ROLE OF PHYSICIAN ASSISTANTS IN RURAL HOSPITAL SETTINGS IN THE VIRGIN ISLANDS: A CASE STUDY

by

Julia V. Beresford

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Health Administration

University of Phoenix

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

The Dissertation Committee for Julia V. Beresford certifies approval of the following dissertation:

ROLE OF PHYSICIAN ASSISTANTS IN A RURAL HOSPITAL SETTING IN THE VIRGIN ISLANDS: A CASE STUDY

Committee:

Elizabeth Thompson, PsyD, Chair

Roderick S. Hooker, PhD, Committee Member

Steve Roussas, PhD, Committee Member

Elizabeth Thompson

Roderick S. Hooker

Steve Roussas

Jeremy Moreland, PhD
Dean, School of Advanced Studies
University of Phoenix

Date Approved: June 20, 2014

Abstract

A qualitative exploratory case study was undertaken to explore the role of physician assistants (PAs) in a small, rural hospital in the Virgin Islands. The concept of task transfer was examined to determine if PAs could take on more roles assumed by physicians. The study involved the perceptions and experiences of 16 physicians, 11 PAs, 12 hospital administrators, and 10 potential patients. Emerging themes fell into three categories: benefits and challenges of working with PAs, role of PAs, and acceptance of PAs. Within these categories, the following themes were identified: limited/basic PA roles, reduction of the physician workload, and variable PA competency levels. Subthemes to emerge included the role of PAs, improving patient care, filling shortages, the supervision of PAs, developing protocols for duty, and establishing a procedure for delegation of responsibilities. The conclusion was that in patient service in rural areas, maximizing the efficiency of a PA could be improved when task transfer was implemented as a means to the division of labor. The results of this study may assist legislators when re-evaluating and revising physician assistant scope of practice policies.

Dedication

I dedicate this degree to my daughter, Brielle, who unknowingly sacrificed the first 4 years of her life to me and will hopefully never remember the time I spent studying instead of playing with her on the swing, playing dress up, or coloring with her. Trust me, when I tell you that I did it for you. I dream of nothing more than providing the best life possible for you and unconditionally being there for you.

Acknowledgements

The decision to pursue a doctoral degree was inspired by my daughter who at only 3 weeks old gave me the motivation to go further and achieve more in my career. The inspiration she provided without even knowing will stay with me forever. I hope to provide the same for her as she grows and turns to me for advice and guidance. When I entered into the doctoral program, little did I realize what the personal investments would be. Some of the hurdles included hurricanes, the terrible twos, relationships, and a challenging economic upheaval on a small island. Many times, I thought of withdrawing but eventually I found a way of balancing life and doctoral studies and pressed on.

Professor Roderick S. Hooker became my second breath of fresh air and inspiration and provided guidance, support, and professional expertise beyond what most could have provided. The many long conversations, emails, words of encouragement, and selfless dedication did not go unnoticed. I have no idea where I would be without him! Thank you co-workers and friends who supported me on this journey and cheered me along. To Paul, Susan, and Nechama – I truly enjoyed knowing and learning from you and your support and guidance. Thank you Dr. Elizabeth Thompson for your encouragement as a mentor and coaching me through this process. You accepted me as a protégé at the right time. Without your guidance, I am not too sure I would have made it through the process. Dr. Randall Thompson your time and dedication in assisting me with many important details has not gone unnoticed. Thank you for helping. Finally, I owe so much to my mother who stood beside me from day one and put just as much effort, energy, and time into the process as I did. Sacrificing her free time and weekends to help with my daughter allowed me the time needed to lock myself in a room and work. I aspire to be

as strong, supportive, selfless, and understanding as you. I promise to always be there for you. I can never re-pay you even if I tried.

Table of Contents

List of Tables

CHAPTER 1: INTRODUCTION

The United States has undergone a widening gap between those in need of medical care and the ability of physicians available to meet the health care needs of a growing and aging population (Kaplan, 2012). In 2010 The Association of American Medical Colleges estimated a shortage of 130,000 medical professionals by the year 2025 The shortage predicts a compromise in patient care, increase in the risk for medical error, reduction of patient satisfaction, and a decrease of the overall quality of services provided (Lofters, 2012). To address the shortage, several initiatives have put forth including more international medical graduates (Itani, Hoballah, Kaafarani, Crisostomo, & Michelassi, 2011), increasing medical school enrollments, and shifting tasks originally established for physicians to other personnel (Bender, 2012; Green, Savin & Lu, 2013; Welch, 2012). To some extent these initiatives may work in large, urban facilities (Walker, Ryan, Ramey, Nunez, Beltran, Splawn, & Brown, 2010); however, rural, underserved populations continue to struggle with medical professional shortages (Welch, 2012).

To address shortages in rural areas, facility administrators are challenged to identify and implement creative staffing models that will allow physicians to focus on the major tasks associated with being a medical provider and shift the cumbersome, time-consuming tasks to nonphysicians (Green et al., 2013). The shift in responsibility allows a provider to spend more time with the patient and focus on delivering the highest quality of care (Green et al., 2013). The shift in responsibility can aid in reducing medical errors and threats to patient safety (Geryane, Hanna, & Cuschieri, 2004; Hendrich, Chow, Skierczynski, & Lu, 2008; O'Leary, Liebovitz, & Baker, 2006; Welch, 2012).

Documented in this study are the labor activities of hospital-based physician assistants (PAs) and the physicians in an effort to delineate the activities eligible to shift from the physician to the PA. The approach includes a convenience sample, and a qualitative exploratory case study. In addition, the perspectives of doctors, administrators, and patients were queried for their perceptions regarding the use of PAs in a rural Virgin Island hospital. For this study, labor activities documented were patient care, communication, transportation, personal time, and medical record charting.

The background for the study includes an explanation why a medical staffing problem is a leadership concern for small, rural hospitals. This first chapter includes a discussion of the problem, purpose, and nature of the study. Embedded in the chapter are the research questions, the theoretical framework, assumptions, scope of the study, limitations, delimitations, and definitions used throughout the study.

Background of the Problem

Shortages in labor strain an organization's ability to meet the demands of their consumers, which in turn may result in poor service quality (Richardson, 2009). In a market economy, businesses are driven by customer demand instead of an ability to provide the product or service (Richardson, 2009). When human resources are stressed in a market economy, consumers must wait for products and services or choose to seek the products or services elsewhere resulting in lost revenues and dissatisfied customers (Richardson, 2009). The basic concept of increasing the workforce may seem like a simple solution, however, the opposite is true because of educational and skill set deficiencies (Richardson & Law, 2009).

In health care workforce situations, shortages stem from rising demands in services, rapid increase in the aging population, and preparation of an inadequate number of health professionals (Kaplan, 2012). A workforce shortage of nurses and physicians is a global problem (Bender, 2012; Zinn, Gugliemi, Davis & Moses, 2012). The U.S. nursing shortage of the 21st century began in 1990s with a shortage of one million registered nurses projected by 2020 (Zinn et al., 2012). However, a nursing shortage is expected to continue as the baby boomer population (i.e., individuals born between 1946 and 1964) retire and demands increase for more from the health care system (Donelan, Buerhaus, DesRoches, Dittus, & Dutwin, 2008). The physician shortage, first identified in the 1960s, has not changed in either urban or rural facilities (Kaplan, 2012).

Sargen (2011) estimated that by the year 2025 the United States might face a physician shortage of approximately 125,000 providers. Growth in both the nation's general and elderly population will strain human capital resources within health care organizations and result in increased costs, long wait times, and decreased access to medical providers (Emrich, 2005; Salsberg & Grover, 2006). Two phenomena are predicted to emerge by the year 2020: (a) baby boomers will be over the age of 70 and (b) physicians who retired will be the largest group to do so at any point in time in history (Emrich, 2005; Salsberg & Grover, 2006). The phenomena will result in increased consumer demands and reduced access to providers (Emrich, 2005; Salsberg & Grover, 2006).

In the first decade of the 21st century, a large number of physicians reduced their workloads and decreased their medical practice in preparation for retirement. The decline in productivity of health services has been impacted by the emergence of a new

generation of physicians who are unwilling to work long hours or maintain heavy patient loads (Fine, 2007; Salsberg & Grover, 2006). An increase in the number of patients over the age of 55, who consume the largest and most costly amount of health services, has also impacted the system and are expected to be the largest consumers of health care by 2018 (Colwill, Cultice, & Kruse, 2008; Salsberg & Grover, 2006).

Colwill et al. (2008) estimated a 29% increase in workloads for primary physicians between 2005 and 2025 to stay even with turn of the century estimates (p. 233). Primary care medical specialties (defined as general internal medicine, general pediatrics and family medicine) have experienced the greatest shortage in providers as fewer medical school students selected careers in primary care (Kaplan, 2012). Shortages have become particularly acute in rural and underserved areas as fewer physicians chose to provide medical services in remote locations (Nusbaum, 2009). Residents of rural and underserved communities have had to rely more upon public health agencies to provide basic medical services, treatment, and preventions (Perlino, 2006). Workforce shortages in rural locations are predicted to further reduce the already limited services provided by public health agencies (Perlino, 2006).

Several tactics have been implemented to reduce the anticipated workforce shortage (Kaplan, 2012). Among these, recruitment and retention of international medical graduates (Emrich, 2005; Murray & Wronski, 2006), task shifting (Fulton et al., 2011), and recruitment and retention of PAs (Powell, 2011) and nurse practitioners (NPs) (Cooper, 2007) have all been suggested as strategies. Although recruitment of international medical graduates has been beneficial to the United States, low income-

countries have experienced increased workforce shortages (Mullan, 2005; Nusbaum, 2009).

Task shifting (i.e., the means of moving activities from one set of providers to another) permits physicians to delegate routine patient care functions to PAs and NPs and permits physicians to focus more on providing more intensive and select patient care (Green et. al, 2013). Recruiting and retaining PAs and NPs may help alleviate staffing gaps (Cooper, 2007; Powell, 2011).

Statement of the Problem

Administrators of rural hospitals must overcome barriers related recruitment and retention of providers due to their geographic location, poor payer mix, and non-competitive compensation packages (Stretton & Bolon, 2009). Although researchers have studied labor activity functions in small hospitals, no researcher has examined the activity of PAs and their supervising physicians in small, rural hospitals (O'Leary et al., 2006).

As experienced by hospital administrators, the specific problems have been that physicians are overworked and many hospitals have been understaffed (Kaplan, 2012). Medical workforce shortages have led to the increased use and dependence upon PAs (Zwijnenerg & Bours, 2011). Relevant to this study, officials in the Virgin Islands Hospital System saw that licensing and granting limited privileges to PAs could offset some task otherwise done by physicians.

Administrators of urban hospitals have incorporated PAs to help solve workforce shortages. Such activity has provided data regarding the output, quality, and productivity of large hospitals (Cassel, Webb-Wright, Holmes, Lyckholm, & Smith, 2010). What

little is known about small, rural hospitals has been based on the reports about the productivity of physicians and NPs. Almost nothing is known about the productivity of physicians when a PA is introduced to the staffing mix. To this end, labor activity assessment has been identified as important for strategic management and resource allocation within the health care organization (Hendrich et al., 2008; Mongan, Van der Schuur, Damiano & Via, 2003).

Purpose of the Study

The purpose of this case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands. Exploring the experiences of PAs and physicians various themes are likely to emerge regarding the benefits and obstacles of utilizing them in rural hospital settings. Such themes can serve to develop strategies, which could enhance rural hospital staffing, increase access to care and expand clinical scopes of PAs in these regions. Because almost nothing is known about PAs in this unique island setting a case study design was selected to collect a wide range of data. Case study research is often used to document and describe events occurring in a particular setting or circumstance (Schram, 2006). The use of a case study allows for an exploration of the perceptions of a group of individuals who have experienced a particular phenomenon (Yin, 2009). The qualitative exploratory approach for this case study provides data pertaining to the services provided by the PA and an understanding of the perceived benefits of PAs by physicians, administrators, potential patients, and PAs themselves.

The findings from this dissertation study are intended to serve as a foundation for larger studies on role delineation, task shifting, workforce shortages, and PA hospitalist labor activities. Hospital based PAs and the supervising physicians in the medical

department of the hospital of interest had their daily activities documented through observation techniques. Additionally, administrators, potential patients, PAs, and physicians who worked at the hospital or who were potential patients were interviewed to gain an understanding of the acceptance and impact PAs had on the delivery of patient care, patient experience, and workforce shortages.

Significance of the Study to Research

The relevance of the study is understanding the role of hospitalist PAs in a small isolated setting. The results may be useful to (a) provide information needed to hire additional PAs and expand their clinical practice, (b) review scope of practice legislation in terms of autonomy, (c) support the expansion of educational initiatives of health professionals, and (d) document whether the utilization of a PA can fill medical labor gaps. Another contribution for administrators may be the additional insight into the actual labor activities of hospitalist physicians allowing for them to improve staffing patterns and job functions through more PA focused tasks. Descriptive statistics were used to provide an overview of the labor activities of the PA and their supervising physician's labor activities. The observations in the qualitative study design were used to understand the labor activities of hospitalist based PAs and the potential of additional tasks that could be transferred safely from physician to PA. Results obtained from the study add to the body of knowledge on the role and activity of PAs. In addition, the study results are intended to broaden the literature by including island hospitals and the U.S. territories. Finally, the study was conducted in a small Government funded hospital, which is a rarely examined health service delivery site in the U.S. hospital system.

Given the lack of specific material on labor activities of PAs in small, rural hospitals, the literature reviewed has been presented in the context of existing hospital models. At the time of this study no publically obtainable literature existed concerning the use of PAs in the Virgin Islands, their labor activities, nor their roles in other island hospital settings (Druss, Marcus, Olfson, Tanielian, & Pincus, 2003; Hooker, 2006).

Significance of the Study to Health Care Leadership

Health care leaders and policy makers share common priorities including prevention, disparities, quality, and access to care (Nelson, 2008; Paulus, Davis, & Steele, 2008; Satcher & Higginbotham, 2008). Administrators at the hospital on island documented the importance of improving access to and quality of health care services provided to the island's community through various improvement methods (Ellis, 2012a). A consensus of administrators was that a better understanding of the PA's labor activities could be leveraged to reduce the medical professional shortage in this small, rural hospital and perhaps in other similar hospitals (be they rural or island based). The results of this study may contribute to the knowledge base of health care leaders in terms of the labor activities of PAs in rural hospitals for the purposes of expanding their clinical scopes and practice guidelines.

Nature of the Study

Marczyk, DeMatteo, and Festinger (2005) wrote, "Once the researcher has determined the specific question to be answered and has operationalized the variables and research question into a clear, measureable hypothesis, it is time to consider a suitable research design" (p. 123). The design's purpose is to connect a study's research questions, data, and conclusion (Yin, 2011). Researchers who wish to study activities in

their natural settings to understand what the participants hold about the problem or issue use qualitative research (Yin, 2011). Used in this current study was a qualitative interview, which yielded descriptive information from, hospital administrators, physicians, physician assistants, and potential patients. The qualitative analysis provided an understanding of the value PAs added to the organization, the benefits, and drawbacks of using PAs within a small rural hospital environment, and the patient's willingness to be treated by a PA.

Also used in this study was quantitative data, allowing for additional descriptive statistics. Researchers who intend to describe population demographics tend to use quantitative research (Lieber, 2009). A quantitative time-motion observation technique was proposed to gather descriptive information from the sample and to measure the labor activities of each clinician by quantifying the data collected. The quantitative analysis describes how different provider types spend their time identifying potential tasks that could be more efficiently distributed from MD/DOs to PAs. No relationships were construed based upon the results of the descriptive statistics.

When researching social activity, researchers can use either a quantitative or qualitative approach (Gelo, Braakmann, & Benetka, 2008; Karami, Rowley, & Analoui, 2006). Qualitative and quantitative research methods occur in various formats including, but not limited to Delphi, phenomenological, and grounded theory. Delphi research is a hybrid model aimed at developing a consensus on important issues (Thompson, 2009). To achieve consensus, a researcher using the Delphi method includes several approaches initiated by a qualitative design to develop the breath of an expert panel on a particular subject followed by several additional expert panel rounds to develop strength in opinion

(Thompson, 2009). The Delphi model failed to meet the intended purpose of the study, as the purpose of the research was not to explain or identify expert opinion on workforce shortages and labor activities of PAs in small, rural hospitals.

