Statement of the Problem

Prolonged patient immobilization may lead to muscle breakdown, bone resorption, cardiac and pulmonary complications, decreased fatigue resistance capacity, and long-term cognitive and physical impairments (Brummel et al., 2012; Parry & Puthucheary, 2015; Schweickert et al., 2009). Intensive care unit acquired weakness (ICUAW), although not fully understood, can occur within 24 hours of ICU admission, continue to evolve, and may result in the patient requiring one to two years to reach peak functional recovery (Tipping et al., 2017). Early patient mobilization has been associated with improved peripheral and respiratory muscle strength, increased quality of life, more ventilator-free days, decreased delirium, and greater functional independence (Brahmbhatt, Murugan, & Milbrandt, 2010; Kayambu, Boots, & Paratz, 2013; Miller, Govindan, Watson, Hyzy, & Iwashyna, 2015; Tipping et al., 2017). Research on early patient mobilization in the neurological ICU is in its infancy.

The core strategy for early patient mobilization in the neurological ICU is to move the patient with a goal-directed, interdisciplinary approach, in whatever capacity that the patient may be stable enough to tolerate on that given day while the patient remains critically ill. A broad range of activities may encompass mobilization for the patient in the neurological ICU, including: assisting the patient to sit on the edge of the bed; progressing the patient to a stand-pivot transfer out of bed to a chair; patient ambulation; maintaining patient joint integrity with passive range of motion; balance training; bed mobilization training; endurance training; gait training; strengthening; cognitive skills training; stair training; transfer training; and therapeutic exercises.

Nurses present at the bedside are front-line providers of patient care in the neurological ICU. Levels of patient mobilization vary from the ICU, the medical-surgical setting, rehabilitation settings, and vary even further among different ICU specialty settings. An opportunity exists to establish best practices for nurses to initiate, implement, provide, and evaluate early patient mobilization in the neurological ICU.

Significance of This Problem

More than 5.7 million patients per year are admitted to an ICU in the USA, and 20-30% of those patients require ventilator support (Society of Critical Care Medicine, n.d.). In 2005, annual critical care costs in the United States were $81.7 billion, which represented 13.4% of hospital costs, 4.1% of national health expenditures, and 0.66% of the gross domestic product (Society of Critical Care Medicine, n.d.). Acute neurological conditions may account for 10-15% of all ICU admissions (Pelosi et al., 2011). Acquired medical complications associated with patient immobilization are detrimental to the patient and can lead to higher economic costs for patients, caregivers, institutions, and third-party payers, due to prolonged hospital lengths of stay, extended rehabilitation stays, and higher levels of disability. Klein, Mulkey, Bena, and Albert (2015) and Titsworth et al. (2012) demonstrated that the implementation of early patient mobilization in the neurological ICU had a positive financial impact, such that hospital charges for patients were decreased by 15-30%.

Universal definitions and terminology that emphasize standard practice for early patient mobility, early patient mobilization, and early rehabilitation do not exist. Timeframes to first patient mobilization, frequency of staff assisted patient mobilization, intensity of patient mobilization, and duration for early patient mobilization differ in specific patient populations and are often not addressed in the published studies. The benefits of early patient mobilization and potential harm in delaying patient mobilization are evident in literature, but clear timelines to start early patient mobilization are not discussed.
Aneurysmal Subarachnoid Hemorrhage (aSAH)

Subarachnoid hemorrhage (SAH) is an acute neurological event that diffusely disrupts a patient’s brain cortex in the period of time immediately after acute onset, and accounts for 5-10% of all strokes. Patients are most frequently affected by an aSAH in the fifth decade of life when they tend to be at the peak of their work productivity (Saciri & Kos, 2002). The financial impact for patients who survive an aSAH is burdensome to society. The lifetime cost to care for someone who survives an aSAH is more than double the cost of care for someone who has an ischemic stroke. After an aSAH, at least 40% of patients will not be able to return to their premorbid occupation (Karic et al., 2016). The recovery process for patients who survive the initial hemorrhage includes a lengthy ICU stay for intensive monitoring, securing the aneurysm with clipping in the operating room or securing the aneurysm with coiling in interventional radiology, and treatment focused on prevention of neurological complications.

