoulders, and aspiration pneumonia by proper positioning in bed and in a chair is vital and the therapists can assist them by demonstrating the proper techniques for positioning and oral care.

**Implications for Education**

Education about the importance of early mobilization needs to be a top priority for staff working on the stroke unit. The opening of the new hospital in summer of 2012 presents a unique opportunity to provide the education to everyone working on the new unit at the same time. The mobilization education can be provided by staff from rehabilitation and nursing together to foster the multidisciplinary team approach.

Nursing staff including Certified Nursing Assistants (CNA) need to be aware of the need for early mobilization of stroke patients. While the role of each staff member may be different, there are many areas where they overlap. The CNA and RN must understand specifically what each therapist does so he/she can seek them out as experts. For example, the CNA helps the patient with activities of daily living so they should be approaching them the same way as the OT. If the patient cannot identify a toothbrush or comb or how to use them, the OT can show the RN and CNA her treatment so the patient will be exposed to the same method with each interaction. Therefore all staff need to understand the plan of care outlined by the
occupational therapist and the speech therapist to maximize the time spent on these activities. The RN and CNA should be building on these plans.

The skilled nursing facilities (SNF) receive many stroke patients for continued rehabilitation or custodial care after their acute stay. These patients are at risk for all the complications of immobility they were at risk for when they were in acute care. While SNF staff is familiar with caring for stroke survivors, they may not be aware of the evidence base supporting these treatments. Transitioning care to these facilities is a critical point in their care and the rehabilitation plan is not often part of that hand off. The hospital system has two SNF’s associated with them and education on the principals of VEM should be presented to the nursing staff. If the patient is admitted to one of these two facilities, the same therapist could treat them in the SNF since they work at all the facilities so the care can go forward practically uninterrupted. This staff also has access to the electronic medical record which will aid in the quicker implementation of therapy. However, if the patient transfers to a SNF not affiliated with the system, there is no way to send that facility the rehab plan of care resulting in an interruption in the therapy schedule. Teaching the hospital RN staff to include the rehab plan of care in the report called to the receiving RN is a first step toward improving the process.

The system has a lift team, a group of specially trained staff that assist the nursing staff with patients who are difficult to move or reposition including the stroke survivor. This team are the experts on lift equipment on the units and are available each shift to assist with any patient. They are not professional staff and do not receive any education on VEM. Since they
are an important member of the team caring for the stroke team they should receive this education.

**Implications for Future Practice**

Better communication between physician, family, patient and staff about the plan of care for the survivor is necessary to provide a safe, healing and patient centric environment. Tools that document the initial evaluation completed by the rehabilitation staff and the initial plan of care need to be developed.

Increased staffing for rehabilitation and nursing for mobilization of patients with severe strokes needs to be put in place for the Neurosciences Unit when the new facility is opened. This increase can be accomplished using PT aides (non licensed aides similar to CNA’s but with training in rehabilitation), CNA’s, and CCE’s assigned to the unit and the rehabilitation department. The project should be presented to administration to enlist their assistance to implement these changes in staffing.

Transitioning practices, which detail how a patient moves from the hospital, to an outside ARU or SNF not affiliated with the hospital system need to be reviewed and updated if necessary. Patients transferring to the SNF’s and ARU associated with the hospital have access to the electronic health record to review patient care plans and previous rehabilitation recommendations. This information is often not passed along in detail by the nurse transferring the patient regardless of whether the patient is going to an outside ARU/SNF or one affiliated with the hospital. Patients transferring to other SNF’s and ARU’s need to have this information passed along in the discharge/transfer information by the nurse and therapists
but in current practice this information is not consistently given in report. Working in collaboration with rehabilitation, a standard needs to be developed for this process.

Education about VEM to the SNF nursing staff needs to be presented to nursing and rehabilitation staff caring for these patients. Rehabilitation staff working at the hospital associated facilities also work at the acute care facilities so they are familiar with the program and may have already worked with the patient transferring to them. The nursing staff do not usually float between facilities and while they are aware of the complications of immobilization, they may not be aware of the importance of early mobilization and the process at the acute care level.