Phenomenological researchers seek to describe the meaning of a lived experience for several individuals in relationship to a significant event (Sokolowski, 2000). Phenomenological research includes the studying of human experiences and things before, during, and after the experience (Sokolowski, 2000). Although the phenomenological approach would be beneficial for understanding what meanings the participants of the current study derive from working in a strained human resource facility, the use of phenomenological design would have failed to meet the intended purpose of identifying the labor activities of hospital based physicians that could be transferred to a PA.

The aim of grounded theory research is to develop a theory derived from and supported in data (Schram, 2006). To develop theories, researchers code data and assign temporary labels while simultaneously theorizing and predicting whether codes, data, and categories observed may appear elsewhere (Schram, 2006). Although the grounded theory approach might have been useful in predicting trends and labor activities in similar rural hospitals, the goal of the proposed study was not to develop a theory to explain the labor activities and workforce shortages.

Use of any of the aforementioned research methods would fail to meet the goals and purpose of the research study as use of the approaches would not have captured the full scope and intent of the study. The goal of qualitative research is to gain further understanding and insights about the issues associated with the utilization of physician

assistants in small rural hospitals (Shank, 2006). The research site, a small rural hospital in the Virgin Islands, had a diverse patient population, diverse provider population, and offered a variety of medical services. The survey design was used to link the definition of terms, variables, research questions, and hypothesis tests to the methodology, purpose, and problem statement for this qualitative exploratory labor activity study.

Research Questions

For the qualitative exploratory case study on the labor activities of PAs and the supervising physicians, one of the objectives was to identify how health care providers spend their time in a small hospital whose staffing model includes a PA. The rationale of the qualitative design was to conduct an in-depth study about the participants in real-world conditions in addition to representing the views and perspectives of the study participants (Yin, 2011). The current case study integrated both qualitative and quantitative data and analysis. The qualitative data were used to provide insight from the perspectives of the stakeholders on the role the PA plays in the particular hospital, as well as on the obstacles and enablers associated with using a PA. The quantitative data were used to quantify how members of the medical staff spent their time, to estimate the amount of time spent on labor activities potentially eligible for task transfer to a PA by a supervising physician, and to assess physician and PA understanding of how one another spent their time as a potential enabler or barrier to PA use.

The purpose of this exploratory case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands and to assist administrators in medical staffing strategies. The following research question guided the study: What are

perceptions of the role of rural hospital based physician assistants? The following sub questions (SQs) were used to guide the study:

- SQ1. What is the distribution of tasks between hospital-based physicians and PAs?
- SQ2. What hospitalists' tasks might be transferred to a PA?
- SQ3. What are the obstacles and benefits regarding use of a hospital PA?

The aim of the study was not to produce generalizable results, but rather to gain a deeper understanding of the dynamics of the medical staff at one specific hospital. At least two data sources were used to answer each research question using parallel mixed analysis (also referred to as triangulation of data sources) (Bickman & Rob, 2009), as displayed in

Table 1. The use of two or more data sources in a single study allows for corroboration of the same fact or phenomenon (Yin 2009).

Table 1

Data Sources Used to Answer Each Sub-Research Question

Data Source	Quantitative	Qualitative
SQ1 Distribution of tasks	Time-motion data: observed distribution of tasks in a given time period Questionnaire: self-reported distribution of tasks in a given time period	
SQ2 Transferrable tasks	Time-motion data: comparison between physician and PA tasks	Interviews: questions on what tasks physicians, administrators, PAs, and patients think PAs can do Licensure laws" tasks indicated by U.S. Virgin Island licensure laws that

		PAs can perform
SQ3 Obstacles/benefits	Time-motion data: observed obstacles/enablers Questionnaire: physicians' estimates of PAs distribution of tasks and PAs' estimates of physician tasks	Interview: perceived obstacles/enablers by physicians, administrators, PAs, and patients

Theoretical Framework

The theoretical framework was grounded in several theories including behavioral change, division of labor, and social behavior. Each assesses the effect of change on the health care system (i.e., how the changes will be embraced, rejected, and impact the delivery of health treatments and services). Behavioral change theories attempt to explain the reasons behind alterations in individual's behavioral patterns (Skinner, 1953). Outlined in the division of labor theory is the categorization of specific functions while social theories seek to explain acceptance and perception. Works such as Skinner's *Science and Behavior* and Bandura's *Social Foundations of Thought and Action: A Social Cognitive Theory* influenced the behavioral change theories used in conjunction with social theories as the basis for the study. The findings from this study provide insight into the problem statement and research questions and add to the body of knowledge concerning the acceptance of PAs, their ability to take on clinical duties, and their value to the health care organization.

Behavioral Change Theories

Several behavioral change theories exist to explain behavioral change including self-efficacy, learning, social cognition, planned behavior, and reasoned action (Michie,

Johnston, Francis, Hardeman, & Eccles, 2008). Self-efficacy is an important element of change theories as the basis is on the individual's impression of their ability to perform a demanding or challenging task such as riding a bike or driving a car (Reeb, 2006). Furthermore, self-efficacy plays an important role in the various change theories to predict the amount of effort an individual will exert to initiate or maintain a behavioral change (Reeb, 2006).

Skinner (1953) offered a theory of learning, which posited that people learn complex behavior gradually through the modification of simpler behaviors. Fostering the theory involves imitation and reinforcement as individuals learn by duplicating these behaviors seen in others and that rewards are essential to ensure the duplication of these behaviors (Skinner, 1953).

Bandura's (1986) social cognitive theory postulated that behavioral change is impacted by environmental, personal, and behavioral elements, which combine and influence one another. The focus of social learning theory is on the reciprocal interactions between each element as an individual's environment may affect their willingness to change and vice versa (Bandura, 1986). In health care, the theory may help to explain why clinicians chose to display certain behaviors in one location and not at another. In this dissertation study, the social cognitive theory was referenced in terms of rural versus urban geographic location. Therefore, the clinicians' actions in an urban facility may vary from the clinicians in a rural facility. The clinical structure in a rural facility is often drastically different from that of a large urban or teaching facility due to limited providers (Henry & Hooker, 2008).

Ajzen (1991), in the planned behavior theory, stressed the role of intention in behavior performance, but was intended to cover cases in which a person was not in control of all factors affecting the actual performance of their behavior. Ajzen stated,

> Intentions to perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; and these intentions, together with perceptions of behavioral control, account for considerable variance in actual behavior. (p. 179)

In health care, the planned behavior theory is used to identify the extent to which individuals have positive or negative evaluations of the behavior and any subjective norms, which refer to the social pressure individuals, perceive themselves to be under to perform a particular behavior (Jenner, Watson, Miller, Jones, & Scott, 2002).

Division of Labor The health industry is a mixture of private, public, not-for-profit, and voluntary sectors. Included in the industry is a dynamic and complex division of labor including series of interactions between patients, volunteers, caregivers, managers, and technicians (Allen & Pilnick, 2005). The health care setting is an active laboratory where "…exploration of classical sociological problems and analysis may be studied and new analysis developed" (Allen & Pilnick, 2005). As cost-containment concerns in the health industry grow, organizational leaders change and respond to the social organization of labor. Because of the changes, new service locations develop, labor intensifies, and positions increase (Allen & Pilnick, 2005).

Ancient Greek theorists Plato and Xenophon referred to the division of labor when they referred to the need for specific job functions (Rahim, 2011). The first modern theorist examined the benefit of the division of labor in shipyards as leaders in

charge chose to apply the theory, produced ships faster than those that did not apply the theory. Nineteenth century theorists include Marx and Smith. Smith addressed the concept in terms of productivity, while Marx chose an opposing viewpoint and argued that the over specialization of an employee leads to alienation and reduces enthusiasm to work because they are less inclined to enjoy their position (Allen & Pilnick, 2005; Marx & Engles, 1848).

Included in the division of labor are (a) the importance of all lines of work, (b) a focus on how occupations arise, (c) the social context of the occupation within the organization, (d) how the occupation and division of labor change over time, and (e) what the main drivers are for change (Allen & Pilnick, 2005). In health care, the division of labor between nurses, physicians, and allied health personnel, is such that no one single individual can provide a comprehensive service to the patient (Leggat, 2007).

Professional dominance has been a historical concern among physicians because some feared a PA would become a colleague instead of a subordinate (Ferraro & Southerland, 1989). Physicians questioned the value of PAs or if hiring a PA was warranted and often indicated the decisions depended on the clientele being served, the medical specialty, and the hierarchal structure between the physician and the PA (Ferraro & Southerland, 1989). Ferraro and Southerland (1989) believed that physicians might be more receptive to the addition of PAs to the workforce provided the professional autonomy of medicine remains. The perception is altered in underserved and rural populations where the practice of medicine has often been unattractive and therefore welcoming of physician extenders (Ferraro & Southerland, 1989).

Acceptance and Perception Theories

Social theories are used to study and interpret social phenomena and include those related to acceptance, perception, and logic (Powers, 2010). The origins of social theory are difficult to identify although evidence of origins are noted in ancient Greece. Greeks used theories to make sense of their lives and to question and value the meanings of their surroundings (Prus, 2004). Social theorists include Marx, Spencer, Comte, and more recently Roberto (Powers, 2010). The theory of acceptance was a major basis for the proposal is to understand the challenges PAs confront pertaining to acceptance amongst the supervising physician counterparts (Burgess, Pruitt, Maybee, Metz, & Leuner, 2003).

Definition of Terms

Definitions are provided to improve the readers understanding. Such definitions are essential to imparting key information related to the construct of research (Creswell, 2008). Key terms and their definitions are provided as follows:

Health Professional Shortage Area (HPSA)

Health professional Shortage Area (HPSA) is a geographic location where access to health care is restricted because there are few or no primary care health professionals who will take care of certain patients (Ricketts, 2000).

Hospitalists

Hospitalists are hospital based family or internal medicine physicians spending a specific amount of time (25% to 100%) caring for patients (Rachoin et al., 2012).

Medical Assistance Program (MAP)

The Virgin Islands form of Medicaid, is the Medical Assistance Program (MAP). It is health care assistance available to people with low incomes and limited resources to obtain medical care for some or all of their bills (Francis, 2011).

Medically Underserved Area (MUA)

Populations restricted from access to health care due to financial or lack of health workforce personnel reside in a medically underserved area (MUA) (Ricketts, 2000).

National Commission on the Certification of Physician Assistants (NCCPA)

Founded in 1975, the National Commission on the Certification of Physician Assistants (NCCPA) is the only credentialing organization for PAs in the United States (NCCPA, 2012). It produces a national examination that all graduates must pass for state licensure.

Physician Assistant (PA)

A Physician assistant (PA) is an individual who graduated from an accredited PA program by the Commission on Accreditation of Allied Health Education Programs, and/or a person who passed the certifying examination of the National Commission on Certification of Physician Assistants (Act No. 6735).

Scope of Practice

Scope of practice relates to the roles, responsibilities, duties, and range of services a clinician may perform (Hooker, Cawley, & Asprey, 2010).

Licensure

Licensure is defined as permission by states to provide services such as evaluating, test ordering, diagnosing, treating, prescribing, and billing. All 50 states, the

District of Columbia, and all US territories (except Puerto Rico) have enacted laws or regulations authorizing PA practice.

Assumptions

The assumptions of the study included individual, organizational, population, geographical, and integrity considerations. Assumptions that affect the research process, are inevitable, and are consistently present throughout the process of investigation (Schram, 2006). Although assumptions are neither good nor bad, they may affect the way researchers pose and conduct the study (Schram, 2006). If left unattended, assumptions may influence a researcher to document what they think is happening versus the actual events (Schram, 2006).

An assumption inherent to this study was that the medical staff at the hospital practice mainstream contemporary medicine and the hospital was typical of a small hospital in a rural location. Another assumption was that the PA was similar to all mainstream PAs graduating from an accredited program and nationally certified. The research assumption was that the information collected during the observation would include a reflection of the actual labor activities of the participants and information collected from the interviews would reflect the actual responses of the participants.

A critical assumption was that all observations would be recorded and documented truthfully without any intent to alter or change the objective of the research. This fidelity assumption was identified as the most critical due to the researcher's relationship with the survey site. As an employee of the site, this researcher was aware of the potentials for experimenter bias. Researcher bias is at risk when funding and limited

resources result in a researcher having multiple roles within the study (Marczyk et al., 2005). To reduce the potential for experimenter bias, a bracketing process was used. The process of bracketing permits the researcher to set aside what they knew about the area being studied and invoke a process to eliminate judgment until after the data are revealed (Fischer, 2009).

Clear rules defining potential circumstances under which any data might be excluded from the analysis were established. Additionally, misassumptions were reduced through transparency and by describing and documenting all research procedures, the purpose was to allow other researchers to review and understand the procedures. Finally, all data remain available for others to scrutinize the work performed allowing others to review the evidence and understand how conclusions were drawn. Those details are described elsewhere.

For the qualitative aspect of the study, an assumption was made that the group of individuals being interviewed represented the entire population being studied. Because participants responded to a recruitment flyer that specifically asked for viewpoints of health care in the Virgin Islands, an assumption was made that participants were open and honest when answering all questions and were willing to provide accurate insight (see Appendix A).

Ambiguity was reduced by ensuring the research questions were clear, and addressed the intent of the study. The final assumption was that the time-motion technique and interview instruments were valid and could be relied upon to collect the required data.

The focus of this dissertation study was to analyze the labor activities of a PA and three supervising physicians working in a medicine department in a hospital setting. Limiting the scope to four participants was considered under the circumstances for an effective data analysis process.

Limitations

Skilled researchers identify boundaries for studies allowing them to focus on specific problems while at the same time try to identify limitations (Lieber, 2009). Limitations are weaknesses that may have a direct impact upon the validity of a study (Yin, 2011). One limitation was understanding how a study regarding a single small, rural, medically underserved public hospital on an island would be generalized. On the other hand it is a unique situation that may have some utility elsewhere. Such uniqueness does not represent the mainstream of larger hospital systems in the United States but does represent a subset of the 1980 rural hospitals in 56 jurisdictions which includes islands (AHA, 2014). Because significant variations exist between the hospital that served as the data collection site, and other small, rural, medically underserved hospitals, generalizations cannot be made. In addition, because a specific area of the hospital was used for observations, activities of the participants might not be representative of activities in other departments of the hospital. Data collected by a single observer may result in shortcomings in inter-rater reliability (Melgar, Schubiner, Burach, Aranha, & Musial, 2000). For validation purposes, observations collected from the time-motion analysis were compared with the data provided by the PAs and supervising clinicians of perceived activities at the same time.

A predetermined time-motion checklist containing the research variables was tested to obtain instrumentation face validity. The checklist was used to preclude additional variables introduced and unexpected as the study progressed. The time-motion scorecard served as a potential limitation as the scorecard did not include all tasks and activities performed by the clinician being observed nor did it include tasks that were highly unlikely to be observed. The use of a pilot study provided an opportunity to locate and rectify problems associated with the variables, research setting, research method, or coding prior to engaging in the actual study.

A third limitation, sometimes called the Hawthorne effect, had the potential for the participants to behave differently in the presence of the observer. Reduction of the observation effect was addressed prior to the study through conversations between the observer and the participant. An additional protection against the Hawthorne effect was addressed through the checklist completed by each clinician allowing them to identify their daily labor activities.

Finally, as an attribute to the study, the researcher did not have any clinical background or medical professional experience. The researcher was free from any predetermined notions of how a PA or attending physician in the clinical department should allocate their time.

Delimitations

The scope of the study did not include a comparison and contrasting of labor activities at multiple geographic locations. The research timeframe and financial resources required to survey multiple locations are delimitations. Although the generalization of results from the study could save money and research time, the

qualitative exploratory results may not apply to multiple geographic locations or represent all characteristics of medical professional populations (Yin, 2009). Physician assistants employed in small, rural hospitals in other geographical locations or in other parts of the hospital might have different labor activities.

Because one geographic location was used, generalizing the results might be a disadvantage. Specific biases for the study included focusing on one geographic location, one period in time, and the convenience sampling technique. Eliminating biases and persuasive comments throughout the research process was implemented to ensure the research was valid and free from researcher influence.

