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Capstone/Thesis

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The Efficacy of a House Call Provider Service

Lynne M. Jacobson

Submitted as partial fulfillment for the Doctor of Nursing Practice Degree

Regis University

April 7, 2016

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The Efficacy of a House Call Provider Service

Problem: Many individuals who are disabled, homebound from chronic disease or are of advanced age have difficulty seeking medical services from an outpatient medical provider. Unnecessary or preventable hospital readmissions/ER visits from congestive heart failure (CHF) and/or chronic obstructive pulmonary disease (COPD) exacerbations are costly and these individuals would benefit from a house call program.

The PICO format is as follows: P) Elderly and adult population with COPD and/or CHF. I) Adult and elderly population with COPD and/or CHF receiving house call visits by a nurse practitioner. C) Adult and elderly population with COPD and/or CHF receiving medical care at a clinic. O) Measurement of hospital admission and/or ER visits with those who receive house call visits compared to those who do not.

Purpose: To assess the efficacy of house call visits made by a nurse practitioner in seeing individuals with COPD and/or CHF compared to those who receive their care at a medical care clinic in determining if there a difference in the rate of hospital readmission and/or ER visits.

Goals: Providing in-home medical care to the adult and elderly population with chronic disease will decrease the strain in the medical clinics, ER and hospital systems by minimizing health exacerbations and these patients can remain at home.

Objectives: Comparing two groups of people with like-diagnoses of CHF and/or COPD to assess the benefit of receiving their health care at home versus those who receive their health care in a clinic.

Plan: 50 participants were selected ages 50 and over with CHF and/or COPD. Participants selected for this study were those who received a yearly physical exam from their insurance company and those who received home-medical visits from a house call provider group. 25 participants were selected for each group, those who received their medical care at a clinic and those who received their medical care at home. All the participants were seen in their home and were asked 3 questions. 1) Do you have COPD? 2) Do you have CHF? 3) Have you been in the hospital and/or ER in the last 12 months due to a CHF and/or COPD exacerbation? Their answers were documented on a context-specific data sheet. Those participants who answered yes to having COPD and/or CHF were selected for the study.

Outcomes and Results: Of the 25 participants who received their care at a medical clinic, 15 went to the hospital/ER in the last 12 months, totaling a hospitalization/ER rate of 65%. Of the 25 participants who received their care at home, 8 went to the hospital/ER in the last 12 months, totaling a hospitalization/ER rate of 35%. The results showed that those participants who received home medical visits by a nurse practitioner had a decrease in medical exacerbations resulting in a hospitalization/ER visit compared to those participants who received their care at a medical clinic. House call visits are beneficial in providing a cost-effective medical care model that support those with chronic illness in being able to remain in their homes.

Table of Contents

I. Preliminary Pages.....	i
A. Copyright Page.....	i
B. Executive Summary.....	ii
D. Table of Contents.....	iii
E. List of Tables.....	v
F. List of Figures.....	v
G. List of Appendices.....	v
II. Problem Recognition and Definition.....	1
A. Problem Statement.....	1
B. Literature Review.....	2
i. Effects of a Multidisciplinary, Home-Based Program for CHF Patient.....	2
ii. Comprehensive Assessment Clinic for the Elderly.....	3
iii. Nurse Practitioners Aiding Frail Elderly.....	3
iv. Comparison of Primary Care Medicine and House Call Visits with Emergency Room Interventions.....	3
v. Theoretical Foundation.....	4

III. Market Risk Analysis.....	5
A. Strengths, Weaknesses, Opportunities and Threats.....	5
B. Needs, Resources and Sustainability.....	6
C. Stakeholders and Project Team.....	7
D. Cost-Benefit Analysis.....	8
III. Project Objectives.....	11
A. Mission and Vision.....	11
B. Goals.....	11
C. Outcomes Objectives.....	11
IV. Evaluation Plan.....	12
A. Logic Model.....	12
B. Population and Sampling Parameters.....	12
C. Setting.....	12
D. Methodology and Measurement.....	13
E. Human Subjects Protection.....	15
F. Instrument Reliability and Validity.....	15
V. Project Findings and Results.....	16

A. Description of the Sample.....	16
B. Limitations, Recommendations, Implications for Change.....	17
VI. Summary.....	19
VII. References.....	20
VIII. Appendices.....	23

List of Tables

I. Final Literature Review Table.....	4
II. Cost/benefit Analysis.....	10
III. Budget.....	10

List of Figures

I. Capstone SWOT Analysis.....	6
II. Scatter Plot Graph.....	14

List of Appendices

A. Logic Model.....	23
B. Measurement Tool/Instrument-Context-Specific data sheet.....	24
C. IRB Approval Letter-Regis University.....	26
D. IRB Approval Letter UHG.....	27
E. CITI Training Certificate	28
F. Agency Letters of Support to Complete the Project-UHG.....	29

G Agency Letter of Support to Complete the Project-PPS.....	30
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THE EFFICACY OF A HOUSE CALL PROVIDER SERVICE

Problem Recognition and Definition

The purpose of this project was to assess the efficacy of house call visits made by a nurse practitioner in seeing individuals with COPD and/or CHF compared to those who receive their care at a medical care clinic in determining if there a difference in the rate of hospital readmission and/or ER visits.

