2012

The effects of a hospitalized elderly mobility pilot program: A secondary analysis

Natalie Alexandrovna Richmeier

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THE EFFECTS OF A HOSPITALIZED ELDERLY MOBILITY

PILOT PROGRAM: A SECONDARY ANALYSIS

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A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

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In Partial Fulfillment

of the Requirements for the Degree

Master of Science

in

Nursing

_____

by

Natalie Alexandrovna Richmeier
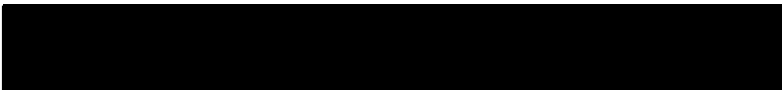
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December 2012

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ABSTRACT

Mobility and ambulation are essential functions that help people maintain their health. They are especially important for the elderly whose functions may be compromised by age related changes of decreased muscle strength and elasticity, bones fragility, ligaments deterioration, decreased endurance, and acquired chronic conditions.

For many decades, bed rest has been the standard of care for hospitalized patients. Nurses have often encouraged patients to rest in bed during their hospital stay to promote recovery and prevent injuries. By establishing a "culture of safety" nurses contribute to hospitalized patients' functional decline. Thus upon discharge, patients are unable to function on their own which leads to nursing home placement, increased falls risk, increased dependence on the help of others, greater rehabilitation costs, increased rate of hospital re-admissions, and even further decline and potential early death.

This secondary analysis examined the functional status of elderly at the time of discharge form one acute care hospital, comparing 154 participants in a piloted Inpatient

Mobility Program and 159 similar patients (n=159) who received standard nursing care. The Mobility Program participants had significantly shorter length of stay by 0.75 days, and improved mobility compared to comparison group.

This study led to incorporation of the Katz functional assessment tool into nursing electronic charting and hospital-wide implementation of the Elderly Mobility Program. The future study could examine the impact of the inpatient Mobility Program on elderly patients' mobility beliefs, mobility practices and re-hospitalization rate.

ACKNOWLEDGEMENTS

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Teach us to live that we may dread unnecessary

time in bed. / Get people up and we may save

our patients from an early grave.

(Richard Asher, MD, 1947, p. 968)

CHAPTER ONE

OLDER ADULTS AND FUNCTIONAL DECLINE

Introduction

Mobility and ambulation are essential functions that
help people maintain their health. They are especially
important for the elderly whose functions may be
compromised by age. The normal aging process is accompanied
by decline in functioning and includes: decreased muscle
strength and elasticity, decreased hearing, and vision,
problems with balance, frailty, decreased lungs capacity,
reduced sensation, memory loss, and changes in metabolism.

Due to aging, the alterations in various body systems
accumulate and a person acquires chronic conditions, such
as congestive heart failure, obstructive lung disease,
renal insufficiency, which exacerbations periodically
require the person's admission to the hospital. Before a
patient with a chronic condition decides to go to the

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hospital, he or she could be sick for a couple weeks, and his or her ability for self-care declines. Wakefield and Holman (2007) noted that the decline in a person's status usually occurs gradually, approximately two weeks before hospital admission, and continues during hospitalization, especially if the person is placed on bed rest. The functional decline during hospitalization for an elderly person can lead to negative outcomes, such as immobility, loss of balance, and progressive weakness.

Nurses in one acute care hospital in Southern California incorporated the Elderly Inpatient Mobility Program to prevent functional decline and promote mobility in elderly patients during hospitalization. The program included range of motion exercises, getting up to sit in the chair for each meal and daily ambulation with nursing staff. As a secondary data analysis, the present study examined the patients' functional status on discharge, length of stay and disposition on discharge as an outcome of the implemented program.

Background and Significance

The average age of the population of the United States is rapidly increasing. According to the United States

Census Bureau (U.S. Census Bureau, 2011), 13.3% of the population in the United States is 65 and older (approximately 41 million people). This compares to the year 2000, when elderly accounted for 12.4% of the population (35 million people). By the year 2030, the elderly will account for 19.7% of the U.S. population or 71 million people (U.S. Census Bureau, 2004, table 5). The life expectancy is also increasing, from 70.8 years in 1970 to 78 years in 2008. At this rate, by 2020 the life expectancy will be 80 years old (U.S. Census Bureau, 2012, table 104).

After retirement, physical activity of elderly people significantly declines due to sedentary lifestyles and chronic illnesses which lead to progressive loss of muscle strength. As a consequence, many elderly people require assistance with mobility, starting from grocery shopping and house cleaning, and as physical decline progresses, to daily bathing and dressing.

The Center for Disease Control and Prevention (CDC) has recommendations for a minimum level of physical activity for adults 65 years and older in order to obtain health benefits. Recommendations include: "150 minutes of moderate-intensity aerobic activity every week and muscle-

strengthening activities on 2 or more days a week" (CDC, 2011, para. 3). In 2011, according to the Behavioral Risk Factor Surveillance System, only 15.9% of adults 65 years and older participated in enough aerobic and muscle strengthening exercises to meet CDC guidelines.

In 2010, the elderly accounted for 38% of all hospitalizations in the United States with the average length of stay at 5.5 days (National Hospital Discharge Survey, 2010). Currently, the majority of United States hospitals don't have any programs to promote patients mobility, and their main concerns are patient safety, fall prevention, diagnosis, and treatment. Resnik (2012) reported nursing—induced bed rest as evident practice in the hospital setting despite the lack of evidence-based benefits. Bed rest has been the standard of care for many decades, and nurses have encouraged patients to rest in bed during illnesses to promote patient recovery and prevent injuries. By establishing a "culture of safety" nurses contribute to a patients' functional decline during hospitalization (Lindquist & Sendelbach, 2007).

"Function-focused care" is a new nursing approach that "incorporates functional and physical activities into all patients care interactions with patients during their stay"

(Boltz, 2012, p.93). The Elderly Inpatient Mobility Program

developed by the nursing staff at the above mentioned acute

care hospital was the result of meticulous investigation of

the best available nursing practices for geriatric

patients.

Statement of the Problem

The low mobility rate in older adults during

hospitalization leads to functional decline. Mudge,

O'Rourke, & Denaro (2010) identified the following adverse

outcomes of functional decline: increased fall risk,

prolonged hospital stay, higher prevalence of nursing home

placements, increased rate of hospital re-admissions,

greater rehabilitation costs, increased dependence on help

of others, and even further decline and mortality.

Hypotheses

1. Among hospitalized patients over the age of 70,

those who participated in the Mobility Program shall have

significantly higher functional status at the time of

discharge than similar patients who received routine care.

2. Among hospitalized patients over the age of 70,

those who participated in the Mobility Program shall have

significantly shorter hospital stays than similar patients who received routine care.

3. Among hospitalized patients over the age of 70, those who participated in the Mobility Program shall have significantly higher prevalence of home discharges versus discharges to long term care facilities, compared to the similar patients who received routine care.

Purpose of the Study

The purpose of this research is to conduct a secondary analysis of data from an Elderly Inpatient Mobility Program pilot tested in 545 beds hospital. The analysis will determine the effectiveness of the Program designed to prevent functional decline in patients over the age of 70. The findings will be used to recommend changes in the Elderly Inpatient Mobility Program before the hospital implements the Program on all patient units.

Setting Background Information

The acute care hospital is located in the desert region of southern California. This hospital is one of three hospitals in this area. The mean age of the residents in the city where the hospital located is 62.3 years old

(City-data.com, 2010). The region is a raw desert and historically was developed as a resort destination with very well developed infrastructure. The weather is very hot during summer, but very enjoyable during winter which attracts numerous retired residents from the "cold" states, as well as Canada and England.

The total population of the elderly in the region is approximately 95,000, with another 100,000 retired residents during winter months. About 75% of patients in the study hospital are 60 years and older with a median age of 70 years old (Office of Statewide Health Planning and Development, 2011). Thus, the hospital predominantly serves an elderly population and therefore must provide special attention to functional status of the patients.

Maintaining elderly patients' capability to perform basic activities of daily living preserves their independence and provides a quality of life. In 2008 the Agency for Healthcare Research and Quality updated the Clinical Practice Guidelines for Geriatric Patients and included the assessment of functional status of hospitalized older adults in the recommended standards of care (National Guideline Clearinghouse, 2008). Thus, every hospital that provides services to the elderly should have

a program to prevent functional decline. The literature

reports a lack of research investigating models of nursing

care for older hospitalized patients (Chang, Hancock,

Hickman, Glasson, & Davidson, 2007). The findings of this

Elderly Inpatient Mobility Program evaluation study will

contribute to the nursing research and add information to

the body of nursing knowledge.

Theoretical Framework

During the literature search, the Mobility Program

development team found a model used in a previous study

that evaluated the function of hospitalized older adults:

"functional decline as a patient outcome related to nursing

care practices" (Boltz, Capezuti, Shabbat, 2011, p.216).

The hospital adapted this model for the Elderly Mobility

Program.

The Quality Health Outcome Model (QHOM) has four

components: the patient, system, intervention and outcome

(Mitchell, Ferketich, & Jennings, 2007). The interaction

among these components is dynamic and reciprocal. QHOM was

developed as an approach to evaluate and compare medical

care quality. "The QHOM provides the conceptualization of

functional decline as a patient outcome related to nursing

care practices, specialized to the needs of the hospitalized older adult patient, and influenced by system characteristics" (Boltz, Capezuti, Shabbat, 2011, p.216).