Chapter Summary

Chapter 1 includes an introduction to the problem that medical workforce shortages have led to physician shortages resulting in increased utilization of PAs (Zwijnenerg & Bours, 2011). Background information included in the chapter incorporates a historic overview of workforce shortages and the role of PAs in health care. The purpose of this qualitative exploratory case study was to explore the role of PAs in a small, rural hospital located on an island in the Caribbean to understand how they were used, how they were accepted, and how their usage impacted the medical workforce shortage.

The theoretical framework of the qualitative exploratory case study consisted of task shifting. Although the study had limitations and delimitations, the qualitative research method is intended to contribute to PA recruitment, task transfer, skill mix, and rural hospitals. Findings indicated by data and themes might serve to develop strategies,

which could enhance rural hospital staffing, increase access to care and expand clinical scopes of PAs in these regions.

In Chapter 2, comparing and contrasting different theories and models expand the literature review and the theoretical framework. In addition, Chapter 2 is a detailed history of the impending workforce shortage, overview of the PA profession, skill mix and task transfer of physicians and PAs.

CHAPTER 2: REVIEW OF LITERATURE

Workforce shortages in health care have been a stimulus to identify alternative staffing patterns to medicine ("Management Solutions," 2005). The purpose of the qualitative exploratory case study was to explore the role of physician assistants (PAs) in a rural hospital in the Virgin Islands. The intent was to understand how PAs were used, how they were accepted, and how their usage impacted the medical workforce shortage. Hospital based research involving PAs use and acceptance was undertaken in large, urban settings (Henry, Hooker, & Yates, 2011). Small and more isolated hospital based research is needed.

The literature reviewed in this chapter includes the history of PAs, workforce shortages, skill mix, PAs in the Virgin Islands, and behavioral change theories. A review of the literature noted that health care leaders have struggled with the shortage of physicians (Hendrich et al., 2008). Jesitus (2006) expressed the need to understand further the roles and responsibilities of PAs. With the shortage of physicians, an increase in the number of PAs and nurse practitioners (NPs) emerged (AHRQ, 2011).

The shortage of physicians also presents problems for many states because supervision of PAs by a licensed physician is a requirement (Jesitus, 2006). For the underserved areas that already struggled with finding providers, the inability to use PAs appropriately because of the lack of available supervising physicians has been a challenge (Jesitus, 2006). In the literature review the lack of information on PAs, labor activities, and the Virgin Islands, clearly identified the need for more information.

Title Searches, Articles, Research Documents, and Journals

Literature reviewed for this chapter included title searches, peer-reviewed articles, books, journals, and research materials related to the problem, purpose, variables, and research methodology. Key words included workforce shortage, task shifting, physician assistants, human resource management, and rural health. Major databases utilized for locating literature were Pub Med, EBSCOHost, Gale PowerSearch, ProQuest, and University of Phoenix thesis and dissertation databases. Additional books and documents were located through Google and Yahoo search engines and Amazon online bookstore. The Virgin Islands history, policies, codes, publications, and by-laws originated from readily available legal codebooks, hospital policies, and by-laws.

Historical Overview of American Medicine

English speaking medical schools in the United States were nonexistent in the 16th century when medical education began to grow in European cities (Toledo-Pereyra, 2004). American medicine differed slightly from European medicine until the 17th century when the University of Pennsylvania opened in 1765 followed by the Kings College Medical School in New York in 1767 (Toledo-Pereyra, 2004). Philadelphia was booming economically, socially, and industrially when the medical school opened and was the largest city and the first of 13 colonies to open a hospital (Toledo-Pereyra, 2004). Kings College Medical School, now known as the Columbia University College of Physicians and Surgeons, was the first to give the degree of Medical Doctor in English America (Toledo-Pereyra, 2004). Shortly thereafter, in 1782, the Medical School of Harvard College and in 1797, the Medical School of Dartmouth began educating students on the practice of medicine (Toledo-Pereyra, 2004).

The first nurse anesthetist began practicing in the 1890s under the supervision of William and Charles Mayo who founded the Mayo Clinic in Minnesota (Brodie, 1991). After many years of discontent between nurse anesthetists and anesthesiologists, the practice by nurse anesthetists became widely accepted in the mid-1900s (Brodie, 1991). In 1945, nurse anesthesiologists became eligible for certification through the American Association of Nurse Anesthetists (American Academy of Nurse Practitioners, 2012). NPs emerged in the 1950s because of the need to meet the primary health needs of individuals in rural communities (O'Brien, 2003). NPs may practice independently from physicians (O'Brien, 2003) and may obtain certification through the American Academy of Nurse Practitioners (2012).

Nurse midwives were introduced to the United States in 1925 as means to meet maternal and infant health care needs in rural areas (Rooks & Fischman, 1980). The American Midwifery Certification Board (2012) began certifying midwives in 1971. Nurse midwives collaborate with obstetrics and gynecologic physicians to manage uncomplicated pregnancies, deliveries, and women's health issues (Rooks & Fischman, 1980).

Education to become a medical doctor in North America usually consists of entry-level education (bachelor degree) from an accredited university followed by a 4-year medical education program accredited by the Liaison Commission for Medical Education (ABMS, 2012). Completion of medical school in the US is generally followed by a 1-year supervised internship and a 3 to 4 year specialty-specific residency (ABMS, 2012). Physicians who successfully graduate from medical school and complete a residency are eligible for board certification (ABMS, 2012). Board certification is a demonstration of a

physician's expertise in a given specialty (ABMS, 2012). Any physician who wishes to sub-specialize in their practice may pursue an additional training period, referred to as a fellowship (ABMS, 2012).

The regulation of medical practice in the United States differs from state to state; however, all states require medical school students to pass Parts 1 and 2 of the United States Medical Licensing Exam prior to obtaining their medical school diploma assuring a minimal level of competence (Antonelli, 2008). Part 3 of the licensing exam must be passed prior to obtaining licensure in any given state assuring that the provider is ready to practice independently (Antonelli, 2008). Students who graduate from foreign medical schools not accredited by Liaison Commission for Medical Education or by the American Osteopathic Association have additional requirements established by the Education on Foreign Medical Graduates pertaining to United States Medical Licensing Exam requirements (Antonelli, 2008). Many states also require all licensed physicians to be certified by a practitioner certifying board (Lipner et al., 2006).

Physicians were the primary providers of medical care in the United States until the late 1960s when the contemporary PA model was formally recognized (Ferraro & Sutherland, 1989). At the same time several advanced nursing provider designations were recognized including nurse midwives, nurse practitioners, and nurse anesthetists (Jones, 2012). Advanced practice registered nurses (APRNs) often work in collaboration with physicians to care for and treat patients.

Shortage of Health Care Professionals

The shortage of physicians sparked national awareness in the 1960s (Cooper, 2007). In response to the alarming shortage of both nurses and physicians, additional medical schools were opened, the National Health Service Corps was created, foreign medical graduate recruitment models were developed, and new provider types were created (Cooper, 2007). Similar to the nurse midwife profession and practice pattern created in the 1930s, NP and PA professions were developed in the 1960s to meet increasing patient demands (Cooper, 2007).

By the 21st century, medical workforce shortage was becoming a global problem (O'Connor & Hooker, 2007). Salsberg and Grover (2006) predicted that,

> By 2020, the nation will be growing by almost 1% per year (0.8%), which exceeds the expected rate of growth in the supply of physicians, thus leading to a decrease in the physician-to-population ratio at a time when the number of elderly will be growing rapidly. (p. 782)

According to Salsberg and Grover (2006), the year 2020 may bring about new challenges, because more Americans will need access to health services, which may be difficult to find because many of the physicians age 55 and over will begin entering into retirement and new graduates will likely work fewer hours.

Human resources within the health industry are the most important inputs because health care professionals are required to perform treatments, interventions, diagnosis, and oversee the provision of health services to any given community (Zurn, Dal Poz, Stilwell, & Adams, 2004); however, these professionals are often neglected in low income countries (Hongoro & McPake, 2004). In 2008, National Advisory Committee on Rural

Health and Human Services ([NACRHHS], 2008) reported, "Over the past 20 years, workforce shortages have posed a fundamental systematic challenge to the rural health care delivery system" (p. 10). Organizational leaders striving to make headway in the market must view human resource management as a strategic component of the organization instead of an administrative one (Hongoro & McPake, 2004).

The projected shortage of physicians has been a key health care issue since 2000 (Ransom, 2009). The decline in physicians combined with an aging population is predicted to deteriorate the already strained health care system in terms of access to care, wait times, and availability of appointments (Ransom, 2009). Solutions to the problem include increasing physician enrollment in approved training programs and improved utilization of clinicians (Ransom, 2009). Emrich (2005) posited that because of reductions in medical school graduates and residents, a modern and cost effective solution would involve staffing with PAs.

Fewer medical school students have chosen primary care as their specialty of choice because of reduced payer reimbursements, poor working conditions and lack of professional recognition (Emrich, 2005). Fine (2007) believed that technology and increased health care costs led to value and judgment challenges from consumers and practitioners altered their practice patterns in many specialty areas. As members of the baby boomer population enter into retirement and their health status declines, the impact on the workforce of the health care industry will be noted in several ways including workforce shortages (Salsberg & Grover, 2006).

Human resource shortages in the health sector, specifically with physicians, have been a common burden shared by many countries (Keuhn, 2007). In 2006, Salsberg and

Grover espoused that the physician shortage would likely take 10 or more years to decline while the demand for health services would exceed the supply leaving many health care facilities and organizations with major workforce shortages and gaps. As the population grows by 25 million every decade (U.S. Census Bureau, 2000, 2010), the Society of Critical Care Medicine estimate that by the year 2025 the physician shortage in the United States would be close to 124,000 (Critical Care Workforce Partnership, 2001). Intense, consistent physician recruitment will not suffice as a long-term solution to the physician shortage even though physicians have been offered positions before they even graduate from medical training (Gorman, 2011).

Changes in reimbursements from third party payers, advancements in technology, and a reduced workforce have pushed the U.S. health care system into a state of transition (Hendrich et al., 2008). The physician workforce has been further compromised as more physicians enter into retirement, fewer individuals enter into medical school, and younger physicians who are unwilling to work long hours or maintain heavy workloads (Fine, 2007; Salsberg & Grover, 2006).

Demand on the health industry has been influenced by an increase in an aging population who consume the largest amount of health services (Colwill et al., 2008). Population increases and the expectations and financial ability of Americans enable individuals to utilize more health services (Madorran-Garcia & Val-Pardo, 2006; Salsberg & Grover, 2006). The majority of costly illnesses, admitted patients, procedures, and high intensity services are provided to elderly patients (Salsberg & Grover, 2006).

Primary care is perhaps the area most affected by shortages. Pizziferri et al. (2005) stated, "Primary care serves as a fundamental component of good health care" (p. 176). Providers who focus on primary care must successfully balance large amounts of information and medical knowledge to deliver quality acute, chronic, and preventative care (Pizziferri et al., 2005). Created in an effort to address the needs of those who were overlooked by mainstream medicine, family medicine, general practitioners, and general pediatricians provide the majority of health care services in the United States (Colwill et al., 2008).

With roughly one-third of the nation's practicing physicians focusing on primary care, rural facilities experience shortages in both primary and specialty providers (Nusbaum, 2009). Unfortunately, general medicine practitioners have pursued education and training in sub-specialty fields eliminating them from private practice because the majority accepts hospitalist positions (Colwill et al., 2008). Improvements in clinical efficiency, reductions in inpatient costs, and shortened length of stays have increased the demand for hospitalist providers (O'Leary et al., 2006).

According to Perlino (2006), people rely upon public health services to provide protection from health threats. Crippled by a decline in medical professions and reduced budgets and resources, public health agencies will fail to meet established goals including protecting the publics' health (Perlino, 2006). Workforce shortages in geographically underserved communities are detrimental to the stability of public health because consumers rely on the departments services to obtain much needed health services and treatments (Perlino, 2006). Epidemiological tracking, disease prevention, emergency preparedness and response, and health promotion activities all are directly impacted by

the shortage of workforce in the public health system (Perlino, 2006). Enhanced recruitment and retention strategies in public health and government facilities are compromised by reduced budgets resulting in below average salaries and compensation packages (Perlino, 2006).

A decline in the number of physicians in clinical activity and medical school residents entering into and staying in the primary care profession poses a threat to the entry into the health care system (Walker et al., 2010). Decreases in physician availability provide an opportunity for the implementation and use of other health practitioners (Friedman, 2008; Hinkel et al., 2010). On the other hand PAs and NPs have been added to staffing mixes in areas previously dominated by physicians.

To address workforce shortages and meet clinical demands, administrators in many countries recruit international medical graduates while others initiate task shifting of activities from physicians to other health providers including the PA (O'Connor & Hooker, 2007; Murray & Wronski, 2006). Drawbacks to international medical graduate recruitment include an inability to ensure placement in rural and medically underserved communities (Nusbaum, 2009). Migration from rural, low-income counties into wealthier countries helps to solve some of the workforce shortage even though the lower income countries struggle and go without much needed care (Keuhn, 2007). Without international medical graduates immigrating, the United States would suffer from similar workforce shortages (Mullan, 2005).

The physician workforce shortage has been enhanced further because of reduced resident hours and availability (Powell, 2011). New enrollments to medical schools are not sufficient to cover the number of physicians entering into retirement (Emrich, 2005).

Historical medical school enrollment patterns are a major cause of the physician shortage as noted by Salsberg and Grover (2006) is as follows:

> If historical patterns continue, the annual number of physicians retiring each year will grow from fewer than 9,000 in the year 2000 to more than 22,000 per year by 2020, almost the number of new physician's completing graduate training annually in 2005 (p. 783).

Hospital Based Providers and Primary Care

Primary care is a fundamental component of quality health care (Pizziferri et al., 2005) and health care organizations rely on primary care physicians to diagnose, treat, refer, and evaluate patients (Friedman, 2008). On the hospital side primary care physicians generate a considerable amount of revenue for a hospital (Patmas, 2010).

With fewer medical school graduates choosing careers in primary care internists and family medicine physicians overlap clinically (Walker et al., 2010). Because of the shortage of the primary care providers, patients experience long waits for office visits, delays in-patient care, and frequent visits to emergency rooms (Friedman, 2008). Medically underserved communities rely upon the primary care physician to improve and sustain the populations' health (Walker et al., 2010).

Internists coordinate care between the nursing staff, sub-specialists, hospitalists, and ancillary services (Poplin, 2004). Prior to the decline in primary care providers, internists were primarily diagnosing and treating the patient population suffering from complex medical conditions while the generalist was focused on treating the less complex and more routine patient population (Poplin, 2004).

In the hospital setting, internists and family practitioners admit patients with a wide array of medical conditions. Patients are usually admitted directly from a provider's private office to a hospital's admissions department. When admitted through the emergency room (ER), attending physicians are the first to see the patients. Based upon the ER physician's review of the patient's history and physical, physical observation and review of test results, the decision is then made whether the internist should be consulted (Howell et al., 2004). If a decision is to consult the internist on-call, the ER physician shares with the consulting physician findings and recommendations for treatment. The consulting physician will choose either to admit the patient based upon the information provided by the ER physician or choose to perform their own physical examination and review of patient information (Howell et al., 2004).

The process to admit a patient from the ER generally includes admission orders, medication orders, and initial plans for treatment. Physicians, who engage in private practice in addition to their on-call responsibilities at local hospitals, must either leave their office during office hours to go to the hospital to perform their admission duties or delay the admission until office hours are over, sometimes in excess of 2 hours (Howell et al., 2004). Depending upon the facility, admission and treatment orders may be accepted via telephone from the internist on-call allowing the patient to be transported to the floor with reduced delays (Howell et al., 2004). Delays to the admission process increase costs and reduce patient satisfaction, efficiency, and emergency room throughput and output (Pascuzzi & Quenzer, 2009). Telephone orders remain valid for a limited amount of time and must be re-written or signed by the internist to avoid compromise to patient care and regulatory compliance.