Problem Statement

Many individuals who are disabled, homebound from chronic disease or are of advanced age benefit from a provider house call visit program. Without these services, it impacts the nurses in having the appropriate resources to provide good care. It impacts the homebound patient in finding a provider who can see them and it impacts the organizations who serve populations with chronic illness. Nurses must be able to provide care to patients and families that is based on the best available evidence so they can potentiate the best possible patient outcomes (Gobel, Beck, & O'Leary, 2006). Team collaboration is especially important as the aging population is on the rise. Management of chronic illness and avoidance of disease exacerbation is crucial. It requires a cycle of collaboration amongst the medical profession to avoid unnecessary or preventable readmissions to the hospital which becomes costly and increases the burden of undue stress for the facilities, patients and families.

To assess the efficacy of a provider house call visit program, the question was stated in a PICO format. The population (P) studied was the adult and elderly population with chronic obstructive pulmonary disease (COPD) and/or congestive heart failure (CHF). The intervention (I) consisted of these populations receiving a house call visit by a nurse practitioner. This was compared (C) to the adult and elderly population with like-diagnoses who did not receive a house call visit and went to a clinic for their medical care. The outcome (O) was the

measurement of hospital admissions and/or emergency room (ER) visits to those who receive house call visits compared to those who did not.

Project Scope and Significance

The significance of this project is that the need for house call visits will continue to rise. There is a higher impact and demand in the outpatient clinics. People are living longer and there are fewer providers available in the community. Routine house call visits can minimize potential health exacerbations, lessening the burden in the emergency room and hospital and the patient can stay at home. A house call program brings quality and compassionate healthcare to a person's home with a goal of promoting quality of life and reducing frequent utilization of emergency room visits for episodic care (Wang, 2008).

Systematic Review of Literature

Regis University Library was used for all research in this capstone project. EBSCO-HOST was the search engine for the databases Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Google Scholar. The search terms for this literature review were; home care, geriatric interdisciplinary assessment, chronic illness, palliative care, functioning, population, house calls, chronically ill seniors, community based care and health care utilization.

Utilizing these search terms, 48 articles were reviewed, 25 were chosen for a more detailed analysis and 15 were most applicable to the capstone project. Four articles were listed on the final literature review table (Appendix A). The first article listed was a randomized controlled study which scored a five for its level of evidence (Houser & Oman, 2011). This article shared research about a hospital study done with post-acute CHF patients receiving house call visits by a cardiac nurse. The hospital also had a Transitional Care Visit (TCV) program set

up for patients to be seen at home after hospitalization to reduce CHF exacerbation risk (Stewart, Marley & Horowitz, 1999). The second article was a quantitative study consisting of 52 elderly patients who participated in a Comprehensive Geriatric Assessment (CGA) to assess their level of need requiring home visits. This article scored a five for level of evidence (Yamanaka, Takasugi, Kubo, & Otsuka, 2007). The third article was a quantitative research study assessing the benefits of a nurse practitioner home-visit program with the elderly in decreasing emergency room visits. This program was managed by a geriatrician, nurse practitioner (NP) and a social worker. The patients were seen through a variety of community-based clinics. This particular study reviewed information collected before and after the study through electronic medical review (EMR). This scored a four in level of evidence (Duckworth, J. M., Repede, E., & Elliott, L., 2013). The last article was a systematic review of literature in comparing the intervention effects on emergency room visits on populations 60 years old or older who had been receiving care in hospitals, primary care or home-based settings. The designs included but were not limited to randomized controlled trials, quasi-experimental time-series and a cross-sectional study. This article received a score of six for level of evidence (McCusker & Verdon, 2006).

The consensus found amongst all the articles was that they demonstrated a benefit in providing house call visits to vulnerable populations such as the frail elderly, disabled and homebound populations. A home-based intervention has potential to decrease the rate of unplanned readmissions, healthcare costs and improve quality of life for seniors (Stewart, Marley & Horowitz, 1999). Interestingly, data showed that community intervention in reducing hospitalizations were more successful than hospital driven outpatient programs. This was due to the hospital collaboration lasting less than one month and community involvement lasted for

many months in duration (McCusker & Verdon, 2006). The levels of evidence were measured by the Evidence Table Format for a Systematic Review (Houser & Oman, 2011). See below:

Table I

Final Literature Review Table

Article/Journal	Effects of a multidisciplinary, home-based intervention on planned readmissions and survival among patients with chronic congestive heart failure: THE LANCET	Do Geriatric Interventions Reduce Emergency Department Visits? A Systematic Review. JOURNAL OF GERONTOLOGY	Nurse Practitioners Aiding Frail Elderly Through Home Visits. HOME HEALTH CARE MANAGEMENT & PRACTICE.	Daily Living Functions of the Elderly Requiring Home Visits. A Study at a Comprehensive Assessment Clinic for the Elderly. JAPAN GERIATRICS SOCIETY
Author/Year	Simon Stewart, John E. Marley, John D. Horowitz. 1999	Jane McCusker, Josee Verdon. 2006	Joy M. Duckworth, Elizabeth Repede, Lydia Elliott. 2013	Takashi Yamanaka, Emiko Takasugi, Norihiro Hotta, Yutaka Kubo and Kuniaki Otsuka. 2007
Level of Evidence	5	6	4	5

30

Theoretical Foundation

An appropriate theoretical foundation for this capstone project was the Humanbecoming Theory by Rosemarie Rizzo-Parse. The patient is the expert with their care (Parse, 1998, 2007). The focus is on the importance of the nurse's presence with under-resourced and low-income individuals (Zaccagnini & White, 2014). Parse believes that when one is valued and heard for whom they are, the success of compliance with their medical regimen will be greater. Human beings are unitary and the human-universe process as irreducible and dynamic (Zaccagnini, et al, 2014).