Grand rounds and continuing education units (CEU’s) for the rehabilitation staff should be given at the acute care level. Rehabilitation CEU’s are administered a bit differently than nursing CEU’s but there is now a therapist at the facility working with nursing education to provide these hours. Interest in Grand Rounds focusing on rehabilitation aspects of patient care has been growing and many staff are willing to present cases already.
Conclusion

This evidence based practice project determined that it was feasible to implement an early mobilization program at a not for profit hospital. Staff working with stroke patients were more likely to implement the program after the presentation was completed. Barriers and benefits were identified including the need for more education of staff working with acute stroke survivors including CNA’s, the lift team, and SNF staff on early mobilization principles. Transitions of care to ARU and SNF need to be improved to maximize therapy gains made when in the acute areas. Tools need to be developed that are easy to understand by staff and families to track daily progress. Administration support for increased staff and equipment needs to be solicited. The benefits of early mobilization on stroke patients is well documented and should be implemented as soon as possible in this stroke unit.
References


Retrieved from


APPENDIX A

Human Subject Approval Forms

- CSUSM
- Palomar Pomerado Health
Institutional Review Board for the Protection of Human Subjects (IRB)
California State University San Marcos
Tel: 760-750-4029  irb@csusm.edu
www.csusm.edu/irb

Human Subjects Research Approval Form

IRB #: 2012-046

To: Amy Carney
Barbara Buesch

Project Title: Assessing The Attitudes of Staff on the Development of a Very Early Mobilization of the Stroke

This letter certifies that the above referenced project was reviewed and approved by the University's Institutional Review Board in accordance with the requirements of the Code of Federal Regulations on Protection of Human Subjects (45 CFR 46), including its relevant subparts.

Continuing Review

This approval is valid through the expiration date shown below. If this research project will extend beyond that date, a continuing review application must be submitted at least 30 days before this expiration using the Continuing Review form available on the IRB website. (www.csusm.edu/irb)

Modifications to Research Protocol

Changes to this protocol (procedures, populations, locations, personnel, etc.) must be submitted and approved by the IRB prior to implementation using the Minor Modification Form available on the IRB website.

Unanticipated Outcomes/Events

The CSU San Marcos IRB must be notified immediately of any injuries or adverse conditions.

☐ Approved Information Sheet or Consent Form(s) are attached. Only approved consent forms may be used to obtain participant consent.

Approval Date: 3/1/2012
Expiration Date: Does Not Expire

Katherine Hayden,
Ed.D. IRB Chair

The California State University
Bakersfield • Channel Islands • Chico • Dominguez Hills • East Bay • Fresno • Fullerton • Humboldt • Long Beach • Los Angeles • Maritime Academy • Monterey Bay • Northridge • Pomona • Sacramento • San Bernardino • San Diego • San Francisco • San Jose • San Luis Obispo • San Marcos • Sonoma • Stanislaus
Barbara Buesch, R.N.
District Stroke Coordinator
Palomar Pomerado Health
555 East Valley Parkway
Escondido, CA 92025

RE: Assessing The Attitudes of Staff on the Development of a Very Early Mobilization of the Stroke Patient

Dear Ms. Buesch:

Thank you for providing me information regarding your above-mentioned project. As Chairman of the Palomar Pomerado Health Investigational Review Committee (PPH IRC) I have reviewed the information and determined that the design of the project will be able to fulfill the outcomes and I see no ethical issues that would prevent it from moving forward. As the project is a quality improvement activity and not research, the study will not require oversight by the PPH IRC.

I will forward this information to Deborah Barnes, Director of Quality Management. Please notify the Quality Management Department of the results of this Quality Improvement project when it is completed. If you should decide to publish or present the results at a conference or in a public forum outside PPH in the future, please notify the Quality Officer, Opal Reinbold.