The Elderly Inpatient Mobility Program addressed all of the components of the QHOM model. The patient characteristics were: advanced age 70 and older, acute illness-diagnosis on admission, baseline functional status measured with the Katz index, level of activity and mobility on admission measured with components of the Braden scale, Schmid Fall Risk score, and living settings-where a patient resides-versus skilled nursing facility. The system characteristics included: nursing staff geriatric education, nursing perception of physical function for older adults, availability of the nursing staff for assistance, and administrative support. The nursing governance infrastructure was added to the model to illustrate the process of the development of the Mobility Program. The hospital Shared Governance, Steering Committee, and Unit-Based Councils participated in the planning, implementation and evaluation of this program. Each body had an assigned role: the research council conducted the evidence-based literature review to learn about similar programs implemented in other hospitals; the

Steering Committee was responsible for connection with

resources, nursing knowledge assessment toward geriatric

care and educational planning. The Unit-Based Councils were

responsible for program planning, implementation, and

performance. The Elderly Inpatient Mobility Program

intervention was designed to prevent functional decline in

hospitalized older adults. Patient outcomes included a

functional status on discharge, length of stay, and

discharge status (home versus skilled nursing facility).

UNIT- BASED COUNCILS   STEERING COMMITTEE   HOSPITAL SHARED GOVERNANCE

SYSTEM
ACUTE CARE HOSPITAL IN SOUTHERN CALIFORNIA
70% of hospitalized patients 65 and older

Prolonged bed rest and lack of progressive activity orders
Staff culture which limits patient activity for safety and fall prevention

INTERVENTIONS HOSPITAL MOBILITY PROGRAM

Functional decline in hospitalized patients≥ 70
Studies report 30-50% of older patients are more dependant
at hospital discharge than their pre-illness baseline

OUTCOMES

Patients and families beliefs related to rest with illness
Lack of destination of interest

PATIENTS
age 70 and older
hospital stay 3 or more days

Figure 1. The Hospital Mobility Program in Reflection of Quality Health Outcomes Model, adapted with authors permission by N. Richmeier
Mitchell, P., Ferketich, S., & Jennings, B. (2007). Quality Health Outcomes Model. American Academy of Nursing Expert Panel on Quality Health Care. *Journal of Nursing Scholarship, 30*(1), 43-46.
http://dx.doi.org/10.1111/j.1547-5069.1998.tb01234.x

Summary

The United States is a country with a significant

number of elderly people that enter the healthcare system

with the hope of improving their condition. Nurses must

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look beyond the physical care of the medical illness and target the patient functional status which has a major impact on a person's everyday life. By discharge, due to immobility, many older adults are unable to function independently. This puts a burden on their families and leads to a strain on nursing resources with home assistance or nursing home placements. Thus, healthcare practices should be redesigned to accommodate the growing elderly population with independent functioning and successful aging. By developing the Elderly Inpatient Mobility Program the study hospital supported the "function-focused" care initiative developed in response to changes in evidence-based practices.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The comprehensive literature review was conducted with

an in-depth investigation to the problem of functional

decline in hospitalized older adults. The computerized data

bases, CINAHL, Medline, PUBMED, EBSCOhost Academic Search

Premier and ScienceDirect, were searched for published

studies on this subject with literature review keywords:

hospitalized older adults, patients, elders, functional

decline, immobility, deconditioning, activities of daily

living, mobility, function in acute care, hospital care,

nursing care, older adults, aging, and physical activity.

Definition of Terms

The literature has several definitions of functional

status, functional decline, mobility, activity,

deconditioning, and etcetera. The most common used are

presented below.

Functional status is defined as "an individual's

ability to perform normal daily activities required to meet

basic needs, fulfill usual roles, and maintain health and

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well-being" (National Palliative Care Research Center, 2012, para. 1).

Activities of daily living are defined as the ability to perform six basic functions: bathing, dressing, toileting, transferring, continence, and feeding (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963).

Functional decline is defined as a loss of independence in activities of daily living (Covinsky et al., 2003).

Impaired physical mobility has the following defining characteristics:

-Inability to move purposefully within the physical environment, including bed mobility, transfers, and ambulation

-Reluctance to attempt movement

-Limited range of motion (ROM)

-Decreased muscle endurance, strength, control, or mass

-Imposed restrictions of movement including mechanical, medical protocols, and impaired coordination

-Inability to perform actions as instructed ("NCP Nursing Diagnosis", 2009).

Deconditioning can be defined as the "...multiple, potentially reversible changes in body systems followed by a period of physical inactivity and disuse" (Gillis & MacDonald, 2005, p.17).

Functional Decline in the Literature

In 1947, the British Medical Journal published an article of R. Asher, MD on a danger of bed rest. The article stated that bed rest negatively affects human body including danger of hypostatic pneumonia, thrombus development, bed sores, joints stiffness, loss of bone mass, development of kidney stones, constipation and insomnia. In the late 1990s, the problem of functional decline during hospitalization due to bed rest was actively discussed in the nursing literature. The authors started to alarm medical community about dangerous effects of bed rest on a human body and offer different measures to prevent functional decline during hospitalization, such as promotion of physical activity on pre-admission phase, screening patients for risk, and implementing interventions during hospitalization to help older adults to maintain strength (Hebert, 1997).

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The hazards of bed rest are well documented in the literature. They include decreased muscle strength which leads to de-conditioning and dependency upon others; vasomotor instability which puts patients at risk for syncope and falling, accelerated bone loss, new onset of urinary incontinence due to difficulty getting out of bed, pressure sores development due to immobility, dehydration, malnutrition, and depression (Thakuria, 2006).

Covinsky and colleagues (2003) recognized functional decline during hospitalization as the most common complication occurring in one third to one half of all older patients. Several studies showed that patients spend 73 to 83% of the entire hospital stay in bed, even those who are able to ambulate independently (Brown et al., 2009; Callen et al., 2004). Decline in functional status can occur even during short hospital stay, by the second day of admission (Kleinpell, Fletcher, & Jennings, 2006); even in individuals without any previous physical impairment (Suesada, Martins, & Carvalho, 2007). The older adults frequently suffer from chronic illnesses, and their conditions often worsen gradually. Thus, before going to the hospital, a person has usually been sick for a while. The studies report that a decline in activities of daily

living (ADL) occurs two weeks before hospital admission (Wakefield & Holman, 2007) and declines even further when a patient is placed on bed rest. Zisberg, et al., 2011, found that the functional decline occurring while in the hospital still persists at one month follow ups, even in patients who were functionally independent before admission to the hospital. Functional decline differs between patients in relation to their preadmission functional status, with worse outcomes in those who had demonstrated decline before hospitalization (Covinsky et al., 2003).

This decline correlates with "…higher mortality rate, longer lengths of stay, greater rehabilitation consumption and costs and an increased rate of admission to long-term care facilities" (Boltz, Capezuti, Shabbat, & Hall, 2010, p.381). A 2007 study by Wakefield and Holman found that patients who experienced functional decline during hospitalization were more likely to die within 3 months of discharge.

Several factors have been identified that negatively affect function during hospitalization: severity of illness, medications side effects, and patients' cognitive status (Fitzpatrick et al., 2004).

In order to prevent functional decline functional
assessment should be performed on admission to recognize
high-risk patients (Graf, 2006). Nurses have the skills and
knowledge to perform this assessment and provide
interventions to prevent functional decline.

Frequently, admitted patients have no written activity
orders which give nurses a power for free interpretation
(Brown et al, 2009; Callen et al, 2004). Thus, nurses
frequently place patients on bed rest since it was a
standard of care for many decades; and they truly believe
it is the best thing to do (Resnick, 2012).

King (2006) summarized that there are several barriers
for mobility identified during a hospital stay:

> ...devices related (intravenous lines, catheters, oxygen
> lines, cardiac monitors and etc.), the hospital
> hostile environment (cluttered hallways, cold shiny
> floors, raised beds, unfamiliar environment),
> uncomfortable clothing (hospital gowns), lost
> eyeglasses or hearing aids, and medication side
> effects (sedatives and analgesics can lead to
> confusion, unsteady gait, falls and fractures) (King,
> 2006, p.268).

Frequently the nursing staff has a tendency to limit patients' activities in order to prevent falls by putting different obstacles in the way, such as bed rails, and bedside tables to stop patients from getting up on their own (Minnick et al., 2008).

In addition, the nursing shortage and increased number of elderly patients that require assistance with ADLs limit the number of nursing staff visits to each patient (Chang et al., 2003). The problem remains unresolved. In spite of a caution "don't let a patient ambulate on his own", there is nobody to help.

In some cases family members are available to assist with ambulation, but quite often spouses of elderly patients require assistance as well (Tucker et al., 2004). Some hospitals have instituted measures to address the shortage of available nursing time. Inouye et al, 2000, studied the recruitment of volunteers to assist patients with activities, such as ambulation, feeding, daily visitors and orientation. Gills and McDonald (2005) recommended family participation during mealtime and exercise periods.

Other identified barriers, such as the patient's general condition(dementia, delirium, acute illness

required bed rest), symptoms of fatigue and weakness, lack of destination of interest, cause patients to remain confined by choice to their rooms (Brown et al., 2009). The hospital environment makes the bed the most convenient and comfortable place from which to view the television (Brown et al., 2007). Medical professionals often stated that patients themselves lack of motivation and have no interest in ambulation (Brown et al., 2007), yet patients reported staying in bed as the worst possible situation (Bourret et al., 2002).