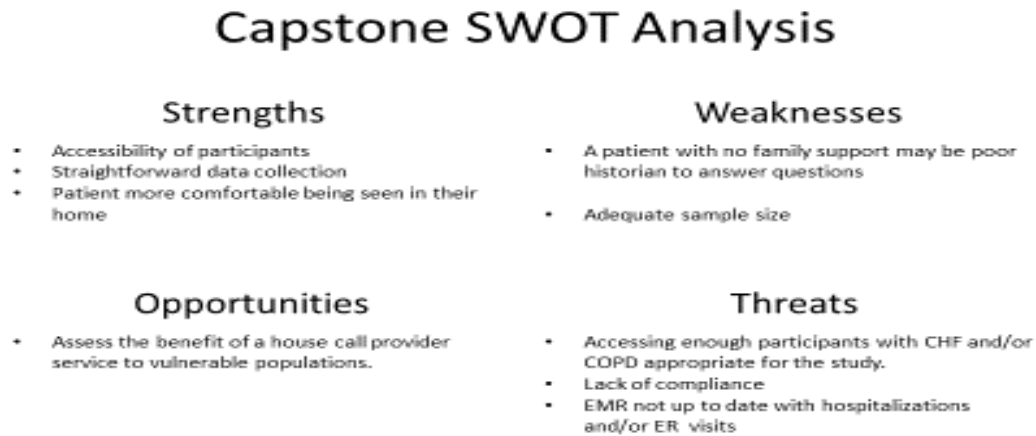
Parse's human becoming theory has three standards of practice. The first one is the patient's meaning of health in their words. The second is the perspective of health needs from the patient and family's point of view and thirdly, the patient and family journaling what their personal health needs are for them. In other words, with the collaboration of the health team, ultimately the patient is responsible for the choices they make (Parse, 1998, 2007).

Market Risk Analysis

Strengths, Weaknesses, Opportunities and Threats

A SWOT analysis was conducted for this project to clearly identify the strengths, weaknesses, opportunities and threats (Figure I). The strengths were the accessibility of the participants and their comfort level with the questionnaire being conducted in their home. Additionally, the responses from the house-call participants could also be verified in the EMR system. The potential weaknesses listed in the SWOT analysis such as concern of inadequate sample size and risk of participants being poor historians, did not occur. This is due to the fact that the house call visit for each participant was pre-planned and they were able to respond to the questionnaire appropriately and provide the data. The opportunities were that the participants were part of a research study to reinforce the value of a house call provider service. Additionally, the responses from the house-call participants could also be verified in the EMR system. Given the short timeframe in conducting the study, a potential threat could have been not having enough qualified participants for the study as well as the EMR system not having up-to-date data collection. These threats did not occur as enough participants were available, consented and accurate EMR data retrieval occurred to conduct the study effectively. See SWOT Analysis listed below:

Figure I



15

The driving force for this project is that the proportion of the U.S. population over age 65 has surpassed the proportion under 15 years of age (Karel, et al., 2012). The first of the baby boomers born between 1946 and 1964 began turning 65 in 2011. A house call program brings quality and compassionate healthcare to a person's home with a goal of promoting quality of life and reducing frequent utilization of emergency room visits for episodic care (Giovino, 2000); Medina-Walpole et al., 2005). This project demonstrated the growing need in reaching out to the aging population in providing healthcare services in their home decreasing the burden in the hospital systems.

Needs, Resources and Sustainability

The needs required for this study were a cellphone, tablet, EMR system, printer, paper, ink and a reliable car. Time spent on each participant was an hour. Two hours were spent in

data collection per week. One IT person was utilized for data collection of appropriate participants that met criteria for the study via the EMR system.

To sustain a house-call visit service, effective communication and ongoing marketing of services is important. Additionally, community collaboration with hospital discharge planners, home health agencies, case managers and assisted living facilities must continue.

Several issues could have potentially arisen regarding the feasibility of this study. As mentioned earlier, there was concern if the project would be implemented given the short time frame. Additionally, would the appropriate sample size be found and if so, would the participants be capable of answering the questions. Consideration of participants choosing to not answer the questions and the EMR data not being up to date was also a risk. The owner of the house call provider business changed the EMR vendor mid-way through this study. There was concern the data for the selected participants would not be accessible. Fortunately, even though there were these risks, none occurred during this study. There were no unintended consequences.