Once on the medical unit, the nurses, physicians, and ancillary staff attend to the patient. Physicians make daily rounds on their patients to assess prognosis, response to medications, response to treatments, review lab and procedure results, and coordinate sub-specialty care if needed. In addition, physicians document findings and recommendations in the patients chart via electronic dictation or hand-written charting. Requests for sub-specialty consultation, procedures, tests, and medications are entered into the patients' medical record and disseminated accordingly. Many facilities have the assistance of the unit secretary to assist with the functions while others do not have unit secretaries (Spence & Reedy, 2007).

O'Leary et al. (2006) reported that physician's spend approximately 69% of their time performing indirect patient care, including documenting histories and physicals, reviewing discharge instructions, family meetings, documentation, reviewing results, and follow-up visits (p. 88). Thirty-five percent of indirect care was comprised of paging or calling other providers, face-to-face communication, and returning pages or telephone calls (O'Leary et al., 2006, p. 88). According to Weigl, Müller, Zupanc, and Angerer (2009), hospital-based internal medicine physicians spend on average 56% of their time performing indirect patient care accounting for more than one-half of their time (p. 252).

Similar to the United States mainland, family practitioners and internists in the Virgin Islands are used as primary care providers in both the outpatient and inpatient settings (Meltzer & Chung, 2010). Family practitioners and internists treat disease conditions ranging from upper respiratory ailments to diabetes and oncology cases (Poplin, 2004). Primary care, general, internal, and family medicine physicians make up the majority of the specialties on the island.

Rural and Underserved Health Services Understanding rural or remote health is important for research, policy development, planning, and resource allocation; however, no one single definition exists (Wakerman, 2004). Rural and underserved communities are categorized by the physician to patient population ratio, which may be influenced at any one point in time because of low recruitment rates or low retention rates (Pathman, Konrad, Dann, & Koch, 2004). The loss of even one physician in a rural area may have major implications for ensuring access to care for the community because of the small population size (NACRHHS, 2008). The health status of a local population (e.g., high disease burden or severe or acute chronic illness), patient preferences, and available treatment facilities all impact the necessary provision for treatment and services and the required number of physician's to effectively address the health needs of the population (Larson, Palazzo, Berkowitz, Porani, & Hart, 2003).

Residents of rural and medically underserved communities have experienced shortages in primary care providers and lack access to providers and have had limited ability to attract new medical school graduates and seasoned physicians (Pathman et al., 2004; Grumbach, Hart, Mertz, Coffman, & Palazzo, 2003; Murray & Wronski, 2006). Access to general, medical, and hospital services (Daniels, VanLeit, Skipper, Sanders, & Rhyne, 2007) and the inability to afford the services has also plagued residents of rural communities (Grumbach et al., 2003). Recruitment and retention efforts are often unsuccessful in rural communities resulting in inadequate access to care (Daniels et al., 2007). Hart, Larson and Lishner (2005) stated:

> Physicians who practice in rural towns practice in a medical care delivery system characterized by financially vulnerable medical organizations, small populations,

> long distances to specialists and tertiary hospitals, longer practice hours, lack of collegial support, limited access to advanced technologies, and relatively high fixed costs per delivered service. (p. 1150)

Some of the characteristics of rural locations would attract more physicians if there were access to larger metropolitan areas, colleges, higher income levels, cooler with more winter precipitation, have higher population growth, and smaller Hispanic populations (Pathman et al., 2004). Heavy workloads, long call hours, limited access to continuing education, limited professional options for spouses, large school debts, and isolation from colleagues all play influential roles on a physician's decision to practice in a rural location (NACRHHS, 2008). Rural physicians work longer hours and retire before their urban counterparts resulting in a heightened awareness of the aging population in rural communities (Schofield, Page, Lyle, & Walker, 2006). On the other hand many physicians are dedicated to serving the medically underserved and strive to do so regardless of reduced reimbursements, barriers to access, and pressure for productivity (Chiyarth, 2006).

Enacted in 1977, the Federal Rural Health Clinical Services Act recognized PAs, as providers of primary care in underserved areas (Martin, 2000). Employment opportunities for PAs are predicted to grow in rural settings as primary care gains more importance in the health care industry and as health care facilities strive to reduce costs, increase access to care, and extend physician duties (Burgess et al., 2003).

In some instances, PAs in rural, and medically underserved communities contribute to more generalist care than their physician counterparts (Larson et al., 2003). While staffing rural health clinics may be problematic, those PAs who choose to practice

in rural and underserved communities are often influenced based upon where they grew up and where they trained (Martin, 2000). The PAs who trained or grew up in small, rural, or underserved communities were more likely to return to similar communities to practice (Martin, 2000).

The Virgin Islands, as a whole, is a medically underserved community and by definition considered rural. As a result, islands in the US territories generally receive HPSA scores designating them underserved (HRSA, 2012). The designation allows the facility to recruit and retain qualified health care professionals who wish to participate in the loan re-payment program (HRSA, 2012). The focus of the incentive is to attract providers who may otherwise choose to seek employment in another geographic location (Grumbach et al., 2003).

Role of the National Health Service Corps

The National Health Service Corps (NHSC) mission is to provide medical care to the medically vulnerable, uninsured, and geographically isolated residents of the United States and territories (NHSC, 2009). This is a federally funded program, with approximately 10,000 members providing care to approximately 10.5 million patients in rural, urban, and frontier areas approved by the NHSC. Sites approved by the NHSC include health care facilities providing outpatient, ambulatory, and primary health care in designated HPSAs (NHSC, 2012).

Health professional shortage areas and medically underserved areas are the primary methods through which the members of the U.S. Federal Government assess a community's ability to meet health care provider needs and track workforce shortages (NACRHHS, 2008). Members of the Health Resources and Services Administration

Bureau of Health Professions define and designate communities as underserved areas or shortage areas based upon several criteria including provider to population ratios (NACRHHS, 2008) (i.e., fewer than one primary care provider per 3500 residents) (Grumbach et al., 2003). Health professional shortage areas and medically underserved areas designations allow communities to become eligible for increased Medicare reimbursements, HRSA placements, and some federal grant and funding programs (NACRHHS, 2008).

The HRSA website reported, "As of 2012, there were 14,076 HRSA designated HPSAs for primary care" (HRSA, 2012). Approximately 20% of the United States population resides in a federally designated HPSA (Salsberg & Grover, 2006). Recognized by the NHSC in 2011, the island that serves as the data collection site, was awarded a HPSA score of 16 (HRSA, 2012). Despite the designation, the island has struggled with recruitment and retention of primary care physicians since 2000 (Walker et al., 2010).

History of Physician Assistants

Designated in 1965 in an effort to alleviate physician shortages, PAs provided medical care in areas where medical providers were unavailable or nonexistent. The original intent was to improve a physician's efficiency and productivity by delegating responsibility for routine and simple tasks (Daniels & Regens, 1980). Over time, the scope for PAs expanded to include more clinical and surgical functions (Cawley, 2007a). Their practices may include, but are not limited to orthopedics, emergency rooms, hospitalist programs, primary care, critical care, and pediatrics. Additionally, PAs

perform procedures, which historically were limited to physicians including central lines and chest tubes.

Hospital administrators employing PAs in inpatient settings have reported higher levels of efficiency, safety, and skills comparable to the services provided by physician residents or staff physicians (Hooker et al., 2010). Researchers have also reported physician and patient acceptance of PAs, cost savings, and maintenance of clinical quality levels when PAs were included on the medical staff. Facility administrators seek to recruit and retain PAs, in an effort to cope with the shortage of physicians and nurses. In addition, employing PAs reflects critical factors such for cost containment, rapid expansion in the health care industry, and an increase in an aging baby-boomer population (Budzi, Lurie, Singh, & Hooker, 2010).

As of 2014 there are 187 accredited PA training programs in the United States with more than 90,000 licensed PAs. Supervision of PAs does not always require the physician to be on-site and does not hamper their ability to practice alone (Hamilton & Decloe, 2011). Physician assistants must be graduates of an accredited education programs and obtain a Physician Assistant National Certification Examination document through the NCCPA prior to any US jurisdiction licensure (2012). Certification defines the profession and limits the use of certain titles indicating the individual has met a given set of criteria. Licensure is the most restrictive regulation and allows only individuals licensed by the state to practice or engage in a particular activity. Physician assistants must meet established standards and criteria in order to practice requiring them to be licensed in the state or states they wish to practice.

Preparing PAs for roles in the health care profession begins with acceptance into one of the accredited training programs (Joslin et al., 2006). Educational programs vary in length from 24 to 36 months and are comprised of courses and clinical rotations (Hinkel et al., 2010). The philosophy is to establish a broad-based approach to general medicine, providing students with a solid platform upon which they can build their professional skills and seek professional careers. The focus in first year of most programs is on didactic courses including anatomy, physiology, microbiology, pharmacology, and the behavioral sciences (Jones, 2008). Students receive clinical sciences through course work with a focus on history and physicals, physical examinations, epidemiology, communication and interpersonal skills, clinical diagnosis, clinical procedures, and surgical skills (Jones, 2008).

The focus of the second year of the PAs education is on clinical training as students spend 4 to 12 weeks rotating through a particular medical service (i.e., medicine, surgery, obstetrics, pediatrics, and emergency medicine) (Wiemiller, Somers, & Adams, 2008). Students have the option of elective rotations in the specialty of their choice and completing the program with an extended preceptor clinical rotation commonly in a primary care setting (Hooker et al., 2010). Physician assistants cite mentoring and time spent with the supervising physicians as their most important and most influential opportunities (Polansky, 2007). Formal education combined with self-study techniques provides PAs with optimum learning opportunities (Polansky, 2007).

Each program's curriculum undergoes revision and modification to meet the rapidly changing health care environment allowing students to be better prepared and aware of the current practice of medicine upon graduation from the program (Polansky,

2007). Most PA programs include a graduate level (master's degree) program to advance and focus the students study based on systematic techniques (Joslin et al., 2006).

The scope of the PA's practice varies based upon years of experience, geographic location, and clinical setting (Brugna, 2006). Clinical activity depends on health care legislation overseen by a state board of medical examiner or equivalent. State legislators establish delineations of practice to ensure the level of care provided by PAs is applicable to the level of education, training, and adequacy for a given setting (Brugna, 2006). Guidelines and delineations are developed with guidance from medical societies, government authorities, and medical associations (Hooker et al., 2010).

Identified in the literature were several routine practices of PAs including preparation for procedures, performing treatments, patient education, and follow-up care (Brugna, 2006). Each state and legislative jurisdiction identifies prescribing authority, admission privileges, referrals, and third party payer benefits (Hooker et al., 2010). Limitations on practice vary from state to state as clinical scopes and responsibilities are delineated by the regulatory and licensing agencies (Wing, Langlier, Salsberg, & Hooker, 2004).

Physician assistants can assist with many dermatologic activities including patient education, microdermabrasion treatments, and discharge instructions (Schneider, 2004). PAs are used in many emergency rooms to maintain quality of care and service delivery standards. Administrators of a pediatric hospital in South Carolina turned to PAs to provide afterhours care, routine follow-up visits, and patient rounds, as well as surgical assistance (Powell, 2011). Orthopedic surgical centers and independent physicians have added PAs to their staff to assist with increased demands (Bohm et al., 2010).

Many countries, including the United Kingdom, Netherlands, Australia, South Africa, and Ghana have used PAs to provide medical treatment and services (Hooker, Kuilman, & Groningen, 2011; McCabe, 2007). In Canada, PAs work in ERs under direct supervision by a licensed physician who must co-sign their orders, review patient records, and collaborate with the PA on complex or non-routine cases (Nurse Practitioners' Association of Ontario, 2009). The addition of PAs to the medical workforce results in an increase in the amount of patients seen, reduced wait times, increases in productivity, and reduced non-direct patient care activities allowing physicians to focus more on complex cases and providing direct patient care (Hamilton & Decloe, 2011).

History of Physician Assistants in the United States

The PA concept originated in the 1960s in an effort to achieve high quality, cost effective health care (Grzybicki, Sullivan, Oppy, Bethke, & Raab, 2002), expand physician services, and meet the needs of underserved regions (Cawley & Hooker, 2003; Cook et al., 2007; Joslin et al., 2006; Polansky, 2007). One of the first groups of individuals to be recruited for PA training was medical military personnel returning from the war in Southeast Asia (Hooker et al., 2010). Under the direction of Dr. Stead, Duke University pioneered the concept in 1965, when four ex-Navy corpsmen were enrolled into the nation's first PA program (Hutchinson et al., 2001). This was followed by similar developments at the University of Washington and the University of Colorado (Cawley, Cawthon, Hooker, 2012).

By the early 1970s, both U.S. Federal Governmental officials and state officials began to take note of the PA concept. Because of the attention, focus was on the regulation of PA practice (Cawley, 2007a). In 1971, the Health Manpower Act was

enacted which provided an increase in funding for medical schools in an effort to meet the medical personnel shortage and included funding for PA programs (50 training programs in all) available by 1974 (Cawley, 2008). The American Medical Association adopted and recognized PAs and shared with the profession resources in an effort to create the national certification and codification of practice laws (Cawley, 2007a).

The creation of the PA profession was inspired by the need for additional health care providers who could help alleviate the shortage of general medical doctors, address health disparities in underserved populations, assist with containing health care costs, improve health care access, and encourage educational and professional advancement for existing health care professionals with diversified experiences (Grzybicki et al., 2002). Original educational and training programs ranged from 15 to 36 months and included medical course work, clinical preceptors, and clinical clerkships (Jones, 2008).

Initially, PAs migrated to rural health clinics and underserved populations (Grzybicki et al., 2002). Although many PAs remain in rural and underserved areas, their practice is in all aspects of health care and in all parts of the nation. The HRSA reported PAs to be vital in the effort to staff underserved populations and rural geographic areas (Philpot, 2005). Clinical practice for PAs in rural and underserved areas are generally broader than the PAs practicing in urban settings as they treat and respond to a larger scope of medical diagnoses (Henry et al., 2011).

Most PAs are in clinical practice and fluctuate between clinical specialties in the United States (Hooker et al., 2010). Clinical scopes of practice vary by state, specialty, and supervising physician (Doan et al., 2011). All scopes of practice allow for taking and documenting medical histories, performing physical examinations, reviewing and

interpreting diagnostic tests, and using all resources to make informed clinical and patient care decisions and work closely with physicians to develop and implement patient care treatments and plans (Abrass, Ballweg, Gilshannon, & Coombs, 2001).

Health care financing initiatives have placed a large burden on organizations to reduce costs and increase quality and productivity. As a result, organizational leaders attempted to identify cost saving measures including those surrounding staffing (Fulton et al., 2011). Combined with the shortage of physicians, and the need to reduce spending, many health care organizations turned to PAs as a means to meet both financial and quality demands (Hooker et al., 2010). Organizations benefit from hiring PAs, as they are able to reduce spending and ensure the quality is comparable if not better than that of a physician (Hooker et al., 2010).

Health Care in the Virgin Islands

The Virgin Islands is comprised of four islands located in the Caribbean Sea approximately 40 miles east from the island of Puerto Rico and 1254 miles from Florida (Dookhan, 2004). The islands' isolated location results in a variety of health care problems familiar to many other rural underserved communities. Problems include the lack of providers, marginal viability of the local acute care hospital, and an increasingly poor and uninsured population. According to the 2010 Census, 108,612 individuals lived on the island. Current details relating to the breakdown of the population by race are not available; however, the 2000 U.S. Census reported a racial breakdown of 76.2% black or of African descent, 13.1% white, 1.1% Asian, 6.1% other, and 3.5% listed two or more races. Approximately 32.5% of the population lives below poverty (U.S. Census, 2010).

Health care in the Virgin Islands differs from the United States mainland in that all health care facilities are government owned, all facilities must comply with Medicare and Medicaid funding regulations and national accreditation standards (K. Griffith, personal communication, December 20, 2013). On the island there is one hospital, one health center, and one clinic (K. Griffith, personal communication, December 20, 2013), which when combined provide comprehensive medical services from primary care to spine surgery. Licensed for 188 beds, the hospital on the island was constructed in 1982 when the local government received federal funds to construct a new facility (X. Simmonds-Emmanuel, personal communication, December 20, 2013). Under Governor Turnbull and the 23rd Legislature of the Virgin Islands, Bill No. 23-0030 under Title 19, Chapter 16, was amended and provided for semiautonomous administration of the V.I. Government Hospitals and Health Facilities (X. Simmonds-Emmanuel, personal communication, December 20, 2013). The goal of the bill was to grant more freedom in the hospital's operations by removing it from the direct control of the Department of Health with the objective of improving health care for residents and visitors (X. Simmonds-Emmanuel, personal communication, December 20, 2013).