Summary

The physical and psychological consequences of low mobility have been extensively documented in the literature and the nurses' role in prevention is paramount. Nurses as front line care providers must take the initiative in assessment and evaluation of current practices with a goal to reorganize and improve patients' care. Multiple programs have been implemented in different hospitals, but little is known about their effectiveness (Chang et al, 2007; Tucker et al, 2004). Only by performing a program evaluation changes can be made to improve care.

CHAPTER THREE

METHODOLOGY

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Introduction

In order to implement new practices and provide

"function-focused care" to better serve geriatric patients,

nurses in one acute care hospital implemented a pilot study

of an Elderly Inpatient Mobility Program on two telemetry

units in November of 2011. The goal of the program was to

prevent patients' functional decline during the hospital

stay, decrease the length of stays and increase occurrences

of home discharges versus nursing home placements. This

thesis focuses on the Mobility Program evaluation by

studying the program's outcomes.

Problem Statement

The low mobility rate in older adults during

hospitalization leads to functional decline, a prolonged

hospital stay, and nursing home placement.

Research Hypotheses

Three hypotheses guided this study. Patients in the intervention group, compared to patients in two comparison groups, who received standard care, will have:

1. higher functional status at the time of discharge

2. shorter hospital stays

3. higher prevalence home discharges versus nursing home placements.

Research Protocol

The protocol presented here describes the secondary data analysis of the Elderly Inpatient Mobility Program that was piloted in November 2011. The depiction of the original study is provided as well for better understanding participants' selection for the current study.

Study Eligibility Criteria

All patients, age 70 years and older, who were on one of two telemetry units were recruited for the Mobility Program that lasted for six weeks. In the original pilot study, the hospital collected data for two weeks on patients participated in the Program (intervention group, n=93). The functional status at discharge and length of stay for the intervention group were compared to the same

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measures on patients admitted on the same units six weeks before the program was implemented (baseline group, n=67).

To increase the sample size for the secondary analysis, the investigator extended collection time from two week to one month (intervention group, n=227) and reviewed the medical records of similar patients admitted to telemetry units where the Mobility Program was not offered, during the original Program pilot study period (comparison group, n=232).

Because the literature indicates, that functional status can decline in patients hospitalized for two days, all records of patients hospitalized for less than two days were excluded from the secondary analysis. To prevent cross contamination of the intervention group and the other groups, only records of patients who remained on the same unit throughout their hospitalization were included with the final count: intervention group, n=154, baseline group, n=49, and comparison group, n=159.

In summary, the secondary analysis included three study groups.

-baseline group: patients admitted to two telemetry units during September 1 through September 14, 2011 before the Mobility Program was implemented.

-intervention group: patients admitted to the same

telemetry units during November 1 through November 30,

2011, and participated in the Mobility Program.

-comparison group: patients admitted to similar telemetry

units during November 1 through November 30, 2011 and had

not participated in the Mobility Program.

It is important to address the reason for the limited

sample size of the baseline group. The patients included in

the baseline group had been admitted to the telemetry units

targeted the Mobility Program during the two weeks before

the Mobility Program started. Since the hospital where the

study occurred is a seasonal hospital with low patients'

census during summer, when some units closed, there was not

enough time to collect data for a longer period prior to

the pilot program. During the summer time, different types

of patients were admitted on telemetry units due to patient

overflow. The education for the Mobility Program rolled out

at the end of September and collecting data beyond the two

weeks could skew the data, because nurses already would be

informed about the mobility protocol. It was not realistic

to collect data from the prior year (November, 2010)

because at that time the Schmid scale was updated. By

collecting baseline data and intervention group data on

patients admitted within the same season for higher

admission rates helped to control nursing variability.

Exclusion Criteria

Patients who had been discharged to hospice or died

during the hospital stay were excluded from the study since

improvements in those patients were not expected. The same

criterion was used in the study by Hoogerduijn et al, 2012.

Patients who had been transferred from other units were not

included since the Mobility Program was piloted only on two

telemetry units during the specified period. Patients who

were hospitalized for less than two days were also

excluded.

Design

Both the original pilot study and the secondary

analysis study described here had a retrospective study

design, retrieving components of the electronic medical

records of study patients. The effectiveness of the

Mobility Program was evaluated by comparing patients'

functional status on admission and discharge and by

investigating the Program's influence on the length of the

hospital stay and on the patients disposition on discharge

(home versus nursing home placement). The other measures

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collected were age, gender, fall risk, and disposition on admission to evaluate group equivalence.

Instruments

The hospital did not have a tool to evaluate patients' functional status. Nurses have routine tools that were used in the study to indirectly assess functional status of participants: the Schmid fall risk scale, the mobility component of Schmid fall risk scale and mobility and activity components of the Braden scale. For the pilot study, the Katz Functional Assessment Index was introduced to the nurses.

Katz Index. This tool consists of six items for assessment of levels of function in activities of daily living: bathing, toileting, transferring, feeding, continence and dressing (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963). Higher scores mean a greater functional capacity and low scores mean a higher dependence to carry out activities of daily living. Despite an absence of formal validity and reliability reports in the literature, the Katz score has established itself as "the most appropriate instrument to assess functional status" measuring activity of daily living in many clinical settings (Wallace & Shelkey, 2007, para.2).

The pre-admission functional score (two weeks before hospital admission) was recorded during a patient interview on admission to the hospital, and the discharge score was recorded by nurses upon a patients direct observation. Since the Katz score was a new tool for the nurses, the Program planning team provided education on its application four weeks before the pilot. The training included a tool overview, its purpose, significance, components and scoring.

Activities Points (1 or 0)	Independence (1 Point) NO supervision, direction or personal assistance	Dependence (0 Points) WITH supervision, direction, personal assistance or total care
BATHING Points: _____	(1 POINT) Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area or disabled extremity	(0 POINTS) Need help with bathing more than one part of the body, getting in or out of the tub or shower. Requires total bathing
DRESSING Points:	(1 POINT) Get clothes from closets and drawers and puts on clothes and outer garments complete with fasteners. May have help tying shoes.	(0 POINTS) Needs help with dressing self or needs to be completely dressed.
TOILETING Points: _____	(1 POINT) Goes to toilet, gets on and off, arranges clothes, cleans genital area without help.	(0 POINTS) Needs help transferring to the toilet, cleaning self or uses bedpan or commode.
TRANSFERRING Points: _____	(1 POINT) Moves in and out of bed or chair unassisted. Mechanical transfer aids are acceptable	(0 POINTS) Needs help in moving from bed to chair or requires a complete transfer.
CONTINENCE Points: _____	(1 POINT) Exercises complete self control over urination and defecation.	(0 POINTS) Is partially or totally incontinent of bowel or bladder
FEEDING Points:	(1 POINT) Gets food from plate into mouth without help. Preparation of food may be done by another person.	(0 POINTS) Needs partial or total help with feeding or requires parenteral feeding.

Total Points: _____

Score of 6 = High, Patient is independent.
Score of 0 = Low, patient is very dependent.

Figure 2. Katz Index of Independence in Activities of Daily Living. *National Palliative Care Research Center*. Retrieved from http://www.npcrc.org/usr_doc/adhoc/functionalstatus/Katz%20Index%20of%20Independence%20in%20Activities%20of%20Daily%20Living.pdf

Schmid Fall Risk Score and Braden Scale. Since the

Katz Index does not provide information about patient

ambulation capability, medical record data were collected

from two additional tools routinely used to assess

patients: the mobility component from the Schmid Fall Risk

Scale, and the activity and mobility components of the

Braden Scale. The mobility component of the Schmid tool

uses the following scale: 0-independent, 1-steady gait with

assistance, 1-unsteady gait without assistance, and 2-

unsteady gait with assistance or bedbound, where the low

score has better outcomes.

The mobility component of the Braden tool has the

following scale: 1-completely immobile, 2-very limited, 3-

slightly limited, and 4-no limitations; activity component

of Braden scale: 1-bedfast, 2-chair fast, 3-walks

occasionally, and 4-walks frequently, where a higher score

indicates greater ability.

All these tools were used to document patients'

functional status on admission and discharge.

Procedure

The Institutional Review Board (IRB) approval for this

secondary analysis of the Elderly Mobility Pilot Program

was obtained from the hospital and from California State

University San Bernardino (CSUSB). The Mobility Program

received a waiver of informed consent from both IRB

committees. For the hospital, the study met the criteria of

a quality improvement project and all participants had been discharged when data collection started.

The list of the potential study participant records was obtained from the informatics department. Each study participants' electronic record received a random ordinal number and all identifiers were removed to protect patients' private information. All information was combined in one spreadsheet for further evaluation.

Table 1. Grid for Data Collection

	Age	M/F	Disposn admissn	Fall risk assesm score Admisn	Fall risk assesm score D/C	Mobilty balance score Admisn	Mobilty balance score D/C	Braden activity score Admisn	Braden activity score D/C	Braden mobilty score Admisn	Braden mobilty score D/C	Katz score admisn	Katz score D/C	Length of stay	Disposn on D/C	D/C Diagnos
1																
2																
3																
4																

Data Analysis

The results of the original study were developed from descriptive statistics only. The secondary analysis was more complete. Descriptive statistics were used to describe patient characteristics (age, gender, disposition on admission, and admission functional status scores) of all

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the study participants. The admission characteristics of the intervention and comparison groups were compared using bivariate analysis techniques. This analysis was important to determine comparison, baseline, and intervention group equivalence.

To test the hypothesis, the median values of the discharge functional status measures of the intervention group were compared to the median values for the baseline and comparison groups using the nonparametric median test. The mean length of stay (LOS) for the three groups was compared using analysis of variance (ANOVA). The data was analyzed with SPSS 19.