Sincerely,

Richard G. Just, M.D.
Chairman, Palomar Pomerado Health Investigational Review Committee

cc: Deborah Barnes, R.N.
APPENDIX B
Survey Questions

Demographics:
Gender: Male Female
Occupation: PT OT ST RN CNA
How long have you been in your profession? < 5 yrs 5-10 yrs More than 10 yrs
How long have you been employed at PPH? < 5 yrs 5-10 yrs More than 10 yrs

Questions:
1. How knowledgeable do you feel about early mobilization of stroke patients?
   a. Not at all
   b. Somewhat
   c. Very
2. How likely are you to participate in early mobilization of stroke patients given your current level of knowledge?
   a. Not at all
   b. Somewhat
   c. Very
3. How beneficial do you think an early mobilization program would be to the patients?
   a. Not at all
   b. Somewhat
   c. Very
4. How beneficial do you think an early mobilization program would be to the patient’s family?
   a. Not at all
   b. Somewhat
   c. Very
5. How interested are you in learning more about an early mobilization program?
   a. Not at all
   b. Somewhat
   c. Very
6. How familiar are you with multidisciplinary stroke care currently used at our facility?
   a. Not at all
   b. Somewhat
   c. Very
7. How interested are you in participating in an early mobilization program on the stroke unit?
   a. Not at all
   b. Somewhat
   c. Very

8. Given the opportunity to participate in an early mobilization program, how likely are you to participate?
   a. Not at all
   b. Somewhat
   c. Very

Note: the same survey was used as both a pre and post survey to allow comparison of knowledge and attitude before and after the intervention. The surveys were identified as “pre test” and “post test” at the top of the page.
APPENDIX C

Slide 1

Barbara Buesch, RN MSN(c)
March 2012
Palomar Medical Center

Slide 2

HEART DISEASE IS THE NUMBER 1 CAUSE OF DEATH IN BOTH MEN AND WOMEN

CVD CLAIMS MORE LIVES EACH YEAR THAN CANCER, CHRONIC LUNG DISEASE AND ACCIDENTS COMBINED
Slide 3

4th leading cause of death as of 2010
Dropped from 3rd.
This decline was mostly due to CVD
decreases in men and offset somewhat
by the increase seen in women.
Pathophysiology
Ischemic (85%)
Hemorrhagic (15%)

Slide 4

795,000 people experience a new or
recurrent stroke each year.
More than 76% of these are first
events.

Slide 5

Every 40 seconds someone
suffers a stroke
Someone dies every 4 minutes
of a stroke
Slide 6

6.4 million American’s are stroke survivors
20% of survivors require institutional care after 3 months
15 to 30% become permanently disabled

Slide 7

Women and Stroke
55,000 more women than men suffer a stroke each year.
6 out of every 10 stroke deaths are women
Cardiovascular disease (MI and stroke) kills more women than breast cancer.
The incidence of breast cancer is going down (36,000) vs increasing CVD (500,000)

Slide 8

Definition of a stroke
When blood flow to a part of the brain is completely blocked causing tissue to die.
Also called a Cerebral Vascular Accident or CVA or Brain Attack
Slide 9

Definition of a TIA

When blood flow to a part of the brain is blocked but then opens up causing the symptoms to go away.
The patient is said to have had a mini stroke.
This is sometimes referred to as a “stuttering stroke”
This could be a precursor to an actual stroke and the patient should be evaluated.

Slide 10

Definition of VEM

- Very Early Mobilization (VEM) is defined as any intervention delivered with the aim of reducing the time frame from stroke onset to first mobilization including first time out of bed.
- The initial interventions are delivered within 24 hours of symptom onset.
- Any form of activity out of bed after a stroke is considered VEM irrespective of the amount of staff and the type of assistance that is required. (Bernhardt, Collier, & Legg, 2009).

Slide 11

JC Measure for PSC Certification

Rehabilitation considered on all patients
PT, OT and ST are automatic orders and must be unchecked if the ALS admission orders are used.
Slide 12

Research shows

- A study from Australia noted that:
  - Patients spent greater than fifty percent of time resting in bed and 28 percent sitting out of bed.
  - Only 13 percent of time was spent in activities that could potentially prevent complications and improve mobility.
  - Patients spent greater than 60 percent of time alone.

(Bernhardt et al., 2005).

Slide 13

Research shows

- Only 17% of patients received therapy from more than one therapist.
- If the patient did receive multiple therapies, 24 minutes was spent with physical therapy, 23 minutes with occupational therapy and 33 minutes with speech therapy.
- The treatment times were longer and more intense if family members were present.

(Bernhardt et al., 2005).

Slide 14

Research shows

- The treatment times were longer and more intense if family members were present.
- Patients were most active when with a therapist or nurse.
- Those patients unable to ambulate spent 98% of their day in bed but those survivors who were able to walk independently still spent 40.5% of their day in bed.