Semiautonomous administration on the island include (a) a territorial board to address health issues, (b) competitive bidding, (c) the provision of government funds for hiring purposes, and (d) separate bank accounts from the central government (X. Simmonds-Emmanuel, personal communication, December 20, 2013). In 1995, the facility received Joint Commission Accreditation (X. Simmonds-Emmanuel, personal communication, December 20, 2013). The facility underwent several name changes and Chief Executive Officers; the most recent was hired January 2011 (X. Simmonds-

Emmanuel, personal communication, December 20, 2013). The hospital serves as a safety net facility to provide treatment and services to all patients regardless of the ability to pay.

Hospital physicians are employees of the Virgin Islands Government. Employment and share in a 50% reduction in malpractice fees (Title 27, Section 166e). Services rendered to any MAP patient are considered charity care, as employed physicians are unable to bill for services rendered to this patient population (R. Centeno, personal communication, December 20, 2013). Approximately 40% of all patients seeking services from the hospital are enrolled in MAP.

The medically underserved population accounts for approximately one fourth of a physicians practice requiring them to provide, on average, seven to 10 hours of charity care per week (Chiyarth, 2006). Social forces including medical training, specialty, and practice setting (Chiyarth, 2006) influence a physician's willingness and attitude towards the medically indigent. Many physicians are originally from a similar geographic region or trained in one (Chiyarth, 2006). Physicians struggle to provide safety net services to the medically underserved, while others choose to turn a blind eye (Chiyarth, 2006). General and family medicine physicians are more inclined to provide and serve the medically indigent than other specialties.

An additional condition of employment requires physicians to share emergency room and floor call with their peers (R. Centeno, personal communication, December 20, 2013). Call responsibility takes away from the time the physician is able to spend rounding on their admitted patients or providing care at their private offices. In addition,

patients experience delays in treatment and services because of the unavailability of the on-call physician.

The hospital administrators recruited the first hospitalist PA to work alongside the physicians in a clinical department in 2010. A recommendation made by the Virgin Islands Primary Health Care Office encourages health care facilities in the Virgin Islands to hire PAs to help address the workforce shortage (HRSA State Health Workforce Profile, 2005). The PA assists the clinical department with admission orders, completing histories and physicals, rounding and charting on admitted patients, assisting with procedures, and discharge protocols.

Adopting new clinical staffing models was an effort to assist with limited human resources and the shortage in physicians. The ability to recruit and retain clinical providers is handicapped because of the remote location and low standards of living. Since being granted licensure and clinical scopes in 2005 (Act No. 6735), PAs help to fill clinician voids. Identifying and understanding labor activities of a PA in the Virgin Islands is crucial for various reasons including funding, legislation, staffing initiatives, quality outcomes, and establishing market power.

History of Physician Assistants in the Virgin Islands

Physician assistants were introduced on the Virgin Islands beginning in 2005 when two individuals sought employment (Act No. 6735). The process for licensure and legislation took 1 year to complete. Upon completion, two PAs were granted licensure and hired to work in the ER at the hospital on the island. Hospital employed physicians who graduated from accredited medical schools and training programs but failed to meet

the requirements to practice medicine in the Virgin Islands as a physician, were grandfathered by the Board of Medical Examiners to practice as a licensed PA as well.

Although the initial concept of the PA originated in the 1960s, the U.S. Virgin Island Government did not recognize PAs as providers until 2005 (Act No. 6735). Legislation proposed by Senators Richards and Berry in 2005 created an additional licensure category under the VI Medical Practice Act for PAs (Act No. 6735). The legislation allowed for three types of PA licensure: graduate, temporary, and permanent (Act No. 6735). Graduate licensure is granted to a PA who meets all established criteria but is awaiting their board certificate (Act No. 6735, Sec 50c). Permanent licensure is granted to a PA who meets all established criteria and is board certified by the NCCPA (Act No. 6735, Sec. 50b). Temporary licensure may be granted to any applicant who has met all established criteria but is awaiting the next scheduled Board of Medical Examiners meeting (Act No. 6735, Sec. 50d).

Pursuant to Act No. 6735, Sec. 50b, to qualify for a PA license in the Virgin Islands and obtain approval from the Board of Medical Examiners, individuals must provide proof of, complete, and submit the following:

1. Appropriate application forms.
2. Applicable fees.
3. Complete of a PA educational program accredited by the Commission on Accreditation of Allied Health Education Program.
4. Certification by the NCCPA.
5. Be mentally and physically able to engage in practice.
6. Free from any licensure or certification disciplines or suspensions.

7. Be of good moral character.

8. Any additional requested information.

A physician to perform duties and must supervise PAs responsibilities (Act No. 6735 Sec. 50b; Sec. 50j). Supervising physicians may delegate responsibilities providing the responsibilities are within the PA's skills, fall within their scope of practice, and are performed under supervision (Act No. 6735, Sec. 50b). Acting on behalf of their supervising physician, PAs may pronounce death, form authentication, order routine tests, and provide medical services (Act No. 6735, Sec. 50b). They may dispense and administer drugs and medical devices as delegated by their supervising physician (Act No. 6735, Sec. 50i). Dispensing and administering activities must comply with federal and territorial regulations; occur when pharmacy services are reasonably available, in the patient's best interest and in emergency circumstances (Act No. 6735, Sec. 50j).

Supervising physicians, as outlined by the legislature of Virgin Islands Act No. 6735, Sec. 50k, must be licensed to practice medicine in the Virgin Islands, be free from any restriction to supervise a PA imposed by board disciplinary action and maintain a written agreement with the PA. Written agreements between the PA and the supervising physician(s) must state where the supervision will occur, must be signed by all parties, updated annually, must be kept on file at the practice location, and provided to the Board of Medical Examiners upon request (Act No. 6735, Sec. 50k). Supervising physicians and/or the employing organization assume legal responsibility for the PA's patient care activities provided in any health care organization within the territory (Act No. 6735, Sec. 50k). Furthermore, supervising physicians must be on-site when a PA is rendering services (Act No. 6725, Sec. 50j). The Board of Medical Examiners may grant

exceptions to the rule if the physician is readily available by telecommunication and documentation of a proposed supervision plan allows for appropriate patient care and oversight only upon petition of the supervising physician (Act No. 6735, Sec. 50j). The three major medical facilities in the Virgin Islands supplement the physician staffing in their ER and fast track clinics with PAs. More recently, the Hospital on the island added a PA to their medical staff.

As of January 2012, the Virgin Islands had 39 licensed PAs. The majority practice in the ER, urgent care, private practice, and clinic settings (T. James, personal communication, January 15, 2012). The first PAs licensed in the Virgin Islands practiced in the hospital ERs in an effort to assist with the increase in patient volume. Over time, physicians employed in private practice noted their benefit and began to seek PAs to assist with routine patient care.

Transferring Clinical Duties from Physicians to Physician Assistants

Time is a critical resource for hospital physicians (Weigl et al., 2009). Providers operate in fragmented work environments and struggle to find additional time to focus on direct patient care, incur increases in expenses, and received reduced reimbursement for services rendered. The amount of time practitioners allocate to specific activities directly affects the quality of services provided (Weigl et al., 2009). Pressured by payer regulations, physicians need to see more patients per hour, which results in diminished personal relationships and hurried medical decision-making (Kleshinski, Dunn, & Kleshinski, 2010).

Direct patient care is a critical component of effective medical care and makes up for approximately 25.5% of a physician's time (Weigl et al., 2009, p. 251). Compromises

to direct patient care may result in medical errors, impaired safety, reduced morale, lowered patient satisfaction, and stress (Weigl et al., 2009). Because physicians need to do more in the same amount of time, patients are left waiting longer to see the physician and spending less time with them.

Growing patient volumes forces physicians to work longer hours increasing their workloads and decreasing their time and availability for direct patient care (Colwill et al., 2008). Expanding the amount of time a physician is able to dedicate to direct patient care may mean identifying activities with a higher patient care value and the reduction and elimination of administrative and documentation tasks (Weigl et al., 2009). Indirect patient care activities compromise the majority of a hospitalist's time, which generally includes communication and documentation activities (O'Leary et al., 2006; Weigl et al., 2009).

Task shifting, the process by which tasks are shifted from one individual to another with less training or more narrowed training, is one option towards addressing skill mix imbalances and workforce shortages (Fulton et al., 2011). Task shifting has occurred for decades in both low and high-income countries but has become more urgent in the low-income countries because of the patients' health care needs and the health workforce shortage (Fulton et al., 2011). When implemented correctly, task shifting aids health care organizations in times of emergency and workforce shortage and allows for maintaining quality and control (Lehmann, Van Deamme, Barten, & Sanders, 2009).

In acute hospitals, the main goal of task shifting is to increase productive efficiency by increasing health care services at an established cost or level of quality or to provide the same level of services at an established quality for a lower cost (Fulton et al.,

2011; McPake & Mensah, 2008). Successful task shifting occurs when comprehensive health teams are reconfigured to introduce new clinical professions (Lehman et al., 2009). Task delegation, along with identifying and supporting PAs, are staffing models for rural and underserved communities to consider (Murray & Wronski, 2006).

To be successful, task shifting requires support from governments as changes to policy and regulatory frameworks ensure the provision of adequate resources and support from stakeholders (Lehmann et al., 2009). Gaps in health policy surrounding task shifting must be addressed in an effort to achieve productive efficiency and provide access to health services that may have been previously inaccessible (Fulton et al., 2011).

Ronstrom (2010) espoused that PAs are able to assume approximately 80% of a physician's duties. Utilizing PAs allows physicians to shift tasks to reduce costs while at the same time increase productivity and reduce burnout potential (Ronstrom, 2010). In the end PAs can also help to alleviate the general and primary care responsibilities many specialists end up dealing with and may absorb the elements of a physician's workload that do not require high degrees of medical expertise (McCabe, 2007).

To achieve the skill balance organizations may choose to revisit their workforce skill mix. Skill mix refers to the appropriate mix or combination of activities, skills, education, and experience required for each job within the organization. Commonly influenced by several factors including availability of resources, regulatory compliance, geographic location, and culture, skill mix of health care professionals within the health care industry has a direct and significant impact on the delivery of services (Fulton et al., 2011).

Optimal skill mixes are productively efficient and include a combination of workers producing a given level of health care at a particular quality for the lowest cost (Fulton et al., 2011). When determining skill mix, health care organizational leaders are encouraged to take into consideration cultures, customs, and the availability of resources. Changes in efficiency are gained when skill mixes are changed and result in various improvements including access to care, reductions in employee training costs and salaries, and reducing workforce shortages (Fulton et al., 2011). As espoused by The College of Family Physicians of Canada (2011), "The composition of a health care team should meet community and patient needs, be designed to improve access while also supporting continuity of care, and enhance cost-effectiveness in the delivery of care" (p. 1).

Workforce planning and skill mix staffing has become a critical staffing tool for many health administrators faced with physician shortages (Duckett, 2005). Mixing responsibilities and substituting professions within the health care workforce has become common solutions to health professional shortages (Duckett, 2005). Human resource and workforce planning include skill mix as professionals who are hired with the goal of ensuring the adequate provision of health services (Duckett, 2005). Staffing solutions and professional titles (i.e., PAs and house officers) differ from one country to the next but the overall goal of addressing physician shortage remains the goal. Clinical substitution may occur in rural, underserved, or academic settings where the physician to patient ratio is inadequate to meet the need (Duckett, 2005). Generalist and primary care physicians can use PAs to optimize their workloads by allowing the PA to be the initial point of contact for patients with minor illness or injuries (Hutchinson et al., 2001).

In a 2006 World Health Organization report, researchers identified four workforce challenges: imbalance in the skill mix, workforce shortage, urban-rural distribution imbalances, and poor working conditions. Improper skill mixes result in a group of inaccessible professionals who are not suited to meet the local community's health care needs and when they are accessible, they are less affordable (Fulton et al., 2011).

Importance of Health Care Productivity and Output

The health care industry has been at the forefront in terms of labor intensity and understanding productivity has been important for strategic planning, resource allocation, and facility staffing (Santric-Milicevic, Simic, & Marinkovic, 2012). Benchmarking performance allows for making a comparison of the labor activities and efficiency of employees in like departments and similar functions (Mongan et al., 2003). Measuring clinical efficiency is the only method strained organizations are able to justify allocations and staffing decisions. Daily activities within the health care setting are critical indicators of reduced patient outcomes and medical error (Ballermann, Shaw, Mayes, Gibney, & Westbrook, 2011). The benefits of documenting drivers for inefficiency, including specified changes to environmental variables and labor activities, positively affect efficiency of care and patient safety (Everett et al., 2007; Hendrich et al., 2008).

Efficiency encompasses the appropriate use of staffing, equipment, time, and physical space to produce optimal results (Hendrich et al., 2008). Many activities outside of direct patient care consume a physician's time. Identifying and understanding how physicians and PAs spend their time is useful for productivity and maximizing the availability of resources. Other reasons to increase physician productivity include health care reimbursements based upon quality and performance, shifting focus towards optimal

patient services, and addressing workforce shortages (Hendrich et al., 2008). Payer reimbursements pressures physicians to increase patient encounters.

Time management strategies are critical for physicians who need to service a large in-patient census, and maintain a private office with reduced payer reimbursements and increased malpractice costs (Kleshinski et al., 2010). Pressures may cause physicians to see more patients, spend less time with each, and limit their ability to develop relationships, which often leads to substandard care (Kleshinski et al., 2010). Physicians must determine the best approach for allocating their time because of the impact on service quality (Weigl et al., 2009). Braddock and Snyder (2005) noted that time spent between the physician and patient is critical to promoting patient well-being and adequate time is needed for physicians to make informed decisions regarding patient care and treatment.

In health care, the skill mix of the workforce dramatically impacts the efficiency and productivity of any given facility (Fulton et al., 2011). Achieving the appropriate skill mix, allows medical providers to provide the highest quality of care for the lowest cost (Fulton et al., 2011). Skill mixes can be altered depending upon the availability of resources, technology, and personnel and facilities operating with less than optimal skill mixes may suffer significant inefficiencies (Fulton et al., 2011).

Using Physician Assistants to Address the Workforce Shortage

Military service personnel who provided medical care on the battlefield returned from Vietnam in the 1960s to a nation struggling to retain primary care providers (Hutchinson et al., 2001). In an effort to integrate the returning service members into the health system, a quick training program was created to educate and train them to work

under the supervision of a physician in rural, underserved communities in need of primary care providers (Hutchinson et al., 2001). Shortly after the benefits of PAs were realized, hiring PAs became another method to fill the health workforce shortage gap (Hutchinson et al., 2001) and provide alternatives for facilities seeking to find balance between workforce supply and demand (Doan et al., 2011). In a 1971 special message to the U.S. Congress proposing a National Health Strategy, President Nixon (1971) offered the following statement (paragraph 63):

> One of the most promising ways to expand the supply of medical care and to reduce its costs is through a greater use of allied health personnel, especially those who work as physicians' and dentists' assistants, nurse pediatric practitioners, and nurse midwives. Such persons are trained to perform tasks, which must otherwise be performed by doctors themselves, even though they do not require the skills of a doctor. Such assistance frees a physician to focus on his skills where they are most needed and often allows him to treat many additional patients.

Physician shortages, reductions in medical school enrollment, and the aging population encourage new clinical providers to emerge (Salsberg & Grover, 2006). Hospitals across the nation have sought PAs to address workforce shortages and fill many of the staffing gaps (Powell, 2011). O'Connor and Hooker (2007) proposed that the workforce shortage required innovative staffing techniques and adequate skill mix balances including expanding the health professional workforce to include PAs. Physician assistants can work closely with physicians to develop and implement treatment plans for patients and hour-by-hour management of the patient freeing the physician to focus more on the complexities of patient care.