Validity and Reliability

The validity of the study was supported by the application of the well-established Katz score that has been proven to measure functional status in multiple studies (Wallace & Shelkey, 2007). The investigator found no published studies using the separate components of the Schmid Fall Risk score and the Braden scale to assess function. This study will be the first to do so and further recommendations will be made upon the results. The groups

of participated patients were compared to ensure their equivalence.

The reliability of the study was assured in several ways. First, the Katz, Schmid and Braden risk assessments scales are well-established reliable tools. Second, the sample size of 362 was sufficient. Third, since all patients over age 70 were included in the study, regardless of their medical illness, functional status or mental condition, the study results are applicable to the general patient population able to participate in a similar program. Last, the functional measures were collected by primary nurses through direct observation. According to one study by Brown and colleagues (2004), direct observation proved to be more reliable than patients' self-report (Brown, Friedkin, & Inouye, 2004).

Limitations

This study has several limitations. The investigative team assumed that all qualified patients participated in the Mobility program since every eligible patient received education in the form of Mobility Program flyers and a verbal explanation of the purpose of the program. The number of patients who refused to participate was not

recorded, but the nurses provided frequent encouragement to all eligible participants. The investigative team assumed that not only Mobility Program participation was essential for the study, but also the educational aspect that informed patients about mobility importance during illness, and was encouraging for the nursing staff to change their approach toward patient mobility.

There are several other factors, which can influence functional status, were not measured: time since last admission, cognitive status or medication that can affect mobility (Chang, et al, 2007; Fitzpatrick et al., 2004).

CHAPTER FOUR

RESULTS

Introduction

This evaluation research study investigated the functional status effects of an Elderly Inpatient Mobility Program pilot. Post-discharge chart data were collected on three groups of patients. The baseline group included patients hospitalized during September 1-14, 2011 who received standard nursing care before the Mobility Program was implemented. The intervention group included patients hospitalized during November 1-30, 2011 on two telemetry units where the Mobility Program was pilot tested. The comparison group included patients hospitalized during November 1-30, 2011 on the telemetry units, similar to the units where the pilot program was implemented. This comparison group did not participate in the Mobility Program, but received standard nursing care.

Study Sample

Over 500 (526) patients during the proposed study period met the inclusion criteria (age 70 years and older and hospitalized for two or more days), 67 for the baseline

group, 227 for the intervention group and 232 for the

comparison group. After reviewing medical records, some

patients were excluded from the study: those individuals

who died during their hospital stay or went to hospice

since the improvement in that category of patients was not

expected. The patients transferred to the study units had

not been recruited for the Mobility Program at the time of

their original admission were also excluded, due to

potential incidental overlap of care given to the study

group.

To maintain the groups' equivalence, the same criteria

were applied to all participants in all groups, even those

that did not participate in the Mobility Program. The final

number of participants (N) was 362: 154 in the intervention

group, 159 in the comparison group and 49 patients in the

baseline group.

Variables

The patient characteristics included age, gender, and

place of residence upon admission. The following risk

assessment variables were collected to define the sample on

admission: the Schmid Fall Risk score on admission, the

mobility component of the Schmid score on admission, the

activity and mobility components of the Braden scale on admission, and the Katz score on admission. The outcome variables were all the same risk assessment measures on discharge, disposition at the time of discharge, and length of stay.

Data Analysis Procedures

The statistical package for Social Science (SPSS) version 19 was used to analyze the data. All variables were coded and all entries were verified for accuracy by a research assistant. The established level of significance for rejection of the null hypothesis was $p < .05$ for all sets of data analysis.

Descriptive statistics were computed for all variables. Crosstabs tables and Chi-square tests were used to determine group equivalence on admission by comparing their age, gender, admission disposition and functional characteristics on admission. Independent student t-tests were used to compare functional variables' means within groups. Analysis of variance (ANOVA) with the Post-Hoc test and non-parametric tests for independent samples: "Median test" and Kruskal-Wallis were used to compare variables across categories of the groups.

Description of the Sample

The 362 older ($\geq$ age 70) hospitalized study participants were half male (n=184, 50.8%) and female (n= 178, 49.2%). The group gender differences were not significant (p=.841).

Table 2. Gender by Groups

			Gender	
			Female	Male
Group	Intervention	Count	75	79
		% within Group	48.7%	51.3%
	Baseline	Count	26	23
		% within Group	53.1%	46.9%
	Comparison	Count	77	82
		% within Group	48.4%	51.6%
Total		Count	178	184
		% within Group	49.2%	50.8%

The mean age of the entire sample was 80.9 years (SD=6.4; range=70-99). The age difference between groups was not significant (F=1.30, p=.27). See Table 3 for age details.
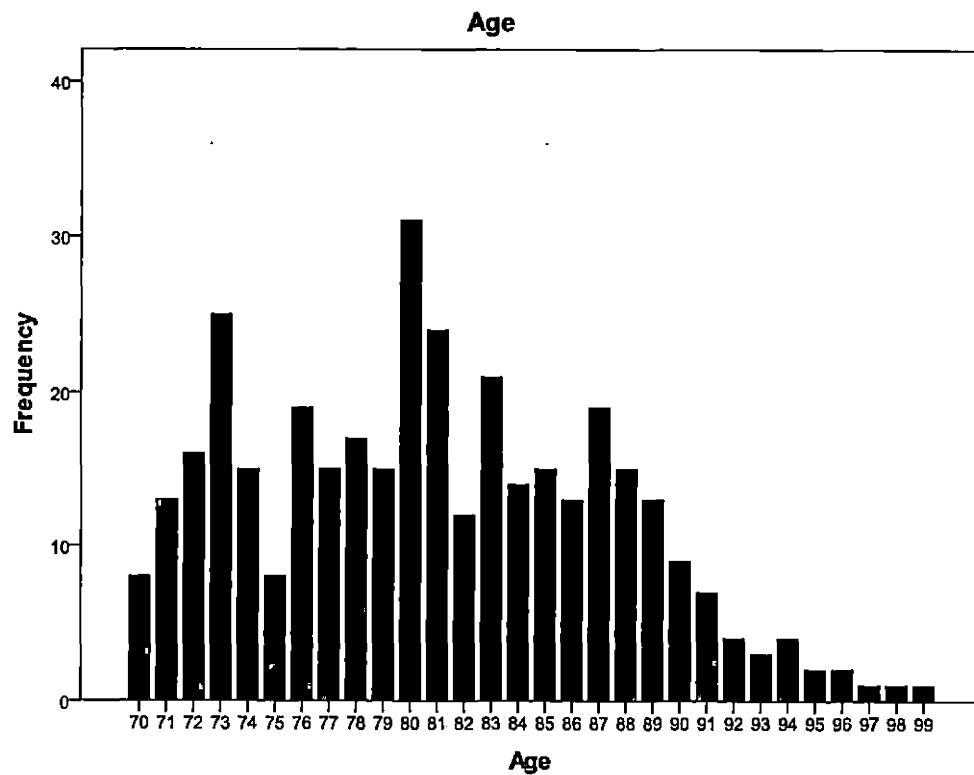
Figure 3. Age Distribution within Sample

Table 3. Mean Age within Groups

Group	Mean	N	Std. Deviation
Study	80.69	154	6.423
Baseline	82.24	49	6.672
Comparison	80.62	159	6.341
Total	80.87	362	6.427

Disposition on Admission

Disposition on admission was another variable used to compare groups equivalence. Individuals admitted to the hospital from skilled nursing facilities are more likely to be less mobile, and thus, may have more difficulties achieving higher mobility scores upon discharge. Chi-square analysis revealed no significant group differences in where the study participants resided before admission (X^2=3.85, p=.05). See details in Table 4.

Table 4. Admission Disposition[a]

			Home	Skilled Nursing Facility
Group	Intervention	Count	146	8
		% within Group	94.8%	5.2%
	Comparison	Count	141	18
		% within Group	88.7%	11.3%
Total		Count	287	26
		% within Group	91.7%	8.3%

Admission Disposition

[a] Admission disposition only available for the intervention and comparison groups, not the baseline group

Thus, there were no statistically significant differences between the groups' participants in age, gender and disposition on admission; and an average patient,

participated in the study, could be either male or female,
80 years old, and admitted from home.

Hypotheses Testing

Functional Status Variables

H_1 Patients who participated in the Mobility Program
will have significantly higher functional status on
discharge than those who did not participate.
Because the risk assessment scales were all measured at the
ordinal level, nonparametric statistical analysis was used
to determine the level of significance of groups'
differences. The mean is reported here only to indicate the
slight changes from admission to discharge.

Fall Risk Score. To record the patients' fall risk
score, the investigator retrieved the Schmid Fall Risk
scale assessments from the patients' electronic records.
The nurses routinely used the Fall Risk ordinal scale, with
a potential score of 0-14 where a high score indicated a
higher risk for a fall. The median of the Fall Risk score
on admission for the entire sample was 5.0, with a mean of
5.78 (SD=2.9). The majority of the patients had a high risk
score on admission ($\geq$ 5). The Fall Risk score on discharge
for the entire sample ranged from 0 to 14 with a median

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score of 5.0, a mean 5.14 (SD=2.99). Neither the differences between the groups' Fall Risk scores on admission nor discharge were significant (F adm.=.57, p=.57; F dis=.318, p=.73). See tables 5 and 6 for details.