Stakeholders and Project Team

The personnel conducting the project was primarily the DNP student. Assistance was provided by an information technologist (IT). The time taken in conducting the research was approximately one hour per patient review and two hours in compiling the data per week. Supplies necessary for the project consisted of an electronic tablet, computer with EMR software, cell phone, a printer and ink. The stakeholders included the medical providers, the insurance companies, the patients and their families, the healthcare community providing ancillary services and the local hospital systems. The project team consisted of Lynne Jacobson,

DNP student; Lora Claywell, Ph.D, Capstone Chair; Allison Perkins, DNP mentor; and Angela Harris, IT.

Cost-Benefit Analysis

Numerous articles were found regarding the cost/benefit of conducting house call visits. For example, a retrospective pilot study conducted at the Veterans Administration (VA) found that an average of 25-31% reduction in hospital admissions and emergency room visits occurred from homebound older adults receiving house call visits (North, Kehm, Bent & Hartman, 2008). Another study showed a savings of over one million dollars in hospital stays and emergency room visits after patients participated in the Home Based Primary Care Program. This was assessed using the Cochrane Consumers and Communication Review Group Study Quality Guide and Meta-Analysis of the observational Studies in epidemiology criteria (Stall, Nowaczynski & Sinha).

The environment in which house call visits were generated determined the cost savings. For example, a clinic combined with a home health agency or a hospital will have lower overhead costs than a separate provider clinic doing house call visits without community support.

In generating the actual costs to run a house call service, an interview was conducted with a well-known physician in the Denver metro area who started a house call provider service in 2007. She stated the start-up costs on average is \$250,000 to \$500,000. This number includes the costs for provider malpractice insurance and technology. The physician further stated that mobile house call practices are dependent on volume, but fewer numbers than an outpatient clinic. They generally need to see 7-10 patients per day per provider. Further, the labor costs for support staff are the most expensive, roughly 30% of the overhead costs. This usually entails

one to two LPNs in nursing triage, one billing person, IT and one office person to answer phones, etc. It is a distinct disadvantage to not have a practice manager as these salaries average \$80,000 per year or a part-time medical director averaging \$75,000 to \$100,000 per year, but according to the physician interviewed it just is not cost effective.

In addition, the physician stated that house call practices are not sustainable in the long term without investors, private, non-Medicare revenue sources or subsidies from other agencies such as hospitals or insurance companies. A house call practice needs a high visit volume of at least 500 visits per month to pay for the basic support staff such as one or two LPNs in the office, a biller an IT and office person. She concludes to say that a single provider house call practice is not viable in this current market due to heavy competition from larger house call groups. However, it may be viable in smaller communities.

From this DNP student's perspective, the success and sustainability of a house call program in a community is dependent on a collaborative effort having relationships with other service providers.

The costs to conduct the capstone project consisted of the following: Printer ink (\$40), cellphone (\$350/mo.), mileage total was 522 at 57.5 cents/mile, paper (\$8/ream), one LPN (\$24/hr.) and one IT person at (\$22/hr.). See Cost/Benefit Analysis and Budget below [Table I & II].

Table II**Cost/Benefit Analysis of Capstone Project**

Direct Costs	Indirect Costs	Capstone Objective	Expected Outcomes
<ul style="list-style-type: none"> • Lynne, DNP student • 2 PPS LPNs • 1 PPS IT • PPS Laptop w/appropriate software • UHC tablet • Printer/ink-\$40 • Mileage per home visit • 57.5 cents a mile 	<ul style="list-style-type: none"> • Telephone-\$350/mo • Xerox paper \$20 • Office space for employees of PPS 	Assessment of Adults and elderly people with CHF and/or COPD for number of times hospitalized or sent to ER in the last year and comparing if there was a difference between those who receive home visits and those who go to a clinic.	Adults and elderly people with CHF and/or COPD benefit from a house call visit decreasing exacerbations of illness and the burden in hospital/ER system.

18

Table III**Capstone Budget**

Transportation	57.5c/mile	\$2760.00
Printer ink	\$40.00	\$40.00
1 LPNs @ \$24.00/hr	\$24.00	\$48.00
1 IT staff	\$22.00	\$22.00
Laptop	\$500.00	\$500.00
Cellphone	\$350.00	\$350.00
1 ream of paper	\$8.00	\$8.00
		\$3728.00

19

Project Objectives

Mission and Vision

The mission is to provide a house call service to the homebound adult and elderly population with disabling conditions and chronic disease. With community support, competent and cost-effective health care services will be provided enhancing the quality of lives and maintaining their ability to stay at home.

The vision of a house-call provider service is having the understanding, respect and compassion in serving adults and people of advanced age with disabling conditions and chronic illness.

Goals

Providing in-home medical care to the adult and elderly population with chronic disease will decrease the strain in the medical clinics, ER and hospital systems by minimizing health exacerbations and these patients can remain at home.

Outcomes Objectives

In identifying the study variables and outcomes, the house call patient records, insurance members' answers to the questionnaire and systematic review of literature was used. In seeing both house call patients and insurance members with the same diagnoses on a weekly basis, comparisons were noted between the two groups in regards to their health and disease management. The study measures used to assess the outcome was in review of the data assessing the number of times a patient or insurance member went to the ER or the hospital within the past year.