Benefits of recruiting and retaining PAs include the ability to adapt to changing environments, the relatively short training times, and the cost saving advantages (O'Connor & Hooker, 2007). Physician assistants provide comparable care to their physician counterparts and patient satisfaction rates are often better than their physician counterparts (Cawley & Hooker, 2003). Administrators of orthopedic surgical centers found adding PAs to the staffing models resulted in increased surgical volumes, reduced administrative burdens, and increased timed to find balance between workforce supply and demand (Bohm et al., 2010). Roy, Liang, and Lund (2008) found no significant differences between the quality of care and patient satisfaction when comparing the treatment and services offered by a PA and the facility's house physician. Kleinpell et al. (2008) noted the addition of PAs to an Intensive Cara Unit team helped to increase patient flow and maintain quality without affecting facility costs or outcomes.

Prior researchers identified the importance of studying the daily labor activities of clinical personnel (Eastaugh, 2010; Weigl et al., 2009). Researchers of a time-motion study, conducted on a group of hospitalists, revealed areas for systems improvements and activities better suited for non-physician providers (O'Leary et al., 2006). Thorpe-Jamison, Culley, Perera, and Handler (2013) conducted time-motion studies in nursing homes. Study findings indicated that the implementation of computer generated rounding reports decreased perceived barriers to providing high quality care in these health care settings. Other researchers used time-motion analysis to highlight time wasted in emergency rooms resulting in more efficiently organized emergency room operations (Areej & Rabia, 2013).

Measuring clinical productivity, work performed, and contributions to the organizations clinical mission are important for any organization interested in strategic planning and resource allocation (Mongan et al., 2003). Justifying additional hires and the use of scarce resources relies upon the measurement of clinical productivity especially in financially strained organizations (Eastaugh, 2010; Mongan et al., 2003).

Calculating the total contribution of patient care made by physicians and nonphysician providers requires more than a head count of employed and readily available providers (Larson et al., 2003). Total visits per week and actual patient care volume is dependent upon location, training, specialty, in-patient care activities, experience, employment status, and in-patient and outpatient activities (Larson et al., 2003). Time-motion studies allow researchers to validate physician efficiency and potential sources of delay working in complex environments (Thorpe-Jamison et al., 2013).

Identifying and understanding PA roles and practice patterns may allow for best practices and standards to emerge guiding the quality and efficiency of the care they deliver (Hinkel et al., 2010). In order to determine whether PAs are an appropriate staffing option, one must first compare their clinical practice patterns with those of physicians in similar settings. Limited knowledge is available, as few studies have been conducted comparing PAs and physicians in similar practice. Little is known about the type and frequency of activities performed by hospitalist providers during routine work (O'Leary et al., 2006).

Administrators of hospitals and health care facilities are primarily concerned with increasing value for patients (Porter & Teisberg, 2007). Although many hospitals,

physician offices, and health care facilities like to operate in an economic surplus, see more patients, perform more procedures, and tests whereas, patients seek less visits, fewer tests, and fewer procedures (Porter & Teisberg, 2007).

Physician assistants assisting with patient education and care is beneficial to any practice that seeks to improve patient satisfaction and perceived quality as patients are unhappy long waits followed by short time spent with their physician (Rohner & Hanno, 2010). Patients seek and expect access to the best technology and treatments but are reluctant to pay for the services (Fine, 2007). Improving value is the best ethical goal for physicians, patients, health plans, governments, and employers (Porter et al., 2007). To achieve an increase in value and shift the focus of health care, the current health care structure must be reconstructed (Porter et al., 2007).

Conclusions

American medicine, originating in the 17th century gave birth to new medical schools and hospitals (Toledo-Pereva, 2004) followed by advanced practitioner nurses in the 18th century (Brodie, 1991). Physician assistants were created in the 1960s largely because of the physician shortage (Cooper, 2007). Rural communities who faced greater economic burdens than urban facilities struggled with recruiting providers worsening their ability to provide access to care. As funding became more constrained and patient volumes increased, health care organizational leaders became more concerned with productivity and efficiency (Hendrich et al., 2008). Ineffective uses of clinician time has been linked to delays in patient care, medical error, poor communication, patient safety, and compromised treatment plans (Hendrich et al., 2008). The Virgin Islands, a rurally located region, struggled with physician recruitment and began employing PAs in 2005.

Medical workforce shortages and increase in patient volumes impacted the delivery of health care as physicians found less and less time available to focus on providing direct patient care as the majority of their time was spent on indirect care. In an effort to capitalize on the time physicians had available, the concept of task shifting was explored. Task shifting allowed physicians to transfer many of the non-critical, non-urgent duties to the PA allowing them to focus more on direct patient care activities.

Chapter Summary

The history of PAs and their role in a hospital setting is a central theme in this literature review. The review contained sections to outline the current and projected medical professional shortages and the implications the shortages may have on the health industry. The PA profession was examined in terms of the history of the profession, the history in the United States, and the history in the Virgin Islands. Theoretical concepts covered in the literature review included skill mix and task shifting.

Examined in Chapter 2 are the concepts pertaining to addressing the medical workforce shortage. To broaden the knowledge and understanding of rural based hospitals, a comprehensive review of the characteristics of rural, underserved hospitals and medical facilities was conducted. Based upon the review, a need exists to explore the activities of PAs in small, rural hospitals.

Reviewed in Chapter 3 are the research methods that were used in carrying out this dissertation study and includes a description of the participants, instruments, and data collection analysis and procedures. In addition Chapter 3 contains information regarding the processes used for gathering and analyzing the data.

CHAPTER 3: METHOD

The purpose of this exploratory case study was to explore the role of physician assistants (PAs) in a rural hospital in the Virgin Islands. The activity of PAs relative to physicians was benchmarked. Chapter 3 contains a discussion of the research method and design used. The basis of the study was on the daily activities of physicians and PAs in a rural, medically underserved hospital. Explained in the chapter are the details of the design, population, sample, data collection, and data analysis. Discussion of the appropriateness of the design and method then follow.

Research Method and Design Appropriateness

Qualitative research involves studying the meanings of people's lives in real-world settings and represents the views and perspectives of participants in a study while collecting and integrating data from a variety of sources (Yin, 2011). Researchers use the case study research approach to add value to a study because the "strategic value lies in its ability to draw attention to what can be learned from a single case" (Schram, 2006, p. 107). Case study research involves a participatory relationship between a researcher and the research subject (Shank, 2006). A researcher commonly assumes the role of the observer or listener allowing for an in-depth understanding and explanation of the complexities of the research subject (Shank, 2006). Case study research is considered appropriate to use to optimize understanding by pursing scholarly research questions and gains credibility through triangulating the descriptions and interpretations (Denzin & Lincoln, 2005).

Quantitative methods also include an emphasis on the measurement and the analysis of causal relationships between variables. New knowledge is added to existing

knowledge and "false hypotheses are eliminated" (Frankel, Naslund, & Bolumole, 2005, p. 188). Data driven research often has a focus on counting occurrences, volumes, or degrees of association whereas qualitative research is about providing a descriptive recollection of the event being studied (Gelo et al., 2008). The use of quantitative research allows for a reduction of data to numbers allowing for statistical analysis (Gelo et al., 2008). Qualitative research can challenge old assumptions and be the basis for theory development.

Qualitative researchers usually conduct in-depth studies about topics in plain everyday terms and settings (Yin, 2011). The qualitative method often offers greater options because other methods may be limited by the unavailability of sufficient data, limited sample sizes and the inability to establish appropriate research conditions (Yin, 2011). Such researchers seek to answer questions that stress how a social experience is created and given meaning (Denzin & Lincoln, 2005). A qualitative approach was selected for the present study because the intent is to use a broad range of interpretive practices hoping to gain an understanding of the subject matter (Denzin & Lincoln, 2005). In the current study, both qualitative and quantitative data were selected to achieve the purpose of the study. A mixed data analysis approach allowed for analysis of both forms of data.

Exploratory studies have gained popularity in the social sciences to explain existing issues from new perspectives or in relationship to new research themes (Mason, Augustyn, & Seakhoa-King, 2010). Shank (2006) explained that exploratory designs were useful when limited knowledge existed on a particular subject or phenomenon. Exploratory designs are used when studying settings that have never been explored and

involve people who are so unique that there have never been any previous models from which to draw upon (Shank, 2006). Researchers using an exploratory design rely heavily upon peers and colleagues who are informed about the subject matter being researched (Yin, 2011).

Cepeda and Martin (2005) prescribed case study analysis for situations where information is scarce. Yin (2009) indicated a single case provides for an in-depth exploration of a bounded system (e.g., an activity, event, process, or individuals). For this study, the bounded system was the medical team comprised of PAs, administrators, and supervising physicians within a small, rural hospital.

Cooper and Schindler (2011) posited that data collection and statistical analysis are frequent elements of descriptive studies. Descriptive research is appropriate to use to enrich data collection and analysis. Schram (2006) noted that descriptive research could be used to both document and describe the events occurring in a particular setting or circumstance. Descriptive research requires direct observation of behavior and environmental events in their natural setting providing a detailed analysis of events and occurrences. For purposes of the present study, descriptive research was used to produce baseline data. The most common descriptive analysis approach requires observing and documenting activities and events via interval or continuous recording procedures (Sloman, 2010).

Research Questions

The purpose of the exploratory case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands. The following research question guided the study:

What are perceptions of the role of rural hospital based physician assistants?

The following sub questions (SQs) were used to guide the study:

- SQ1. What is the distribution of tasks between hospital-based physicians and PAs?
- SQ2. What hospitalists' tasks might be transferrable d to a PA?
- SQ3. What are the obstacles and benefits regarding use of a hospital PA?

Population

The population selected for a research study includes all individuals of interest that meet the study criteria (Marczyk et al., 2005). The general population of interest for the current study was hospital administrators, physicians, PAs, and the general population located on an island in the Virgin Islands. The target population at the time of the study consisted of 54 physicians and nine PAs who were employed at St. Croix hospital. Of the nine PAs, five were male and four were female, all under the age of 35. All PAs were educated and trained in the United States and certified by the National Commission on Certification of Physician Assistants (NCCPA). Of the 54 physicians, five were medically educated outside the US but all were trained in the United States. Thirty-three of the 54 physicians held board certification. There were seven female physicians all ranged in age from 36 to 69 years.

Twenty-nine administrators were employed at the hospital. Administrators in clinical capacities were the Chief Pharmacist, Chief Nursing Officer, and Chief Medical Officer. Administrators in non-clinical capacities included Chief Financial Officer, Chief Executive Officer, and General Counsel. At the time of the study, all hospital leaders were legal residents of the United States. All 108,612 individuals lived on the island

were considered potential patients for the purpose of this study because only one hospital was available for treatment. Only the 2000 Census report provides a racial breakdown of islanders: 76% black or of African descent, 13% White, 1% Asian, 6% other, and 4% mixed race.

Sampling Frame

The sample for the study was selected from a pool of eligible participants including all physicians and PAs within the hospital's clinical department, all hospital administrators, and all residents on the island who were considered potential patients of the hospital. According to Neuman (2006), a target population was determined by the purpose of the study and selected from a pool of participants who shared similar characteristics or experiences. For this reason, non-random convenience sampling was used to obtain the sample required for data collection, because access was available to only one hospital, which allowed for expediency. To obtain a valid sample of potential patients and hospital leaders for the qualitative aspect of the study, purposive sampling was used. In this study purposive sampling allows for selection of the population with the most information on the characteristic of interest (Guarte & Barrios, 2006).

All members of the study sample selected for were adults 18 years of age or older. The criteria for the quantitative portion of the study were clinicians employed by the facility's clinical department, six physicians, and one PA. Each was an employee in the clinical department at the hospital. The clinical department was comprised of 60% male and 40% female clinicians, with a mean age of 43 years. One provider who participated in the time-motion study resigned from the organization prior to completing the self-report tool. As a result, a request was made to allow another medicine physician to

complete the tool. Despite having two separate providers, an assumption was made that the difference would not affect the results because the medicine physicians shared similar practice patterns and daily routines.

All residents of the island were potential patients. Understanding stakeholder perceptions is important for hospital administrators interested in measuring and assessing their performance and obtaining an overall assessment of business excellence. Including diverse stakeholder populations allows for rich data as each population has different priorities, views, and experiences from which they draw upon to assess the posed question (Norcini, 2011).

Geographic Location

The geographic location for the qualitative exploratory case study was a small, rural hospital located on an island in the Virgin Island. Participants were employed by the facility or were potential patients of the facility. Using one geographic location was the best choice for the study because there was only one hospital on the island and the demographics of the research site mirrored that of the majority of other rural hospitals.

The hospital employed approximately 600 employees and averaged 4000 admissions per year (F. Pimentel, personal communication, December 20, 2013). Designated as an acute care facility, clinical services range from newborn services to dialysis and psychiatry treatment (K. Griffith, personal communication, December 20, 2013). A full complement of surgical services is provided including urology, plastics, otolaryngology, and spine surgery (K. Griffith, personal communication, December 20, 2013).

Leadership at the Geographic Location The first step in building the relationship between the researchers, leaders, and supporting staff consisted of multiple phone calls and informal conversations to discuss the importance of the study and the importance of collecting critical data from the organization. Face-to-face meetings were important for building trust and developing strong working relationships in preparation for gaining the approval to conduct the research. The organizations' CEO, senior administrators, and medical staff helped to narrow the scope of the study, and provided insight into what the needs of the organization in hopes the study might help to address some of the personnel staffing shortages.

Once the relationships were in place, approval to access the research site was sought. After seeking legal advice, the CEO approved the study and notified the researcher, the Medical Director, and the Vice President of Human Resources. Approval to conduct the research study was provided by the CEO. The Medical Director informed and delegated responsibility for direct coordination of the time-motion observations amongst the clinical department's staff to the Chief of the Department.

Informed Consent

Participants received a detailed explanation of the nature and purpose of the study (see Appendix E). Described in the narrative were the interrelationships between the researcher, the stakeholders, the patients, the participants, and the potential patients for the qualitative exploratory case study.

Although the support of the leaders is essential to the qualitative exploratory case study, maintaining the participants' trust and confidence is the first priority. A printed flyer (see Appendix A) was distributed throughout the facility and the community

announcing the study, the purpose of the study, and the need for participants. Interested participants contacted the researcher at which point they were provided with the Informed Consent Form, which allowed them to review the purpose of the study, review their rights as a participant, as well as moral and ethical considerations, and information storage procedures. Individuals were asked to read the instructions carefully and mark a response to the informed consent item before enrolling. Participants had the option of emailing the researcher any questions they might have had pertaining to the informed consent. Any individual who did not wish to participate indicated "no" or simply did not return the Informed Consent. Such action terminated their participation. None of the participants withdrew from the study; however, one resigned from the hospital after completing the self-report tool.

Participants who signed the informed consent did so with an ink pen and returned it to the researcher in the provided addressed and stamped envelope. Once signed and returned, the researcher contacted the participant via telephone to schedule a mutually convenient appointment for the interview. One day prior to the interview, the researcher contacted each participant to remind them of the interview location and their appointment time.

By signing the informed consent, the participants acknowledged they were 18 years of age or older, understood the purpose of the study, the potential risks as a participant, and the means by which any data or interview responses would be kept confidential and safeguarded. Once signed, the researcher scheduled a mutually convenient appointment for the interview. The interview was held separate from the

completion of the informed consent. Upon completion of the informed consent, a mutually agreeable time and place for the interview was established.

At the beginning of an interview each participant was provided a cover letter (see Appendix E) explaining the problem for the study, the name of the researcher, name of the study, the purpose of the study, a statement of approval from the host site, and an alphanumeric code. The code identified the interviews, scorecards and transcriptions and kept separate from the informed consent. The use of alphanumeric coding provided anonymity for all participants and allowed easy access for the data should a participant have chosen to withdraw from the study. Additional information outlining how the anonymity and confidentiality of each participant was protected was provided to each participant. In addition, participants in the interviews signed consents agreeing that their interviews would be audio recorded. Willingness to participate was strictly voluntary.