Schmid Mobility. To record the patients' mobility, the investigator retrieved a Mobility component of the Schmid Fall Risk scale from the patients' electronic records. The nurses routinely use this tool and it grades as follow: 0-no limitations, 1-steady gait with assistance, or unsteady gait and no assistance, 2-unsteady gait with assistance or bedbound. A lower score indicated a better mobility. For the entire sample, the admission Schmid Mobility median score was 1.0, with a mean score of 0.94 (SD=.74). There were no changes in the scores at the time of discharge (median=1.0, mean=.72, SD=0.69). The statistical findings of the differences between groups were: F adm=3.6, p=0.03; F dis=0.36, p=.70. The Post-Hoc test showed statistical significant difference between the baseline and comparison group on admission with p=0.032. See table 5 and 6 for details.

Braden Activity. To record the patients' activity, the investigator retrieved an Activity component of the Braden scale from the patients' electronic records. It scored as

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follow: 1-bedfast, 2-chair fast, 3-walks occasionally, 4-walks frequently, where the higher score meant a greater activity level. For the entire sample, the admission Braden Activity median score was 3.0, with a mean of 2.39 (SD=1.0). The discharge Braden activity was slightly better (median 3.0, mean 2.83 (SD=.8), but it was not statistically significant. None of the groups' differences were statistically significant (F adm=.80, p=.45; F dis=.54, p=.59). See tables 5 and 6 for details.

Braden Mobility. To record the patients' mobility, the investigator retrieved a Mobility component of the Braden scale from the patients' electronic records. It scored as follow: 1-completely immobile, 2-very limited, 3-slightly limited and 4-no limitations, where a higher score indicated greater mobility. The scores improved slightly from admission (median 3.0, mean 3.17, SD=.65) to discharge (median 3.0, mean 3.21, SD=.59). The difference in discharge scores between groups were statistically significant (F=4.44, p=.01). Post-Hoc test results showed statistically significant improvement in the Braden Mobility score on discharge in the intervention group compared to the comparison group (p=.04), but not to the baseline group (p=.06). See tables 5 and 6 for details

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Table 5.   Functional Variables across Groups

		N	Mean	Std. Deviation
Admission Fall Risk	Intervention	154	5.62	2.949
	Baseline	49	6.10	2.330
	Comparison	159	5.84	3.078
	Total	362	5.78	2.929
Discharge Fall Risk	Intervention	154	5.03	2.981
	Baseline	49	5.04	2.500
	Comparison	159	5.28	3.159
	Total	362	5.14	2.997
Admission Schmid Mobility	Intervention	154	.92	.771
	Baseline	49	1.20	.707
	Comparison	159	.89	.711
	Total	362	.94	.742
Discharge Schmid Mobility	Intervention	154	.70	.706
	Baseline	49	.80	.612
	Comparison	159	.72	.695
	Total	362	.72	.688
Admission Braden Activity	Intervention	153	2.43	1.044
	Baseline	49	2.22	1.085
	Comparison	159	2.39	.934
	Total	361	2.39	1.002
Discharge Braden Activity	Intervention	154	2.85	.846
	Baseline	49	2.90	.743
	Comparison	159	2.78	.768
	Total	362	2.83	.798
Admission Braden Mobility	Intervention	153	3.22	.651
	Baseline	49	3.04	.644
	Comparison	159	3.15	.638
	Total	361	3.17	.646
Discharge Braden Mobility	Intervention	154	3.31	.621
	Baseline	49	3.08	.571
	Comparison	159	3.14	.561
	Total	362	3.21	.594

Table 6. Post-Hoc Multiple Comparison Test of the Functional Variables between Groups

Dependent Variable	(I) Group	(J) Group	Mean Difference	Std. Error	Sig.
Admission Fall Risk	Intervention	Baseline	-.485	.481	.602
		Comparison	-.226	.332	.793
	Baseline	Intervention	.485	.481	.602
		Comparison	.259	.479	.864
	Comparison	Intervention	.226	.332	.793
		Baseline	-.259	.479	.864
Discharge Fall Risk	Intervention	Baseline	-.015	.492	1.000
		Comparison	-.257	.339	.751
	Baseline	Intervention	.015	.492	1.000
		Comparison	-.242	.491	.885
	Comparison	Intervention	.257	.339	.751
		Baseline	.242	.491	.885
Admission Schmid Mobility	Intervention	Baseline	-.282	.121	.067
		Comparison	.035	.083	.914
	Baseline	Intervention	.282	.121	.067
		Comparison	.317*	.120	.032
	Comparison	Intervention	-.035	.083	.914
		Baseline	-.317*	.120	.032
Discharge Schmid Mobility	Intervention	Baseline	-.095	.113	.705
		Comparison	-.016	.078	.980
	Baseline	Intervention	.095	.113	.705
		Comparison	.079	.113	.782
	Comparison	Intervention	.016	.078	.980
		Baseline	-.079	.113	.782
Admission Braden Activity	Intervention	Baseline	.207	.165	.455
		Comparison	.041	.114	.936
	Baseline	Intervention	-.207	.165	.455
		Comparison	-.165	.164	.601
	Comparison	Intervention	-.041	.114	.936
		Baseline	.165	.164	.601
Discharge Braden Activity	Intervention	Baseline	-.047	.131	.937
		Comparison	.071	.090	.736
	Baseline	Intervention	.047	.131	.937
		Comparison	.118	.131	.665
	Comparison	Intervention	-.071	.090	.736

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		Baseline	-.118	.131	.665
Admission Braden Mobility	Intervention	Baseline	.181	.106	.231
		Comparison	.071	.073	.621
	Baseline	Intervention	-.181	.106	.231
		Comparison	-.110	.105	.579
	Comparison	Intervention	-.071	.073	.621
		Baseline	.110	.105	.579
Discharge Braden Mobility	Intervention	Baseline	.230	.097	.060
		Comparison	.167*	.067	.044
	Baseline	Intervention	-.230	.097	.060
		Comparison	-.063	.096	.807
	Comparison	Intervention	-.167*	.067	.044
		Baseline	.063	.096	.807

Katz. The Katz functional assessment tool was
implemented to assess the intervention group pre-admission
functional status only because the literature indicated it
was a more accurate predictor of potential functional
decline. The score ranged from 0 to 6, where 0 is totally
dependent in all activities of daily living and 6 is very
independent or no assistance is required.

Because the Katz was a new tool for the nurses and it
was not included in electronic charting, the investigative
team offered special training on using the Katz. In spite
of the nurses' enthusiasm for the Katz, after the training
the nurses frequently missed this assessment on the
intervention group, despite the training and monitoring. Of

the 154 intervention group patients, the admission Katz was

documented only 49% of the time (n=75) and 25% on discharge

(n=38). Consequently, the generalizability of findings from

the Katz score analysis was limited. The Wilcoxon signed

rank non-parametric test of related samples confirmed the

null hypothesis that the median of differences between

admission and discharge Katz equals 0.

The summary of the admission values are presented in

the Figure 4.

Admission Values

Variables	Baseline (n=49)	Intervention (n=154)	Comparison (n=159)
Age	82	81	81
Admission disposition	N/A	Home-94.8% SNF- 5.2%	Home-88.7% SNF- 11.3%
Schmid Total Fall Risk Score (0-14)	6.1	5.6	5.8
Schmid Mobility subscore(0-2)	1.2	.92	.90
Braden Activity subscore(1-4)	2.2	2.4	2.4
Braden Mobility subscore(1-3)	3.0	3.2	3.2
Katz Score (0-6)	N/A	4.7	N/A

Figure 4. The Summary of Admission Values

Length of Stay

H_2. Among hospitalized patents over the age of 70, patents who participate in the Mobility Program during their hospitalization shall have a significantly shorter hospital stay than similar patients who received routine care.

The length of stay (LOS) was defined as the number of days spent in the hospital with admission and discharge days counted as 1. Analysis of variance was used to test H_2, comparing the mean LOS for the intervention group with the LOS for the baseline and comparison groups.

The LOS for the study participants ranged from 2 to 14 days in the entire sample (mean 4.48, median 3.5, SD=2.67). The LOS in the intervention group ranged from 2 to 13 days (mean 4.09, SD=2.42). For the baseline group, the LOS ranged from 2 to 11 days (mean 4.49, SD=2.14). The comparison group LOS ranged from 2 to 14 days (mean 4.84, SD=2.99). See Table 7 for details.

Analysis of variance determined the group differences in LOS as significant (F=3.138, p=0.045). The Post-Hoc multiple comparison test revealed a statistical significance between intervention and comparison groups in length of stay with p=0.045 (Table 8), which partially

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supported a hypothesis that patients in the intervention group shall have shorter hospital stays compared to other groups.