Evaluation Plan

Logic Model

The Logic Model demonstrated the project plan (Appendix A). This was compiled based on Zaccagnini and White's Development Plan, 2014. This broke down the information regarding the inputs and constraints in getting the project together, the short and long term outcomes and the impact on doing the study.

Population and Sampling Parameters

The sample size for this study consisted of males and females who were 50 years of age and older with like-diagnoses of CHF and/or COPD. The data collected was the rate of hospitalizations and/or ER visits related to health exacerbations within the two groups.

The house-call electronic medical record (EMR) provided a listing of their patients with COPD and CHF and whether they were hospitalized or sent to the emergency room in the last year. Additionally, the patients were questioned during a face-to-face visit. The patients from the clinic practice received a physical examination in their home as a part of the routine care. Those whose past medical history demonstrated a diagnosis of COPD and/or CHF as well as current information collected during the house call visit were selected for the study. Participants with cognitive impairments such as memory loss were excluded from this study to ensure the answers to the questionnaire were accurate.

Setting

The participants were selected from two different health arenas, a house-call clinician practice and a clinic-based medical practice. The patients from the house-call practice receive their primary health care services at home and the patients from clinician practice go to outside clinics for their health care needs. All 50 participants were seen in their homes.

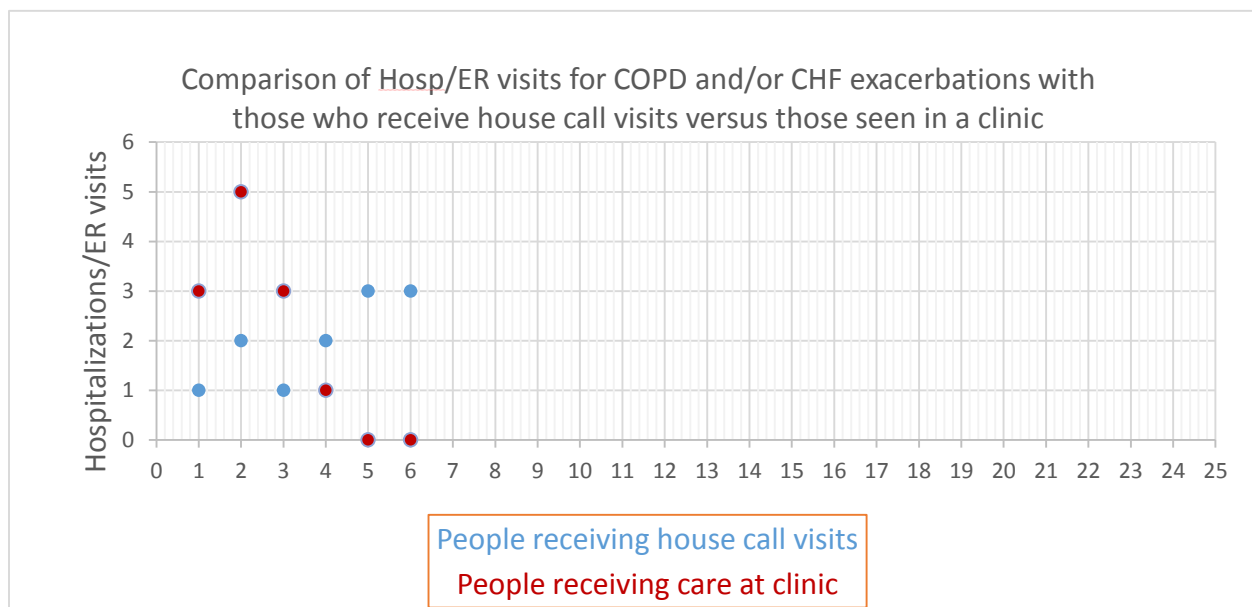
Methodology and Measurement

The intention of this research project was to compare two groups of people with like-diagnoses of congestive heart failure (CHF) and/or chronic obstructive pulmonary disease (COPD). This study assessed the benefits and outcomes in receiving health care at home versus those who receive their health care in a clinic. Data was collected in determining the rate of hospitalizations and/or emergency room (ER) visits related to health exacerbations within the two groups

In determining the power analysis for this study, the Power Table for d (effect size) was utilized (Polit, 2010, p. 421). This power table included the four components necessary in a power analysis; significance criterion, power, population effect size and sample size (Polit, 2010, p. 421). This power table consisted of the power level of .60, .70, .80 and .90. The significance criterion levels included .10 or .05. The .05 indicated the probability that the observed values would be found by chance only five times out of 100. This is estimated with a statistic called Cohen's d , the standard mean difference (Polit, 2010, p. 421). It was determined for purposes of this study to utilize the significance criterion (confidence level) of .05 in providing data with 95% accuracy. Having no previous literature or studies to compare, the effect size was determined to be .80 with a targeted sample size of 25 persons per group. This was the standard level that a probability of a Type II error would not be committed. This was a quantitative study comparing two groups of people to assess the benefit of receiving their health care at home versus those who received their health care in a clinic. The sample population selected for these two groups was purposeful. In purposive sampling the researcher specifies the characteristics of the population of interest and then locates individuals who match those characteristics (Terry, 2015).