(Bernhardt et al., 2005).
Slide 15

Research shows

- Seven patients were thought by staff to be at risk for falls but this group was noted to be standing or walking alone 10.5% of the time they were alone, highlighting safety issues inherent in stroke patients.
- Ninety-eight percent of the therapy was done at the bedside.
- The majority of therapy occurred during the hours of 0900 and 1230 and it was rare that the same therapist saw the patient on consecutive days. (Bernhardt et al., 2005).

Slide 16

Research shows

- Patients who were being placed in skilled nursing facilities were considered to be already at the level of care they were moving to and were considered a lower priority for therapy.
- Needs to be more research into the timing, intensity and frequency of therapy especially in the first 7 days after an acute event.
- (Bernhardt, Chan, Nichola, & Collier, 2007).

Slide 17

Research shows

- For patients with the most severe strokes, rehabilitation intensity was the best predictor of their functional outcome at discharge and the benefits from the rehab therapy were greater.
- Early rehabilitation initiation and intensity of the therapy led to improved functional.
- ICU patients who were given one additional rehab session a day had a 27-fold increase in the possibility of being able to walk alone and a 2.77 point increase in BI scores.
Slide 18

Research shows

- Patients who received more intense therapy had an 8-fold increase in the chance of independent walking than those who received less intense therapy.
- (Hu, Hsu, Yip, Jeng, & Wang, 2010).

Slide 19

Research shows

- Conventional treatment of stroke patients in which "one must learn to crawl before one can walk and the patient should not be challenged excessively for fear that it may induce a sense of failure or stress, if not depression and thus compromise outcome" (Horn et al., 2005, SI10) was false.
- Patients exposed to higher order tasks earlier in their stay including gait training within the first three hours of physical therapy (PT) even when they did not appear ready to perform the specific task had better outcomes. This was especially prominent in patients who suffered severe strokes. Trunk control follows naturally when working with extremities.
- (Horn et al., 2005, p. SI10).

Slide 20

Research shows

- Patients who were exposed to more minutes of gait training activities, upper-extremity control, and problem solving activities had significantly higher rates of discharge home.
- “Minutes of gait training in the first block of therapy was consistently the most important PT activity associated with better outcome, regardless of the total amount of PT rendered over the course of the rehabilitation stay”.
- (Horn et al., 2005, p. SI10).
Research shows

- 18% of survivors are dysphasic
- Up to 22% are not able to walk
- Between 24% and 53% are dependent on someone for some or all of their ADL’s
- (Katra & Langhorne, 2007).

Medical Complications

- Medical complications include:
  - Urinary Tract Infections (UTI)
  - Falls
  - Aspiration pneumonia
- Complications severely limit participation in rehab efforts, contribute to increased mortality
- Complications account for up to 51% of deaths within the first 30 days.

(Bernhardt, Dewey, Thrift, & Donnan, 2005).
(Sorbello et al., 2009).

Medical Complications

- Factors that can contribute to complications but that can be controlled in the hospital include
  - The hospital environment itself
  - Presence of a Foley catheter
  - Pain
  - Positioning in bed
  - Length of time spent in bed immobile

(Sorbello et al., 2009).
Benefits to the patient

- Waking up
- Increased self esteem
- See improvement instead of thinking they will be like this forever.
- Decrease in complications
- Decrease in depression
- Increase in function can be the difference between going home and going to a SNF

Teamwork

- A Study in 2005 looked at the relationship between rehabilitation team functioning and stroke patient outcomes”
- Three patient outcome variables were also used (length of stay (LOS) in the rehabilitation setting, functional improvement and discharge home).
- Improved team planning, problem solving and more effective use of feedback may improve treatment effectiveness.
- (Strasser et al., 2005).

Take Away Message

- Not everyone can go to ARU but everyone can get rehab.
- The earlier we get these patients up the better even if they don’t look like they can do it.
- Don’t triage this group especially if the stroke is BIG.
- Involve the nursing staff, CCE’s and family
- Must be a team effort
If Cardiovascular disease were eliminated, it would raise the average life expectancy by almost 7 years!!

What could YOU accomplish with another 7 years?

What can we accomplish together?

Contact Information

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Questions?