Table 7. Length of Stay Distribution across Groups

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Length of Stay	Intervention	154	4.09	2.421	.195	2	13
	Baseline	49	4.49	2.142	.306	2	11
	Comparison	159	4.84	2.991	.237	2	14
	Total	362	4.48	2.670	.140	2	14

Table 8. Post-Hoc Multiple Comparison Test for
Length of Stay between Groups

Dependent Variable	(I) Group	(J) Group	Mean Difference	Std. Error	Sig.
Length of Stay	Intervention	Baseline	-.399	.435	.658
		Comparison	-.752*	.300	.045
	Baseline	Study	.399	.435	.658
		Comparison	-.353	.434	.718
	Comparison	Study	.752*	.300	.045
		Baseline	.353	.434	.718

Bar Chart
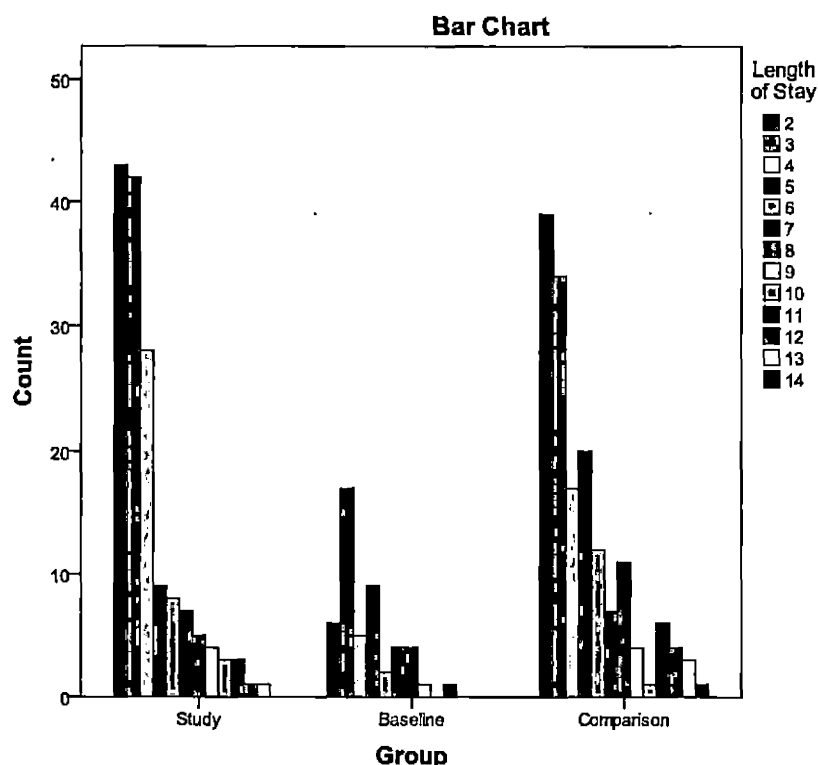
Figure 5. Length of Stay Distribution

Disposition on Discharge

H₃ Among hospitalized patients over the age of 70,

patients who participated in the Mobility Program during

their hospitalization shall have significantly higher

prevalence of home discharges versus discharges to long

term care facilities, compared to similar patients who

received routine care.

Disposition on discharge was described as home, home

with home health, and skilled nursing facilities. To

address this hypothesis, Chi-Squire analysis was conducted. From the entire sample 218 (60.2%) patients went home, 34 (9.4%) went home with home health and 110 (30.4%) went to skilled nursing facilities.

Of the intervention group, 92 (59.7%) patients went home, 16 (10.4%) home with home health, and 46 (29.9%) to skilled nursing facilities. Among those in the comparison group, 34 (69.4%) patients went home, 4 (8.2%) were discharged home with home health, and 11 (22.4%) to skilled nursing facilities. From the comparison group, 92 (57.9%) patients went home, 14 (8.8%) went home with home health services, and 53 (33.3%) to skilled nursing facilities (Table. 9).

The Chi-Square test revealed no statistically significant differences in discharge status of the groups' participants. Thus, the third hypothesis was rejected (X^2=2.62, p=.62). The groups experienced similar discharge dispositions.

Table 9. Groups Discharge Disposition

			Discharge Disposition			
					Skilled Nursing	
			Home Health	Home	Facility	Total
Group	Study	Count	16	92	46	154
		% within Group	10.4%	59.7%	29.9%	100.0%
	Baseline	Count	4	34	11	49
		% within Group	8.2%	69.4%	22.4%	100.0%
	Comparison	Count	14	92	53	159
		% within Group	8.8%	57.9%	33.3%	100.0%
Total		Count	34	218	110	362
		% within Group	9.4%	60.2%	30.4%	100.0%

The summary of the discharge values are presented in the Figure 6.

Discharge Values

Variables	Baseline	Intervention	Comparison
Schmid Fall Risk Score	5.0	5.0	5.3
Schmid Mobility	0.8	0.7	0.7
Braden Activity	2.9	2.9	2.8
Braden Mobility	3.1	3.3	3.1
Katz	N/A	4.5	N/A
Length of Stay	4.49	4.09	4.84
Disposition on Discharge	Home-70% SNF- 22%	Home-60% SNF- 30%	Home-58% SNF 33%

Figure 6. The Summary of Discharge Values

Summary of Conclusions

This study sought to confirm three research hypotheses.

Hospitalized patients 70 years and older participated in the Mobility Program in comparison to similar patients that received standard care will have:

1. Higher functional status at the time of discharge.

2. Shorter hospital stays.

3. Higher prevalence of home discharges versus nursing home placements.

The intervention and comparison groups were compared and determined to be equivalent on age, gender, and type of residence before admission. At the time of discharge, all groups of patients experienced improved functional status. The intervention group only had significantly higher Braden Mobility scores than the comparison group, but not the baseline group.

In the length of stay, the intervention group participants stayed 0.75 days less than patients in the comparison group, and the difference was statistically significant.

The prevalence of home discharges versus skilled nursing facilities was not significantly different.

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CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Physical activity is an important aspect of people everyday life, especially elders whose functional status is compromised by age and chronic illnesses. Thus, any hospitalization which includes decreased mobility will compromise the individual's quality of life following discharge. Therefore, the hospital nursing care goal is to provide patients with age sensitive care, accommodate their personal needs and prepare them for independent functioning at home.

The Inpatient Elderly Mobility Program was a nursing initiative that reflected this age sensitive care and demonstrated how nursing takes a leading role in patient care. Before conducting this research, a team of nurses performed a scrupulous literature search to evaluate current nursing knowledge on this subject. NICHE (Nurses Improving Care for Health System Elders), one of the leaders in providing a high quality geriatric care, a program of the Hartford Institute for Geriatric Nursing at New York University College of Nursing, has described the

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functional decline during hospitalization as "under recognized epidemic" and identified functional well-being as a priority of care.

The NICHE initiative to prevent functional decline during hospitalization was recognized by more than 270 hospitals in 40 states that implemented different programs in order to prevent decline and promote sensitive and excellent geriatric care (Agency for Healthcare Research and Quality, 2009). The pilot test of the Elderly Mobility Program was a first step toward implementing "function-focused" care at this acute care hospital in southern California. Following the study, the Program Planning Committee recommended to the Magnet Nursing Practice Council to implement the Mobility Program in the hospital for all patients over age 70.

Findings Related to Research Hypotheses

The impact of the Mobility Program on hospitalized patients age 70 and older was significant. Compared to similar patients in a comparison group who received standard nursing care, those who participated in the Mobility Program had significantly higher the Braden Mobility functional status score at the time of discharge

(p=.04), but no differences were found with the baseline group (p=.06).

The Mobility Program participants had shorter lengths of stays by 0.75 day (p=.045), and it was statistically significant.

No statistical significant differences between groups were found in prevalence of home discharges versus skilled nursing facilities.

Limitations of Study Design and Procedures

There were several limitations to the study. The baseline group had a small sample size, three times smaller than the study or comparison groups. Although, similarity of patients was statistically confirmed, the smaller sample size in one group could skew results of the study.

The tool, Katz score, that was implemented for functional assessment was not properly utilized. It was not documented in the majority of cases; only 35 patients from 154 had a documented Katz score on admission and discharge.

This was the first study that used the mobility component of the Schmidt Fall Risk score and mobility and activity components of the Braden scale, but not the

complete tool. The internal validity of separate tools'
components was not previously tested and can be a subject
of future study.

Every eligible patient received the Mobility Program
brochure, and a nurse explained the program and encouraged
each person to participate. Therefore, the research team
assumed that all qualified patients participated in the
Mobility program. The number of patients who refused
participation was not recorded, but frequent encouragement
was provided to all eligible participants. The Program
Planning Committee decided that not only the Mobility
Program participation was important for the study, but also
educational aspects that informed patients about mobility
importance during illness, and was encouraging for nursing
staff to change their approach toward patients' mobility.

There are several other factors, which can influence
functional status, that were not measured: time since last
admission, severity of illness, cognitive status or
medications that can affect mobility (Chang, et al, 2007;
Fitzpatrick at al., 2004).

Practice Implications

The Elderly Inpatient Mobility Program is very important for the hospital that delivers care to the geriatric population. The pilot study was a staff-driven evidence-based practice initiative that showed a nursing goal of high quality patient care. In addition evaluating the Program effects on patient outcomes, the study team also explored the process of program delivery. The chart reviews revealed that nursing documentation of patient mobility was incomplete. Feedback from the nursing staff uncovered one solution. The nurses recommended that the Katz Functional Assessment tool be incorporated into the electronic charting to assure documentation of the assessment. In addition, the patient's age (over 70) will trigger the inclusion of the Katz score area within the electronic chart.

When the Elderly Mobility Program is rolled out hospital-wide, the effects of this study on length of stay (LOS) will be included in the nursing staff educational campaign. One day of nursing care on a telemetry floor cost $700. If each older patient can be discharged from the hospital 0.75 day earlier, the hospital will save $105,000 a month.

Research Implications

After the Katz tool is implemented as a component of the routine functional assessment of the hospitalized elderly, patient improvement during hospitalization can be examined with a larger sample. Patient improvement can be tracked more completely since the Katz assessment will be done three times: on pre-admission, admission and discharge. The necessity of three assessments in addition to the other required patient assessments needs to be studied. Results from the current study revealed high correlations among all the current assessment scores. A larger sample would allow multivariate analysis to determine which assessments (and resulting care) are the best predictors of desired patient outcomes. Type and severity of illness could also be included as outcome predictors.