The data was calculated based on the number of times each group went to the ER and/or hospital for a CHF and/or COPD exacerbation in the last year. Representation of these findings were documented on a column scatter plot graph (Miller, J.R., 2003). The mean data of the intervention and comparison groups were identified horizontally. The vertical column represented the outcome of the collected data (Figure II). See Scatter Plot Graph below:

Figure II



For the selected participants, three questions were asked:

1. Do you have COPD?
2. Do you have CHF?
3. Have you been hospitalized or sent to the ER in the past year for complications related to CHF and/or COPD?

If there had been participants unable to answer, the family member or caregiver would have been asked the three questions. However, the data collected in this study, did not require questions to be asked outside of the participants involvement. Additionally, review of the EMR for the PPS patients also provided verification of whether they were hospitalized or sent to the ER in the last year for a CHF and/or COPD exacerbation. The data was collected from January 2, 2016 to March 1, 2016 and documented on a Context-Specific Database form (Appendix E).

Human Subjects Implications

There are specific federal guidelines that must be followed to implement research projects when protecting human subjects. Some of these guidelines include the right to be informed of both the nature and purpose of the research and the right to ask questions (Terry, 2015). If the participant had not been appropriate for the study, data would not have been collected. The foundation for the recruitment and treatment of subjects in this study followed the basic ethical principles of respect for persons, beneficence and justice (Belmont Report, 1979). Even though the participants were known to the researcher, there was no data documenting their identity. They were listed numerically on the context-specific database. Data was reported in aggregate form and stored in a password protected file.

Instrument Reliability and Validity

Issues with reliability and validity of the data can exist. The potential threat to validity with this project can be finding enough participants in each group who have CHF or COPD. A threat to reliability was verifying that the information was accurate in that the hospitalization or ER visit was related to one of these diagnoses. This potential threat to reliability was verifying that the patient charts had been updated with hospital or ER frequencies in the last year.

Additionally, reliability can be affected by the manner in which oral questions are presented (Lange & Jacox, 1993). For example, the participant's verbal responses to the questions may or may not be reliable in regards to remembering accurately if they were hospitalized or sent to the ER in the last year. Comprehension of the question can be a factor, especially if one is of advanced age or suffers from chronic disease. It was important to build in a cushion for attrition (Polit, 2010). Both groups needed to be equal in numbers as much as possible to account for potential issues of reliability and validity that could have arisen.

Project Findings and Results

Description of the Sample

Data was collected in determining the rate of hospitalizations and/or emergency room (ER) visits related to health exacerbations between two groups of people. With the intent of using SPSS to run the data, the categories were all coded on the context specific data sheet with a number. Both of the student's employers were utilized in this study. UHG (clinic participants) were coded a 10. PPS (home patients) were coded a 20. On the context-specific data sheet, any blanks (no check marks) were coded a 1. Those who had COPD were coded with a 2. Those who had CHF were coded with a 1. Those who were hospitalized or sent to the ER were coded with the actual number of times they were there over the last 12 months....i.e.: 1, 2, 3. and those who had no hospitalizations or ER visits were coded with a 0.

As results were calculated, it was determined that running it through SPSS was not necessary because the data was nominal in nature. It was determined to run descriptive statistics for this data and find truer results based on percentages. Fifty percent (25 people) of the data collection was from the clinic participants and 50% (25 people) were from the in-home participants. Of the 50 participants between the two groups, 23 went to the hospital and/or ER in

the last 12 months. Fifteen of the visits were those who go to a clinic and eight of the visits were from participants who receive in-home medical care. This yielded a 65% hospitalization/ER rate for those participants who go to a clinic for their medical care and a 35% hospitalization/ER rate for those participants who receive in-home care. Based on the descriptive statistic data, there was a difference in that those who received in-home medical care by an NP had fewer medical exacerbations requiring a hospitalization and/or ER visit than those who received their medical care from an outpatient clinic.

Limitations, Recommendations, Implications for Change

Based on the results of the descriptive statistical analysis, providing in-home medical services to the vulnerable populations was beneficial to the patient and medical community. Recommendations are that NPs provide house call visits as an extension of the medical home model. New cost-effective care models that support those with chronic illness at home are needed. Traditional fee-for service reimbursement mechanisms have been a major barrier to the widespread implementation of this model, but recent reforms in health care payment enacted in the Patient Protection Affordable Care Act (PPACA) of 2010 hold great potential for finally aligning provider, payer and patient incentives and improving care for some of the nation's most challenging and vulnerable populations (DeCherrie, Soriano & Hayashi, 2012).

Another recommendation is utilizing e-Health technology. The use of e-Health technology will provide an adjunctive service in management of these patients by minimizing opportunities for unnecessary hospital and emergency room (ER) visits. Depending on the telehealth technology that is set up such as a video computer monitor or a telephonic system, the patient can have 1:1 communication with their provider with real-time vital sign readings. This technology will allow the patient to be monitored without a direct face-to-face visit. As their

vital sign results are communicated via the telephone system or internet, trends can be monitored. This includes daily weights to track for congestive heart failure (CHF) exacerbation and/or blood pressure readings to manage hypertension. Advance practice leaders can manage their chronically ill patients and at the same time improve productivity and accessibility by freeing up the providers to manage patients with other urgent issues that may arise.