Participants could withdraw from the study before, during, or after data collection without any negative implications. To withdraw from the study the participant was asked to orally express their request to withdraw or submit a written request outlining their request to withdraw from the study to the researcher and provide their unique alphanumeric code located on their participant cover letter. Any data collected from individuals who chose to withdraw were identified via the individuals alphanumeric code destroyed and removed from the study. If a participant chose to withdraw from the study after all data had been collected, the data were identified per the participant's numeric code located on their cover letter. Audio-recorded data were erased. Time-motion, self-reports, and observational data were shredded. Each data set was identified based upon the coded response per their stakeholder group and order in which they were interviewed.

Informed consents were kept separate from all data collected during the interview or observational process to ensure no link could be associated between participant names and the actual data collected.

Confidentiality

Participants' confidentiality was an ethical requirement for the study and approved protocol was adhered to. All participants were given a code to protect anonymity. To restrict identity each participant completed an informed consent for the qualitative interviews, which was coded dependent upon the stakeholder group and in order of participation. Individual responses were distinguishable by the order in which they were interviewed. Each hospital administrator was assigned an alpha code of HA and a numeric code based upon the order in which they were interviewed (HA-1, HA-2, HA-3, etc.). Potential patients were assigned an alpha code of PP and a numeric code based upon the order in which they were interviewed (PP-1, PP-2, PP-3, etc.). Physicians were assigned an alpha code of P and a numeric code based upon the order in which they were interviewed (P1, P2, P3, etc.). Physician assistants were assigned an alpha code of PA and a numeric code based upon the order in which they were interviewed (PA-1, PA-2, PA-3, etc.). Each cover letter was marked with the appropriate alphanumeric code should the participant have chosen to withdraw from the study after data were collected. This process permitted identifying the corresponding data once it had been collected for destruction purposes.

During the time-motion process, no patient information was recorded, discussed, assessed, or identified. Patients were informed beforehand about the observer's presence and purpose. Because patients in the hospital were not the focus of the study, their

actions were not described in any way. The researcher agreed to abide by all hospital organizational policies and procedures and the Health Insurance Portability and Accountability Act. In an effort to eliminate any potential for threats to confidentiality, the researcher maintained a distance of three meters at all times to avoid overhearing or observing any patient activity.

All data collected were stored on an external hard drive in a locked filing cabinet that will be accessible only to the researcher for a period of 5 years (2014-2019). The hard drive will be erased by the researcher at the end of the 5 year storage period. Paper documents were stored in the same filing cabinet and will be shredded and destroyed at the end of 5 years.

Data Collection

Results obtained were important to help identify and evaluate the differences in services and daily activities of a PA and the supervising physicians. Results obtained assisted with establishing the value of the use of PAs relative to how supervising physicians can increase clinical services and efficiency, and address workforce shortages.

The mode of data collection for the quantitative component of the study was time-motion field research and self-disclosed quantitative labor activity data. Each physician and PA was approached by the researcher and presented with a cover letter (see Appendix E) explaining the problem for the study, the name of the researcher, name of the study, the purpose of the study, a statement of approval from the host site, and an alpha numeric code. After informed consent was secured, physicians and PAs were given a scorecard prior to participating in the time-motion observation studies (see Appendix B). Each scorecard included the major duties and functions of each position.

Each clinician was asked to provide an accounting of the time they believed they spent on each activity on a daily basis. Each clinician was also asked to fill out a scorecard on how much time they believed the other type of providers spent on each activity on a daily basis (with the physician filling out a score card on the physician assistant's time allocation, and vice versa). Each scorecard was labeled with the participant's alphanumeric code allowing for identification should the individual have chosen to withdraw from study later. No names were included on any of the collected data. The data collected from the self-disclosure reports were compared to the data collected in the time-motion study to identify similarities and differences.

Originally developed in 1911 by Taylor, time-motion studies are aimed to increase efficiency of industrial production (Bratt et al., 1999). Since 1911, time-motion studies gained popularity and have been used in almost every business industry including the health sector (Ralston, 2013). Observational time-motion studies are the standard instrumentation used in time measurement (Areej, & Rabia, 2013; Zheng, Guo, & Hanauer, 2011). In one instance, researchers identified traditional physician tasks and activities that could be shifted to PAs using a time-motion study (Abrass et al., 2001). Alternative uses for time-motion studies include identifying patterns conducive to optimal task execution, unproductive activities, and inefficient communication (Areej, & Rabia, 2013; Geryane et al., 2004). Requiring direct observation and careful documentation, time-motion studies are used to provide detailed explanations of individual actions (Zheng, Guo, & Hanauer, 2011).

Because observing physicians' daily labor activities has been shown to be the most accurate approach to documenting their labor patterns, an observational time-

motion procedure utilized by Weigl et al. (2009) was used as well. The principal investigator unobtrusively *shadowed* each physician and PA for 4 hours a day for a period of 1 week for a total of 20 hours for each provider. Shadowing was conducted in such a manner to avoid any intrusion on the clinician's activity, and avoid interruption or distraction from the tasks being performed. Continuous observations took place during various hours of the day to ensure adequate sampling of all hospitalists' daytime activities. Providers were observed between 8:00 a.m. and 12:00 p.m., and 1:00 p.m. and 5:00 p.m. for adequate sampling of all hospitalists' daytime activities. Each day of observation was labeled with the participant's alphanumeric code and the designation of day (Day 1, Day 2, etc.). The observational techniques used were intended to reduce concerns of incomplete data as suggested by two published studies (Ballermann et al., 2011; Weigl et al., 2009). All activities were recorded and assigned a numeric time value identifying the amount of time spent on each activity within the 4-hour observation period.

The focus of study was on the labor activities of the physicians and PAs at the island hospital. Research ethics, as outlined in the Helsinki Declaration, include an area for potential conflict surrounding maintaining confidentiality, the principal of voluntariness, and the participation in medical care interactions (Weigl et al., 2009). No patient information was recorded, discussed, assessed, or identified. If possible, patients were informed before seeing the provider concerning the observer's presence and purpose. Because patients were not the focus of the study, they were not described in any way. Scorecards were developed to identify common functions and labor activities of hospital based clinicians (see Appendix B). The activities were grouped based upon

similar functions. Each participant was assigned an alphanumeric code and each activity was assigned a numeric code. At the start of each data collection activity, the researcher documented where the provider was met (e.g., on medical floor, at elevators on second floor), the time, date, and alphanumeric code representing the participant being shadowed. The scorecard was not shown to any participant because of the need to maintain confidentiality and study rigor.

Coding is the process by which a researcher assigns a numeric or alphanumeric designation to a particular function to assist with data collection and analysis (Cepeda & Martin, 2005). Activities were coded at every 5-minute interval and rounded to the nearest one-half minute or at the onset of a new activity. Additional activities performed outside of those coded were documented in detail and addressed during the coding and data analysis. The coded data were entered into an Excel database and analyzed using descriptive statistics.

The mode of data collection for the qualitative component of the study consisted of qualitative interviews. A printed flyer was distributed throughout the facility and the community that announced the study, the purpose of the study, and the need for participants (see Appendix A). Additionally, all physicians and PAs who participated in the time-motion study were asked to participate in the qualitative interview. As an incentive for the potential patient stakeholder group of qualitative participants, a $25 gift card was given to all participants who successfully participated in the interview. Rewarding participants with $25 is considered an ample payment for time spent participating in a research study (Slomka, McCurdy, Ratiff, Timpson, & Williams, 2007). Researchers often use financial compensation as a method of recruitment in research

when participation is not likely to be high (Slomka et al., 2007). Gift cards were not presented to physicians, PAs, and hospital administrators. Copies of the results were offered to each participant in all stakeholder groups after the study was completed and accepted.

The distributed flyer produced 42 stakeholder participants, 12 hospital administrators, 10 potential patients, 10 physicians, and 10 physician assistants. Two community based physician assistants responded to the flyer. Three of the physicians in the clinical department agreed to participate in the time-motion study. The physician assistant in the clinical department elected to participate as well. To obtain additional responses, the researcher continued to distribute flyers. Despite the financial incentive granted at the completion of the interview to those participating in the study, the researcher was unable to obtain any additional participants.

After dissemination of flyers (see Appendix A), interested participants contacted the researcher and scheduled mutually convenient appointments. Participants who responded were told about the nature and purpose of the study and were informed what would be expected of them (see Appendix A). Contact information was obtained from each potential participant, who received via mail the Informed Consent Form and an empty addressed and stamped return envelope. This process permitted each participant to review again the problem and purpose of the current study, review their rights as a participant, moral and ethical considerations, and information storage procedures.

Participants were contacted one day prior to their appointment to confirm attendance. In anticipation of scheduling several interviews on the same calendar day, each interview was scheduled 1 hour apart to provide for added confidentiality. The

location selected to conduct each interview, the researchers' office, eliminated external interference allowing the participant to feel comfortable, ensuring privacy, and eliminating any potential for bias. Permission to utilize the location for participant interviews was granted in writing by the building's owner (see Appendix I). Upon arrival at the identified location, each participant received the cover letter (see Appendix E) explaining the purpose and goals of the current study.

At the beginning of each interview, the researcher recorded the participants alphanumeric code allowing for identification of the data should the individual chose to withdraw from study at a later date. The participants' responses were transcribed verbatim from the audio-recorded interviews and shared with the participant to ensure accuracy and validity of responses. Participants were contacted after the interview to schedule a follow-up meeting to review the written transcription. During the meeting, the participant and the researcher reviewed the transcript to verify the accuracy of the information.

Instrumentation

Instrumentation effects occur when a researcher uses a non-psychometrically sound instrument to measure the variables of interest (Marczyk et al., 2005). Fieldworkers invest little in standardized instrument construction, as tailored questions are needed for most sources of data (Denzin & Lincoln, 2005). Four separate instruments were used in this qualitative exploratory case study. The first instrument was the researcher.

In qualitative research, the researcher generally is accepted to be the primary instrument of data collection (Barrett, 2007). One assumption in a study is the role the

researcher plays in making subjective assessments, adjusting the study as needed, analyzing the data, and describing the findings (Barrett, 2007). A potential bias to the study existed because the researcher is a health care administrator employed by the hospital. To minimize bias, the researcher utilized a bracketing approach. The incorporation of the technique allows researchers to place distance between themselves and any judgments or preconceptions about the nature and essence of experiences observed in the everyday world (Denzin & Lincoln, 2005). To ensure the researcher maintained proper identity and focused on the process of inquiry, a personal journal was maintained. The purpose of the journal was to document observations and the researcher's experiences allowing for valuable and necessary inspiration, reflection, and continuous reality checks.

The second instrument was a self-report questionnaire (see Appendix D), followed by the time-motion tool (see Appendix B), and finally the qualitative interview questionnaire (see Appendix C). The qualitative interview questionnaire was comprised of questions that aimed to gain an understanding of the acceptance and impact PAs have on the delivery of patient care, patient experience, and workforce shortages. The self-report questionnaire was comprised of four separate job functions further broken down by tasks specific to each job function. The instrument allowed providers to document the amount of time they believed they spent on each activity on a daily basis.

Each clinician was also asked to fill out a form on how much time they believed the other type of providers spent on each activity on a daily basis (e.g., the physician filled out a score card on the PA's time allocation, and vice versa). Each scorecard was labeled with the participants alphanumeric code allowing for identification should the

individual have chosen to withdraw from study at a later date. No names were included on any of the collected data.

The time-motion instrument was selected as the third as this method is considered the "gold standard" of time measurement techniques. The lack of established "activity classifications for hospital physicians' activities" in the current literature (Weigl et al., 2009, p. 112), provided for the creation of tailored instrumentation clearly identifying the daily activities of physicians. Variables for inclusion on the time-motion scorecard were identified after speaking with clinicians about their normal daily activities and a review of the tasks delineated to PAs via Virgin Islands licensure laws. The time-motion scorecard was clarified further through the pilot study. Once developed, the scorecard was not shown to any participant because of the need to maintain confidentiality and maintain study rigor (see Appendix B).

Quantitative time-motion data protocol, *a priori*, called for a half-day as the unit of analysis. For each hour shadowed, the total time each study participant spent in each of the task categories was recorded in minutes. Descriptive, univariate statistics were generated, including the mean time in minutes spent on each task category per half-day, the standard deviation, and the mean percentage of the half-day spent on each task for each clinician, as well as among the three physicians who participated in the time-motion study. The mean time spent on each task per half day for each clinician was compared to the self-reported distribution of tasks as collected through the questionnaire. The mean, standard deviation, and difference in means for each task were calculated to determine if similarities were present. In the same way, physician estimates of how PAs spend their time were compared to PA time-motion data, and vice versa.

To obtain qualitative data from the identified stakeholder group, qualitative interviews were selected as an appropriate instrument. Use of an interview is appropriate to uncover and understand the everyday lived experiences of the interviewee (Shank, 2006). For the purposes of this study, the researcher used the problem-centered interview with a focus on the specific area of interest to the researcher. Three separate sets of interview tools were developed with the primary focus being the role of the stakeholder. The focus was aimed at extracting problem centered data specific to each stakeholder group.

Pilot Study

Pilot studies generally are used to examine research framework and processes allowing a researcher to identify problems in need of attention prior to starting the study thereby increasing the rigor of the study (Secomb & Smith, 2011). The results of pilot studies are generally limited, lack statistical significance, and do not advance theory development (Secomb & Smith, 2011). Quantitative researchers frequently use pilot studies to test data collection instruments and assist with sample size calculations (Secomb & Smith, 2011). Yin (2009) noted that a pilot study was beneficial to the researcher to assist with defining data collection procedures and content. Additional uses include testing research procedures, tools, and participation rates (Arain, Campbell, Cooper, & Lancaster, 2010).

Another reason to undertake a pilot study is to identify and correct any potential coding errors (Melgar et al., 2000). Prior to initiating the pilot study, pilot participants were given the cover letter informing them of the goals and purpose of the pilot study (see Appendix H). The pilot study consisted of 4 hours of time-motion observation with

each practitioner (i.e., the length of time members of the medical team typically work in a single shift). Observations were timed and documented. The initial work was used to identify the routine activities performed by the physicians and PAs. Based upon the results, broad categories and subcategories were created. Subcategories were assigned codes, which were used during the data collection and analysis process.

To test the validity of the interview questions, a pilot study was conducted to identify and correct any potential errors with the interview questions as well. Collins (2003) recommended conducting a pilot study to understand if the selected participants could read and respond to the instructions and questions with respect to their perceptions of care provided by PAs. The qualitative pilot study was conducted on one non-hospital based PA, two physicians, two potential patients, and two administrators. Participants in the pilot study did not participate in the actual study. Pilot study participants received the cover letter (see Appendix J) with a description of the goals and purpose of the pilot study and were asked to sign an Informed Consent form (see Appendix K). Each participant was interviewed using the same questions (see Appendix C). Notes were taken outlining any potential errors or points for clarification related to the structure of the questions. In addition, physician and PA participants were provided with copies of the time-motion scorecard and asked for feedback pertaining to the labor activity tasks identified.

Validity and Reliability

The primary focus for researchers who utilize established research processes is to produce valid conclusions (Marczyk et al., 2005). In order to accomplish validity, researchers must eliminate or reduce the potential for both internal and external threats

(Marczyk et al., 2005). Validity is important to research as it increases the accuracy of findings by controlling or eliminating the majority of confusing variables increasing the confidence of the study's findings (Marczyk et al., 2005). Qualitative researchers strive to properly collect and interpret the data strengthening the validity of their research yielding accurate conclusions about the real world (Yin, 2011).

Internal Validity

Internal validity is the ability of the research design to rule out or eliminate alternative explanations of results (Marczyk et al., 2005). The aim of the majority of experimental designs is to show a direct impact of the independent variable upon the dependent variable (Marczyk et al. 2005). Threats to internal validity include testing, history, and attrition (Marczyk et al., 2005). To ensure internal validity and reduce the appearance of confounding effects a study sample was selected with similar characteristics as the population sample. Reducing the study population to one department within the hospital, and involving only one researcher for data collection was purposeful for consistency and confounding effects. Shadowing each participant for the same amount of time during similar hours helped standardize the working environment during data collection. Minimizing the data collection time to 2 months also reduced the threat of history. Threats to the validity of the data were addressed via member checking. The participant responses were transcribed verbatim and shared with the participant to ensure the accuracy and validity of their responses.