The inclusion of the Katz assessment in the electronic chart solves the problem of admission and discharge mobility documentation. However, simpler methods to record patient daily mobility still need to be developed. This will require a quality observation study of patients' activities. A focused literature review and data gathered from nursing and patient focus groups could identify

potential activity documentation that does not increase nurse or patient burden. New activity documentation methods could be tested in future studies.

The current study found the Mobility Program had positive effects on mobility during hospitalization. However, the effects of the Program's patient education component were not measured. The studied effects could be knowledge and beliefs about the effects of mobility on functional decline, as well as changes in patient mobility practices.

Another study could examine the impact of the inpatient Mobility Program following discharge. The longitudinal study might include changes in the elderly patient mobility beliefs, mobility practices and future hospitalization rates. In addition, a future study is needed to evaluate the Program's effect on nurses' knowledge and attitudes about the importance of mobility for the hospitalized elderly.

The research team was very grateful to the information system (IS) department for their cooperation in getting access to the electronic records. However, perhaps the data request process could be improved. The research team will be meeting with the IS personnel to examine the need for a

more streamlined electronic record access, since the number of retrospective nursing studies is increasing.

Conclusions

The Elderly Inpatient Mobility Program had a significant positive effect on one mobility measure and decreased the patient length of stay by 0.75 day. Based on these results, the Program will be implemented throughout the hospital and a follow-up study will be conducted six months later.

The investigator will share the results with the nursing staff and gerontology nurses in the region through posters and a formal presentation and discuss the practice implications and the need for future research. In addition, the results will be published in peer reviewed journals to add to the body of knowledge regarding care of the elderly. A potential publication in the lay literature, such as hospital community magazine "Healthy Living" and the local newspaper, would focus on the importance of mobility to maintain functional status in the elderly.

APPENDIX A

PERMISSION TO USE

QUALITY HEALTH OUTCOMES MODEL

Dear Ms. Richmeier:

My colleagues and I would be most pleased for you to use the Quality Health Outcomes Model as a framework for your project. We also appreciate that you will be citing the publication from which it came. The most complete citation would include the subtitle: American Academy of Nursing Expert Panel on Quality Health Care. I see that PubMed is now indexing it this way, which is great. I have copied that citation below. Although the paper is copyrighted, the concepts are definitely in the public domain and your use is entirely consistent with that.

Current pubmed citation:

Image J Nurs Sch. 1998;30(1):43-6.

Quality health outcomes model. American Academy of Nursing Expert Panel on Quality Health Care.

Mitchell PH, Ferketich S, Jennings BM.

Best wishes on your work,

Pam Mitchell

Pamela H. Mitchell, PhD, RN, FAHA, FAAN

The Robert G. and Jean A. Reid Dean in Nursing (Interim)

Professor, Biobehavioral Nursing and Health Systems

Box 357260, University of Washington, Seattle WA 98195

APPENDIX B

BRADEN PRESSURE ULCER

RISK ASSESSEMT SCALE

.

Braden Pressure Ulcer Risk Assessment

NOTE: Bed- and chair-bound individuals with impaired ability to reposition themselves should be assessed for risk developing pressure ulcers.
Patients with established pressure ulcers should be reassessed periodically.

Date of Assessment/Reassessment (day/month/year)						
SENSORY PERCEPTION ability to respond meaningfully to pressure-related discomfort	**1. Completely Limited:** Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation. OR limited ability to feel pain over most of body surface.	**2. Very Limited:** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness. OR has a sensory impairment which limits the ability to feel pain or discomfort over 1/2 of body.	**3. Slightly Limited:** Responds to verbal commands, but cannot always communicate discomfort or need to be turned. OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	**4. No Impairment:** Responds to verbal commands, has no sensory deficit which would limit ability to feel or voice pain or discomfort.		
MOISTURE degree to which skin is exposed to moisture	**1. Constantly Moist:** Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	**2. Very Moist:** Skin is often, but not always, moist. Linen must be changed at least once a shift.	**3. Occasionally Moist:** Skin is occasionally moist, requiring an extra linen change approximately once a day.	**4. Rarely Moist:** Skin is usually dry, linen only requires changing at routine intervals.		
ACTIVITY degree of physical activity	**1. Bedfast:** Confined to bed.	**2. Chairfast:** Ability to walk severely limited or non-existent. Cannot bear weight and/or must be assisted into chair or wheelchair.	**3. Walks Occasionally:** Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	**4. Walks Frequently:** Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours.		
MOBILITY ability to change and control body position	**1. Completely Immobile:** Does not make even slight changes in body or extremity position without assistance.	**2. Very Limited:** Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	**3. Slightly Limited:** Makes frequent though slight changes in body or extremity position independently.	**4. No Limitations:** Makes major and frequent changes in position without assistance.		
NUTRITION usual food intake pattern	**1. Very Poor:** Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement. OR is NPO and/or maintained on clear liquids or IV's for more than 5 days.	**2. Probably Inadequate:** Rarely eats a complete meal and generally eats only about 1/2 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. OR receives less than optimum amount of liquid diet or tube feeding.	**3. Adequate:** Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered. OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs.	**4. Excellent:** Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.		
FRICTION AND SHEAR	**1. Problem:** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation lead to almost constant friction.	**2. Potential Problem:** Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	**3. No Apparent Problem:** Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.			
NOTE: Patients with a total score of 16 or less are considered to be at risk of developing pressure ulcers. (15 or 16 = mild risk, 13 or 14 = moderate risk, 12 or less = high risk)				TOTAL SCORE:		
				INITIALS:		

Highlight details specific to patient

B. Braden & N. Bergstrom (1988). Braden Pressure Ulcer Risk Assessment. Reprinted with permission. Retrieved from http://www.bradenscale.com/images/bradenscale.pdf

APPENDIX C

SCHMID FALL RISK ASSESSMENT SCALE

Schmid Fall Risk Assessment Tool — _Circle group number_

MOBILITY **0** Ambulates without gait disturbance
1 Ambulates or transfers with assist devices or assistance/unsteady gait.
1 Ambulates with unsteady gait and no assistance
2 Unable to ambulate or transfer

MENTATION **0** Alert, oriented x 3   **1** Periodic confusion
1 Confusion at all times   **0** Comatose/unresponsive

MEDICATION **1** Anticonvulsants, tranquilizers, psychotropics, hypnotics
0 No anticonvulsants, tranquilizers, psychotropics, hypnotics

ELIMINATION **0** Independent in elimination
1 Independent with frequency or diarrhea
1 Needs assistance with toileting
1 Incontinent

PRIOR FALL **0** No prior history   **1** Unknown
HISTORY **1** Yes, before admission (home or previous admission)
2 Yes, during this admission Date _____

_Total Score:_____ *3 or greater = FALL RISK
Comments:

Schmid Fall Risk Assessment Tool (2008). _University of Virginia Health System._ Retrieved from http://www.virginia.edu/uvaprint/HSC/pdf/050381.pdf

APPENDIX D

THE ELDERLY MOBILITY PROGRAM

PROPOSED POLICY

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MOBILITY AND FUNCTION IN ELDER HOSPTIALIZED PATIENTS

Policy:

To assess the functional status of elder hospitalized patients $\geq$ 70 years old.

To provide nursing interventions which maximize mobility and prevent or minimize decline in functional status.

Responsible persons: RNs and CNAs

Procedure:

1. The RN will complete the Katz Index on admission and discharge. The admission Katz Index assessment will include baseline functional level two weeks prior to admission and functional level on the day of admission. The RN will refer to the Falls Risk score to assess the patient's daily mobility/balance status and risk for falls.
2. Physician orders for activity are required on all patients. The RN will monitor medical orders for activity daily. As the patient's condition improves, the RN will work with the physician to progress activity orders.   Key point: Reassess daily with the physician the necessity for the continuation of bed rest orders.
3. The RN will monitor for a decline in mobility / functional status and will request orders from the physician for appropriate therapy referrals as indicated.
4. Utilize the Mobility Nursing Care Plan Sticker to develop a plan of care for mobility.

Guidelines:

1. Patients who are on bed rest will be assisted to:
   - Turn/reposition at least every two hours when they are unable to reposition themselves unless contraindicated.
   - Perform active/passive range of motion three times a day.
   - If available, utilize the chair position of the bed during meals when not contraindicated.
2. Patients who are able to be up in the chair will be encouraged to do so independently or with assistance a minimum of two times a day, preferably at meals.
3. Patients who are able to walk will be encouraged and/or assisted to walk a minimum of two times a day. Key Point: Refer to Falls Risk Assessment and Interventions to maintain safety.
4. Patients will be encouraged to maintain Activities of Daily Living by self-feeding, participating in their personal hygiene, toileting routine etc. to extent possible.
5. Documentation
   - Katz Index in HED on admission and discharge. The admission documentation will include a baseline 2 weeks prior to admission and functional level on the day of admission.