The implication to practice is that the need for house call visits will continue to rise. By 2030 one in every eight people will be above age 65. Ages 85 and older are the fastest growing part of the aging population (Duckworth, et al., 2013). House call visits will allow frail, elderly patients to receive quality patient-centered care in their home, minimize potential health exacerbations and decrease the workload with office-based primary care providers. Home-based programs are designed to decrease overutilization of hospitals and prevent functional decline so as not to become dependent on nursing care (Yamanaka, Takasugi, Hotta, Kubo & Kuniaki, 2007). According to nursing theorist Rosemarie Rizzo-Parse (1999, 2007), the teaching-learning process is tailored to the person, not a canned approach. It is meeting them where they are, including seeing them in their home environment.

People are living longer so there are fewer providers available in the community. It is essential that all providers of primary care, including physicians, nurse practitioners and medical assistants learn about house calls (DeCherrie et al., 2012). Home-based programs are designed to decrease usage of overutilization of hospitals and prevent functional decline so not to become dependent on nursing care (Yamanaka, Takasugi, Hotta, Kubo & Kuniaki, 2007). Unnecessary or preventable readmissions to the hospital are costly and become an increasing burden with undue stress for the facilities, patients and families. The opportunity for those with chronic illness will benefit in their disease management in receiving house call visits by an NP on a

routine basis. This study demonstrated a decrease in hospital and ER visits for COPD and/or CHF exacerbations in those that received house call visits versus those that go to a clinic for their care. This study only assessed those with CHF and COPD. Those effected by chronic illness may also include diabetes, dementia and neurological disorders. The results of this data reinforces the impact that a house call provider service can make in management of those with chronic disease.

Summary

This paper addressed the important components discussing the benefits of a house call provider program. There are many people who are in need of health care services but are homebound or have significant difficulty leaving their home. As our aging population rises, so do our healthcare costs. As this study has shown, providing a house call service decreases medical exacerbations contributing to prevention of unnecessary readmissions to the hospital thus reducing medical costs and lessening the burden of undue stress to those involved.

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Appendix A Logic Model

INPUTS	CONSTRAINT	ACTIVITIES	OUTPUTS	SHORT TERM OUTCOME	LONG TERM OUTCOME	IMPACT
Patient questionnaire EMR	Adequate sample size	Develop-ment of question-naire	Number of participants for the study	Education to participants/ families with mgmt. and prevention of disease exacerbation	Decrease in hospital/ER visit with COPD and/or CHF receiving house call visits	Increased community awareness in benefit of house calls for chronic disease mgmt.
UHC scheduled participant list	Time in completing project	Chart review data	Education to participants and families	Improved participant family care/ satisfaction	Decrease in costs and preventable trips to hospital/ER	Decreased use of hospital/ER system
Work time to collect data and analyze information	Patients with cognitive deficits, no family support or cg to answer questions.	This will be a quantitative correlational study collection	Assessment of patient hospital/ER usage	Increased awareness of house call benefit	Accountable in self-care	Decreased rate of exacerbation of chronic disease
Participant approval		Time in develop-ment of project sheet				

Appendix B
Context-Specific Data Sheet

Context-Specific Database

2015-2016	HOME	CLINIC	COPD	CHF	HOSP	ER
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THE EFFICACY OF A HOUSE CALL PROVIDER SERVICE

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Number of participants with CHF and/or COPD who are homebound or go to a medical clinic for their care. Include whether they were hospitalized or sent to the ER within the last year for exacerbation of CHF and/or COPD.

Appendix C Regis University IRB Approval



OFFICE OF ACADEMIC GRANTS

IRB – REGIS UNIVERSITY

January 4, 2016

Lynne Jacobson
4757 South Jason Street
Englewood, CO 80110

RE: IRB # 15-284

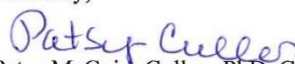
Dear Ms. Jacobson;

Your application to the Regis IRB for your project, "Efficacy of House Call Visits", was approved as an expedited study December 5, 2015. It is approved per OHRP Category of Research #5.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval. Projects which continue beyond one year from their starting date require IRB continuation review. The continuation should be requested 30 days prior to the one year anniversary date of the approved project's start date. A completion report of the findings of this study should be sent to the IRB.

In addition, it is the responsibility of the principal investigator to promptly report to the IRB any injuries to human subjects and/or any unanticipated problems within the scope of the approved research which may pose risks to human subjects. Lastly, a final report should be submitted at completion of the project and it is the responsibility of the investigator to maintain signed consent documents for a period of three years after the conclusion of the research.