In the literature review of early patient mobilization in the aSAH patient population, quantitative research includes either prospective non-blinded studies (Karic et al., 2016, 2017), prospective observational studies (Saciri & Kos, 2002; Kung et al., 2013; Shimamura et al., 2014) or retrospective analyses (Olkowski et al. 2013, 2015) published between 2002-2017; all of the studies were conducted at single centers. Some of the researchers noted nurses’ involvement in the study, either with screening patients or with assistance in the patient mobilization, and other studies did not mention any involvement of nurses (Saciri & Kos, 2002). Shimamura et al. (2014) did not mention which providers were responsible for patient mobilization. No explanation was given on how written and oral consent were obtained in this critically ill, vulnerable patient population, which is noteworthy because an average of 50% of aSAH patients have permanent physical and/or cognitive impairment, and/or social impairment as a result of their acute hemorrhage.

There is a need for multi-institutional, well-designed randomized clinical trials to explore the effect of early patient mobilization in the neurological ICU setting. Of the seven research studies reviewed, two were performed at the same single center (Olkowski et al., 2013, 2015) and two more were performed at another same single center (Karic et al., 2016, 2017). Although the research studies reviewed were performed world-wide, more studies are necessary to demonstrate the effects of early patient mobilization for patients with aSAH.

Mixed Neurological ICU Patient Population

The majority of the articles identified in neurological ICU patient mobilization separate the studies into specific diagnoses such as acute ischemic stroke or aSAH. Mixed neurological ICU patient population include patients with aSAH, ischemic strokes, TBI, intracerebral hemorrhage, subdural hematoma, status epilepticus, elective procedure, seizure, encephalopathy, respiratory failure, and others.

Seven quantitative research studies were identified in the mixed neurological ICU patient population. Research demonstrates that early patient mobilization practices vary throughout the world. In the literature review of early patient mobilization in the mixed neurological ICU patient population, quantitative research included either a prospective interventional study (Brimioulle et al., 1997), a prospective correlational interventional study (Titsworth et al., 2012), a prospective observational, multicenter study (Bartolo et al., 2016), a prospective two-group pre-post comparative design (Klein et al., 2015), a prospective design one-group pre-post quasi experimental study (Mulkey, Bena, & Albert, 2014), a preliminary prospective randomized study (Rocca et al., 2016), and a retrospective chart review (Witcher et al., 2015). Only one of the studies reviewed was a multi-center study (Bartolo et al., 2016); all others were single-center trials only.

Well-designed interventional research studies are needed to help clarify best practices for patient early mobilization for all types of patients who are cared for in the neurological ICU. The only randomized
control trial that was conducted was industry-sponsored and was not limited solely in the neurological ICU. In the research reviews on both neurological ICUs and mixed-patient neurological ICUs, early patient mobilization studies were not designed to involve nurses. Further opportunity exists for nurses to be key stakeholders in future early patient mobilization studies in the neurological ICU.

Limited qualitative research exists on the benefits of ICU early patient mobilization as perceived by physicians, nurses, advanced practice providers, rehabilitation therapists, patients, and/or their family members. The few research articles that have been published support the practice of early patient mobilization or early rehabilitation of patients. Published quantitative research studies provide support that early ICU patient mobilization is both safe and feasible (Schweickert et al., 2009; Titsworth et al., 2012). No qualitative research was identified that specifically addressed early patient mobilization practices in neurological ICUs. A few qualitative studies addressed the rehabilitation needs of stroke patients after they were discharged from the acute care setting, but no qualitative studies specifically addressed early patient mobilization in the neurological ICU (Barnsley, McCluskey, & Middleton, 2012; Outermans, Pool, van de Port, Bakers, & Wittink, 2016). No published peer reviewed journals were identified that specifically addressed qualitative research in a neurological ICU patient population or how patient mobilization efforts are affected by the presence of neurologic monitors and drains.

The early patient mobilization research published to date varies from discipline-specific research to multidisciplinary team research in the neurological ICU. Patient mobilization efforts are more alike than different across the various disciplines. Discipline-specific publications fail to mention the importance of collaboration between patient care team members, yet multidisciplinary publications highlight how all team members play a key role in early mobilization of patients. Therefore, all patient care team members, including nurses, must be included in early patient mobilization research.

Title:
Early Patient Mobilization in the Neurological Intensive Care Unit

Keywords:
Evidence based practice, Mobilization and Neurological ICU

References:


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**Abstract Summary:**
Early patient mobilization has been associated with positive patient outcomes. Using evidence-based mobilization interventions, nurses can standardize interdisciplinary care delivered to the neuroscience patient population and support positive patient outcomes. Well-designed interventional research studies are needed to help clarify best practices for patient early mobilization in the neurological ICU.

**Content Outline:**
I. Introduction

II. Review of the Literature

a. Introduction

b. Aneurysmal Subarachnoid Hemorrhage

c. Mixed Neurological ICU Patient Population

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