APPENDIX E

HOSPITAL INSTITUTIONAL REVIEW BOARD

APPROVAL

INSTITUTIONAL REVIEW BOARD
IRB Office
Administrative Contact: Donna DiCiaula, C.I.P.
39000 Bob Hope Drive, Rancho Mirage, CA 92270

May 25, 2012

<div style="border: 1px solid black;">

NOTICE OF FULL APPROVAL OF MINIMAL RISK NEW PROTOCOL

Study Title: *The Effects of the Pilot Mobility Program for the Elderly at Eisenhower Medical Center*
IRB #12-008
Protocol: Protocol dated 4/2/12
IRB Study Approval Period: May 25, 2012 to May 24, 2013

</div>

Natalie Richmeier, RN
Eisenhower Medical Center
Nursing Service
39000 Bob Hope Drive,
Rancho Mirage, CA 92270

Dear Ms. Richmeier:

Thank you for your attendance and informative presentation of your above-named study at our meeting of May 25, 2012. After your presentation, the protocol, research plan, and data collection tool were reviewed and discussed by the IRB in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46). This study involves the review of medical records of hospitalized patients over the age of 70 who were hospitalized for over 2 days between September 1-30 and October-November 2011 on 3 North and 3 South; and similar patients hospitalized between October - November 2011 on 3 and 4 North and 3 and 4 South. It is anticipated that this will result in 600 charts being reviewed. The results of this initial study will be used to evaluate the effectiveness of the Pilot Mobility Program.

The Board reviewed your request for a Waiver of Consent and determined that it met the requirements of 45 CFR 46.116d because: 1) the research involves no more than minimal risk to subjects as the information is not controversial and it will be coded; 2) the waiver or alteration will not be used in any way that would adversely affect the rights and welfare of the subjects; 3) the research could not practicably be carried out without the waiver or alteration as these patients are no longer available to contact; and 4) it is not anticipated that there will be a need to provide subjects pertinent information at the completion of the study. Thus the IRB approved the Waiver of Consent.

The IRB also determined that the review of medical records for this study met the criteria for Waiver of Authorization under 45 CFR 164.512 (i) (2) in that the use or disclosure of the requested information involves no more than a minimal risk to the privacy of the individuals based on, at least, the presence of: 1) an adequate plan to protect the identifiers from improper use and disclosure by coding the data and keeping the link file separate from the data, 2) there is an adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, and 3) you have provided adequate written assurances that the requested information will not be used or disclosed to any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of the requested information be permitted by the Privacy Rule; the research could not practicably be conducted without the waiver or alteration; and the research could not practicably be conducted without access to and use of the requested information.

The IRB concluded that in accordance with 45 CFR 46.111 the risks have been minimized through the use of procedures that are consistent with sound research design, and do not unnecessarily expose subjects to risk; 2) risks are reasonable in relation to anticipated benefits and generalizable knowledge may reasonably be expected to result; 3) selection of subject records is equitable and appears to take into account the purpose of the research, and the setting in which research will be conducted; 4) consent has been waived under 45 CFR 46.116(d); and 5) there are adequate provisions to protect subject privacy and maintain data confidentiality. Thus, the risks are reasonable in relation to benefits to subjects and the importance of the knowledge expected to result from the research and the overall risk/benefit ratio of this minimal risk study is acceptable.

Because this is a minimal risk study, continuation reviews may be conducted utilizing the expedited review procedures.

This approval is for 365 days from the date of IRB initial review and approval (May 25, 2012 – May 24, 2013). The regulations require that continuing review be conducted on or before the IRB approval date expires (May 24, 2013), even though the research activity may not begin until some time after the IRB has granted approval. If the IRB has not reviewed and approved the continuation of this study by the expiration of the IRB approval date, all research activities must stop. Therefore it is best that you submit your request for continuing IRB approval by the 10th day of the month prior to IRB approval expiration (e.g. January 10th for a study expiring March 26th) in order to be sure that your request will be placed on the IRB agenda in time for full board review.

You are reminded that IRB approval is required before implementing any changes in the approved research plan.

This study has been assigned the **IRB Number 12-008.** Please use this number on all correspondence concerning this study.

Thank you for your continued support and cooperation in our shared responsibility in protecting the rights and welfare of human participants in research.

Yours truly,

Lyle Matthews, Pharm.D, MAM
Institutional Review Board Co-Chairman   Date: 5/25/12
EMC IRB #00002040

Enclosures: IRB Roster
                 Documentation of Approval of IRB Waiver of Authorization

INSTITUTIONAL REVIEW BOARD
IRB Office
Administrative Contact: Donna DiCiaula, C.I.P.
39000 Bob Hope Drive, Rancho Mirage, CA 92270

Waiver of HIPAA Authorization
Study Title: *The Effects of the Pilot Mobility Program for the elderly at Eisenhower Medical Center*
IRB #12-008
Principal Investigator: Natalie Richmeier, RN

The Eisenhower Medical Center (EMC) Institutional Review Board (IRB #00002040) approves a Waiver of HIPAA under 45 CFR 164.512 (i) (2) in that the use or disclosure of the requested information involves no more than a minimal risk to the privacy of the individuals based on, at least, the presence of: 1) an adequate plan to protect the identifiers from improper use and disclosure by coding the data and keeping the link file separate from the data, 2) there is an adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, and 3) you have provided adequate written assurances that the requested information will not be used or disclosed to any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of the requested information be permitted by the Privacy Rule; the research could not practicably be conducted without the waiver or alteration; and the research could not practicably be conducted without access to and use of the requested information.

The PHI to be collected includes in general: age, gender, diagnosis, Braden score, fall risk score, Katz score, length of stay and disposition on discharge will be collected. It is anticipated that approximately 600 records will be reviewed.

Lyle Matthews, Pharm.D, MAM
Institutional Review Board Co-Chairman   Date: 5/25/12
EMC IRB #00002040

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APPENDIX F

CALIFORNIA STATE UNIVERSITY SAN BERNARDINO

INSTITUTIONAL REVIEW BOARD APPROVAL

Academic Affairs
Office of Academic Research • Institutional Review Board

October 08, 2012

Ms. Natalie Richmeier
c/o: Prof. Margaret Beaman
Department of Nursing
California State University, San Bernardino
5500 University Parkway
San Bernardino, California 92407

<div style="border:1px solid">

**CSUSB
INSTITUTIONAL
REVIEW BOARD**
Expedited Review
IRB# 12014
Status
APPROVED

</div>

Dear Ms. Richmeier:

Your application to use human subjects, titled "The Secondary Data Analysis of the Effects of the Pilot Mobility Program for the Elderly at Eisenhower Medical Center" has been reviewed and approved by the Institutional Review Board (IRB). The attached informed consent document has been stamped and signed by the IRB chairperson. All subsequent copies used must be this officially approved version. A change in your informed consent (no matter how minor the change) requires resubmission of your protocol as amended. Your application is approved for one year from October 08, 2012 through October 07, 2013. One month prior to the approval end date you need to file for a renewal if you have not completed your research. See additional requirements (items 1 – 4) of your approval below.

Your responsibilities as the researcher/investigator reporting to the IRB Committee include the following 4 requirements as mandated by the Code of Federal Regulations 45 CFR 46 listed below. Please note that the protocol change form and renewal form are located on the IRB website under the forms menu. Failure to notify the IRB of the above may result in disciplinary action. You are required to keep copies of the informed consent forms and data for at least three years.

1) Submit a protocol change form if any changes (no matter how minor) are made in your research prospectus/protocol for review and approval of the IRB before implemented in your research.
2) If any unanticipated/adverse events are experienced by subjects during your research,
3) Too renew your protocol one month prior to the protocols end date,
4) When your project has ended by emailing the IRB Coordinator/Compliance Analyst.

The CSUSB IRB has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval notice does not replace any departmental or additional approvals which may be required.

If you have any questions regarding the IRB decision, please contact Michael Gillespie, IRB Compliance Coordinator. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application approval identification number (listed at the top) in all correspondence.

Best of luck with your research.

Sincerely,

Sharon Ward, Ph.D.

Sharon Ward, Ph.D., Chair
Institutional Review Board

SW/mg

cc: Prof. Margaret Beaman, Department of Nursing

909.537.7588 • fax: 909.537.7028 • http://irb.csusb.edu/
5500 UNIVERSITY PARKWAY, SAN BERNARDINO, CA 92407-2393

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

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APPENDIX G

THE MOBILITY PROGRAM PATIENT FLYER

Functional Decline

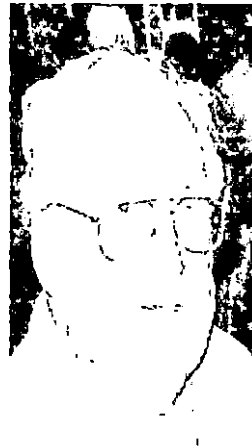### EISENHOWER MEDICAL CENTER

Mobility Program for Elders

Definition: Physical function is being able to eat, bathe, dress, walk and take medications. Being unable to do one or more of these activities is functional decline.

Why Is It Important?

Functional decline happens often in the hospital. Returning to normal takes longer. Other problems can occur. These can include falls, skin troubles, joint pain, and circulatory and respiratory problems. For every day spent in bed it can take two-and-half days to regain the ability to walk.

What Can You Do?

1. Take part in your or your family member/friend's care. Talk with the doctor and nurse about:
   * Your normal ability to walk, eat, dress, bathe, use the bathroom, climb stairs
   * Discharge goals: living situation and plan for assistance
   * Activity that is safe while in the hospital.

2. Request help to be as active as possible:
   * To get up in the chair for meals
   * To use the bathroom
   * To sit at the sink and bathe
   * Walk in the hall

   If unable to do these things, ask about simple exercises in bed

3. Be safe. Ask for help. Don't get up alone! Wear sturdy footwear.

4. Tubes can limit movement. Ask when can they be removed.

5. Keep the mind active with music, movies, TV and puzzles.

6. Eat and drink well. Talk with the nutritionist if you don't like the food.

7. Get good sleep. Avoid sleeping pills. Let the nurse manager know if noise at night is a problem. Earplugs may be helpful.

8. Make sure glasses, hearing aids and other important items are where you need them.

NICHE

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