Sincerely,


Patsy McGuire Cullen, PhD, CPNP-PC
Chair, Institutional Review Board
Professor & Director
Doctor of Nursing Practice & Nurse Practitioner Programs
Loretto Heights School of Nursing
Regis University

cc: Dr. Lora Claywell

3333 Regis Boulevard, H-4, Denver, CO 80221-1099
REGIS.EDU | O 303-458-4206 | F 303-964-5528 | E oag@regis.edu

Appendix D
Optum House Calls Letter of Approval

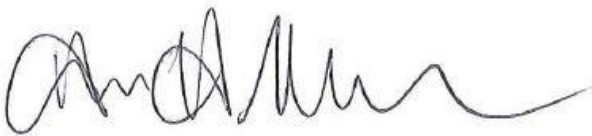
December 29, 2015

Regis University
Rueckert-Hartman College for Health Care Professions
3333 Regis Blvd
Denver CO 80221

To Whom It May Concern,

This letter certifies that Lynne Jacobson has shared and discussed the project/study titled 'Efficacy of House Call visits' , with Optum HouseCalls leadership and is approved to conduct this project/study.

This Doctor of Nursing Practice (DNP) project may involve the collection or study of existing data, documents, or records. The investigator will ensure that the data in any published materials is de-identified in alignment with the Optum De-identification Policy and will be used only for the approved purpose of this study/project, and cannot be used to identify or link back to the subjects. Optum HouseCalls leadership has reviewed the project and confirmed that it does not involve any physical risk or potential harm to any individual. The investigator agrees to obtain permission from Optum HouseCalls leadership prior to publishing the resulting study.



Vice President of Clinical Field Operations Optum HouseCalls

Hope Miller, MS, GNP-BC

Appendix E CITI Training Certificate

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM) COURSEWORK REQUIREMENTS REPORT*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details.

See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Lynne Jacobson (ID: 4650657)
- **Email:** jacob148@regis.edu
- **Institution Affiliation:** Regis University (ID: 745)
- **Institution Unit:** Nursing
- **Curriculum Group:** Human Research
- **Course Learner Group:** Social Behavioral Research Investigators and Key Personnel
- **Stage:** Stage 1 - Basic Course
- **Report ID:** 15179732
- **Completion Date:** 02/02/2015
- **Expiration Date:** 02/01/2018
- **Minimum Passing:** 80
- **Reported Score*:** 93

REQUIRED AND ELECTIVE MODULES ONLY DATE COMPLETED

Belmont Report and CITI Course Introduction 02/02/15

History and Ethical Principles - SBE 02/02/15

The Federal Regulations - SBE 02/02/15

Assessing Risk - SBE 02/02/15

Informed Consent - SBE 02/02/15

Privacy and Confidentiality - SBE 02/02/15

Regis University 02/02/15

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution

identified above or have been a paid Independent Learner.

CITI Program

Email: citisupport@miami.edu

Phone: 305-243-7970

Web: <https://www.citiprogram>

Appendix F Optum Letter of Support



6514 Meadowridge Rd.
Elkridge, MD 21075

Optum HouseCalls Letter of Support

June 2, 2015

Regis University
Rueckert-Hartman College for Health Care Professions
3333 Regis Blvd
Denver CO 80221

To Whom It May Concern,

This letter certifies that Lynne Jacobson has shared and discussed the project/study titled, *'The benefit of patients receiving house call visits in decreasing exacerbations of congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) that result in a hospitalization admission and/or ER visit'*, with Optum HouseCalls leadership, and has permission to conduct this project/study. Final approval will be issued upon receipt and review of IRB approval, detailed plan and supporting documents.

This Doctor of Nursing Practice (DNP) project may involve the collection or study of existing data, documents, or records. The investigator will ensure that the data in any published materials is de-identified in alignment with the Optum De-identification Policy and, will be used only for the approved purpose of this study/project, and cannot be used to identify or link back to the subjects. Optum HouseCalls leadership has reviewed the project and confirmed that it does not involve any physical risk or potential harm to any individual. The investigator agrees to obtain permission from Optum HouseCalls leadership prior to publishing the resulting study.

A handwritten signature in black ink, appearing to read "Hope Miller", written over a horizontal line.

Vice President of Clinical Field Operations, Optum HouseCalls
Hope Miller, MS, GNP-BC

Appendix G
Preferred Provider Services Letter of Support



Your Partners in Superior Healthcare

8/4/2015

Regis University
Rueckert-Hartman College for Health Care Professions
3333 Regis Blvd
Denver, CO 80221

RE: Lynne Jacobsen

To Whom It May Concern:

Lynne Jacobsen has permission to conduct her Doctor of Nursing Practice project titled "The benefit of patients receiving house call visits in decreasing exacerbations of congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) that result in a hospitalization admission and/or ER visit" with Preferred Provider Services, LLC pending final approval upon receipt and review of the IRB documentation – including the detailed plan, supporting documents, and approval letter.

The project/study may require the collection or study of existing data, documents, or records. Any published documents containing references to said data will be HIPPA compliant – removing any and all identifiers, as the information is approved for use within the study and must not in any way allow for identification of the patients. Preferred Provider Services, LLC has reviewed the project and determined that there is no potential for physical or mental harm to any of the individuals. Prior to publishing the study, Lynne Jacobsen will obtain permission from Preferred Provider Services, LLC.

A handwritten signature in black ink, appearing to read "Bobbie Livingston", is written over a horizontal line.

Bobbie Livingston, M.D.
Medical Director
Preferred Provider Services, LLC