External Validity

External validity concerns the ability of a researcher to be able to generalize the results and conclusions upon other conditions, people, times, and places (Marczyk et al.,

2005). External validity is threatened by testing, selection bias, and statistical regression (Marczyk et al., 2005). Selecting all physicians and PAs in one clinical department reduced the threat of selection bias and increased the generalizability of the study findings to the study population, the medicine department at the hospital. The use of convenience sampling threatens the external validity of the study because participants studied may not represent the behaviors of persons in other populations.

Reliability

The reliability of an instrument refers to the concept that other researchers can produce similar results (Marczyk et al., 2005) and that individuals are likely to act upon the results of research (Denzin & Lincoln, 2005). Additionally, the researcher eliminates any personal interests to increase reliability and to eliminate the potential for any influence over the data results (Shank, 2006). In the context of this dissertation study, similar responses were compared to determine the general reliability of the research questionnaire.

The results of the pilot are important to adjust the research instrument and to reduce measurement error (Collins, 2003). Key issues of concern for the qualitative component of the study included the participants' misunderstanding of the research question, the researcher's misunderstanding of the participants' responses, and basic verbal communication errors associated with face-to-face interviews (Collins, 2003). Applying sound pretesting methods may improve future applications of the research findings.

Data Analysis

Data collected throughout a research study can unlock answers to a researcher's question (Marczyk et al., 2005). Statistical procedures to analyze data collected allow a researcher to describe individuals, events, or relationships and generalize results back to the originating population (Marczyk et al., 2005). The analysis of the study was obtained from data derived from open-ended interview questions, data collected from provider time-motion observations, and data reported by providers on the self-report tool. Content analysis included data from the transcribed interviews, coded time-motion data, and coded self-report data.

Time-motion data were analyzed using a half-day (i.e., 4 hours) as the unit of analysis. For each hour shadowed, the time each study participant spent in each of the task categories was recorded in minutes. Quantitative data from the study was entered into a Microsoft Excel® document electronically and prepared for coding. The mean time spent on each task per half day for each clinician was compared to the self-reported distribution of tasks as collected through the questionnaire by directly comparing the difference in means to examine how closely self-reported time distribution matched what was observed. In the same way, physician estimated of how PAs spend their time were compared to PA time-motion data, and vice versa. The comparisons revealed how accurately members of the medical staff perceived the way they were spending their own time, as well as their perception of other members of the medical team.

The mean amount of time, standard deviation, and mean percent of each one-half-day each physician spent on tasks that could be transferred to a PA was calculated using time-motion data based on three scenarios:

1. Time spent on tasks that the PA also performs as observed through the time-motion data.
2. Time spent on tasks that PAs can perform according to the U.S. Virgin Islands Code (Act No. 6735, Sec. 50b.).
3. Time spent on tasks that physicians, PAs, administrators, or patients think that PAs can perform as reported during interviews.

Because no consensus exists on what tasks can be transferred from a physician to a PA, the use of three scenarios allowed an estimation of the range of tasks within which the time physicians spent on transferrable tasks during the observed period likely falls.

Data obtained from the interviews for the qualitative study contained individual responses to each interview question. The researcher expected participant responses to be elaborate because of the current physician staffing situation on the island; however, some participants chose to be brief despite probing. The qualitative data analysis of the study involved repeated reading, organizing transcripts, and field notes. Individual interview responses were recorded and transcribed. To increase validity in participant responses, member checking was employed.

Once transcribed and verified, the data obtained from the qualitative interviews were analyzed via thematic and content analysis. Thematic analysis was used in an attempt to identify patterns and themes from the textual data. Researchers use thematic analysis techniques to look for themes during data analysis (Shank, 2006). Meaningful themes will develop based on thematic analysis without explicitly generating theory (Smith & Firth, 2011). Benefits of thematic analysis techniques include rich insights into

complex phenomena, applicable across a range of theoretical approaches, and can be used to expand or tests existing theory (Braun & Clarke 2006).

A qualitative data analysis program, NVivo 10®, provided storing, and organizing data, and searching through the information to locate specific themes or categories. After transcribing the data was entered into the QSR NVivo 10® software database for analysis based on the identified common themes and patterns. Nodes, the NVivo equivalent to a code, are entered within the software dependent upon the intent of the research (QSR International, 2010) and are used to achieve meaning to the text (Leech & Onwuegbuzie, 2011). For the purposes of the current study, nodes associated with perceptions, barriers, enablers, and values of PAs as members of hospital teams as identified in the literature review were used. Transcribed data were highlighted and identified as a node within the software. The software was used to interpret, segment, and classify the transcribed data by category. The QSR NVivo 10 qualitative data analysis software was used to examine and organize the data so that the data could be viewed in different ways to provide comparisons of data. Viewing the data in different ways allowed relationships to be determined.

A content analysis was performed to determine themes in the information gathered during the interviews. The NVivo 10 software auto-categorized and clustered themes from the texted data, which included medical staff job satisfaction, task transfer of labor activities, barriers to transfer, physician assistant abilities, value of physician assistants, staffing model challenges, competencies, value of physician assistants. The researcher adjusted and refined category parameters until the categories were consistent with the research objectives. For example, participant responses that related to physician

job satisfaction were placed under the physician satisfaction node or category. The data were studied and the researcher notated general impressions and gaps found within the data analysis process. For instance, hospital administrators all agreed that there were tasks physicians could transfer to physician assistants freeing up some of the physicians' time.

The content analysis was used to provide a qualitative picture of the stakeholder's perceptions, attitudes, feelings, and ideas pertaining to PAs and workforce shortages. Specific data were collected pertaining to perceptions of PAs in order to identify a larger more general pattern.

QSR NVivo 10 content analysis software was used to perform the qualitative analysis. Developed by QSR International, NVivo 10 software is used by researchers to help capture, manage, explore, and understand data, allowing the researcher to uncover new insight and easily report on findings (QSR International, 2012). The information gathered during the interviews was used to determine stakeholder perceptions of PAs, determine which themes were the most prevalent, and provided reports to explain the themes.

Once all nodes were assigned, NVivo 10 was used to determine related words and to associate the words to form themes. Coded words within the software were used to make the determinations. Associations were made based on the major perceptions generated from the initial content analysis performed by NVivo 10, as each perception had many possible meanings within the initial analysis. To do this, several nodes (when possible) were assigned to transcribed data allowing queries to generate multiple combinations of the nodes.

Word counts were used, as word counts are beneficial for identifying patters more easily, verifying hypothesis, and maintaining analytic integrity (Leech & Onwuegbuzie, 2011). Word counts performed via NVivo 10 software were generated using frequency reports allowing development of a frequency table. The frequency is the number of times a related word for each theme was mentioned and identified in the interviews. The frequencies determined the order of the themes present within the data. Based upon the analysis, conclusions were drawn.

Chapter Summary

The purpose of Chapter 3 is to define the methods and procedures used to complete this dissertation study. A qualitative exploratory case study is appropriate to document and describe the events occurring in a particular setting or event (Yin, 2011). The chapter includes a discussion of the population sample, data collection methods, data analysis procedures, instrumentation, validity, and reliability. Data collected from the observations were analyzed with descriptive statistics to summarize time physicians spend on tasks while data collected from stakeholder interviews were analyzed via content and thematic analysis to summarize stakeholder perceptions of physician assistants.

Chapter 4 contains the results of data analysis. The chapter includes details of the data collected via the participant self-reports and interviews. In addition, the chapter reviews the themes generated through the data analysis. The chapter concludes with a review of the data collected via the time-motion study.

CHAPTER 4: RESULTS

Described in Chapter 4 are the results and analysis of the study. The purpose of this exploratory case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands. The chapter contains the results of qualitative stakeholder interviews and quantitative time-motion studies.

Provided in Chapter 4 is a description of the data collection and statistical procedures used. Perceptions of labor activities between physician and physician assistant stakeholder groups were also explored. Chapter 4 concludes with an interpretation of the results and a summary.

Pilot Study Findings

Nine individuals participated in the pilot study (see Table 2). The PA and physicians were queried about activities in the hospital and any concerns about patient confidentiality. Based upon the tasks each participant provided via the informal query, broad categories and subcategories were created. The pilot study determines: (a) if the selected interview questions would yield enough data to formulate themes and (b) to ensure appropriate categories had been selected for the quantitative portion of the study. None of the initial qualitative questions or categories for the time-motion study was changed as a result of the pilot study. The pilot study involving providers should be viewed as a rehearsal more than an actual data accumulation activity.

Table 2

Pilot Study Participants

Data Source	Physician	Physician Assistant	Hospital Administrators	Potential Patients	Total
Pilot time-motion observation	1	1	0	0	2
Pilot interview	2	2	2	2	8
Total	2	3	2	2	9

Demographics of Participants

Table 3 summarizes the number of participants per data collection activity. There was an overlap in participation because three physicians who participated in the time-motion and self-report study also participated in the interviews. In addition, the one physician assistant employed in the clinical department was the same PA who participated in the pilot time-motion, interview, and self-report study. Two community based PAs participated in the pilot interview.

Table 3

Total Participants

Data Source	Physicians	Physician Assistants	Hospital Administrators	Potential Patients	Total
Time-motion observation	3	1	0	0	4
Self-reports	3	1	0	0	4
Interviews	10	10	12	10	42
Total	10	10	12	10	42

Hospital Administrators

For the purposes of this study, hospital administrators were defined as leaders within the hospital that served as the data collection site. Twenty-nine individuals were employed in administrative and clinical capacities at the facility. Of the 29

administrators on staff, 12 responded to the request to participate in the study including the chief nursing officer, eight hospital administrative administrators, one attorney, one social worker, and one physical therapist; all were in administrator roles. Participants in the hospital administrator group included 10 females and one male. In terms of age groups, one female was 18-29 years of age, 9 females were between the ages of 30-49, and the one male was between the ages of 50 and 69.

Potential Patients

All residents of the island were considered potential patients because only one hospital is available for treatment on the island. Ten responded and agreed to participate in the study. Participants in the patient group were three males and seven females. One female was between the age of 18 and 29, five were between the ages of 30 and 49, and one was over the age of 70. One male was over the age of 70, and two males were between the age of 30 and 49.

Physician Assistants

Although the hospital employed nine PAs, a total of 10 PAs, including one from the community, expressed an interest in participating in the study. In addition, the one PA employed in the clinical department at the facility was included in the time-motion observations and participated in the interviews (bringing the total to 10 participants). Participants in the PA group consisted of three females. Two PAs were general medicine clinicians with the remaining eight emergency medicine clinicians. One female was between the ages of 50 and 69, and two females were between the ages of 30 and 49. One male was between the ages of 50 and 69 and six males were between the ages of 30 and 49.

Physicians

Of the 54 physicians employed by the facility, 10 responded; seven males and three females from the following specialties: three internal medicine, three surgeons, one pediatrician, two nephrologists, and one emergency room physician. One male was between the ages of 50 and 69 and six males were between the ages of 30 and 49. One of the female participants was between the age of 50-69 and two of the female participants' ages ranged between 30 and 49.

Data Results and Findings

Medical Staff Workload Satisfaction

The first interview question asked of the 12 administrators was, "How satisfied would you say your medical staff is with their current workload?" The intent of this question was to gain insight whether the medical staff at the hospital was satisfied with their current workload. Question 1 allowed for probing the topic of medical staff satisfaction. Inquiring about the satisfaction of the medical staff provided data types why the medical staff was or was not satisfied. The data collected from the question provided information about what was thought could improve the satisfaction of the medical staff.

Nine out of 12 (75%) hospital administrators believed the medical staff was unsatisfied. Twenty-five percent (n = 3) offered reasons for the dissatisfaction that spanned a broad range of issues from lack of supplies, disproportionate physician to patient ratios, additional documentation requirements, heavy patient loads, and poor information technology support.

The following comments supported the findings from Question 1. HA-1 commented as follows:

> The general consensus is that the medical staff is overworked due to the limited staffing and resources available here. By nature of the fact that the uninsured population is very high, this results in the emergency room being utilized as a primary care facility. In addition, this hospital is the sole provider on the island, compounding the problem in our emergency department.

HA-2 stated, "the medical staff would be more satisfied with their workload if there was additional support staff available." HA-3 (the only administrator who noted satisfaction) made the following comment: "It would seem as if they are satisfied considering the majority of them work until 12 and then head to their private offices."

The physician participants were asked, "How satisfied are you with your current workload and the way you spend your time? Of the 10 participants, two stated they were somewhat satisfied, two noted they were satisfied, and 6 indicated they were not satisfied with their current workload. One physician noted most wanted more time with their patients while another indicated their time could be managed more efficiently.

Physician Assistant Workload Satisfaction

Physician assistants were asked the following question: "How satisfied are you with your current workload and the way you spend your time?" The intent of this question was to determine how satisfied the PAs were with their current workload. Probing the participants regarding whether they were satisfied or not provided in-depth information regarding the qualities of their work they consider being satisfying or un-satisfying.

All 10 of the PAs noted they were satisfied with their current workload although three said they were very busy. The PA assigned to the clinical department reported spending more time "charting, following up on orders, and fulfilling physician requests versus the PAs in the emergency department who focus more on non-acute patient needs allowing the physician to focus on the emergent patient issues." Documentation and charting was reported as the primary time consuming activity by three of the PAs. Four expressed that they would be more satisfied if they were more autonomous and not *tied* to a computer.

Perceptions of Physician Assistant Competency

Hospital administrators (H-A), physicians, and PAs were asked, "What are your opinions regarding the competency of physician assistants to provide hospital-based medical treatment?" The intent of this question was to gain an insight into the perceptions stakeholders had regarding the competency of PAs. The data obtained from this question yielded in depth information about the perceptions each stakeholder group held related to the competency level of a PA. This question allowed for additional probing of stakeholders. The data collected from this probe provided supporting information about the qualities and attributes each participant group identified to determine competency.

Four out of 12 hospital administrators (33%) suggested that the hospital should have policies to govern what PAs were allowed to do and what needed to be evaluated from a competency based standpoint prior to their being hired. The following comments supported the findings A-5 stated:

> A hospital should have policies in place with regard to assessing competencies upon hiring and annually. If a PA is providing any hospital-based medical treatments, then staff physicians need to ensure that a PA is competent in all areas.

HA-3 stated,

> From what I have heard PAs only receive 2 years of master's level training. Two years seems like a very short amount of time so I would say they are competent to enter orders and check on the status of tests, however clinical decisions would be better left for the doctor.

Responses from three other hospital administrators (25%) offered that PAs complete a rigid 2-year training program from an accredited school of higher education, which validates their competency levels. The third response and the opinion of 25% (n = 3) of the hospital administrator participants was that physician assistants were competent to provide the duties outlined within their scope of practice as long as they were under physician supervision. Two of the 12 administrators indicated that PAs proved competency when they obtained licensure and credentialing standards. Two of the administrators encouraged the hospital to track satisfaction levels to determine if the care delivered by PAs met patients' expectations to determine competency levels.

As presented in Table 4, eight out of 10 PA participants (80%) noted that passage of the Physician Assistant National Certifying Examination was a measure of their competency. PA-3 posited, "By passing the National Board Exams to become a Physician Assistant, every PA has proven basic competency to provide hospital-based medical treatment." Both PA 2 and PA-6 indicated that competency level was dependent

upon proper training and experience. All PA participants noted competency to provide basic medical care was based on their education and training. PA-2 said, "There are certain hospital-based diagnoses that are very common and somewhat straight-forward to manage. More complicated cases should obviously be deferred or managed in consultation with the physician."

Four physicians noted that the competency level of PAs differed from one individual to the next as one might have more training than another had. Thirty percent of the physicians (n = 3) noted that judgment and hands on experience influenced the PA's competency to provide medical care. Two physicians noted the lack of supervision for new graduates might lead to less than desirable patient outcomes because of minimal hands on experience and clinical knowledge.

Table 4

Perceptions of Physician Assistant Competency

Participant Responses	Potential Patient	Physician	Physician Assistant	Hospital Administrator
Thoroughness	3	0	0	0
Professionalism	1	0	0	0
Competent	1	2	8	6
Require more education	1	1	0	2
No opinion	1	1	0	1
Competent for minor treatment	4	3	2	4
Determined by decision	1	5	2	2
Still require supervision	0	2	2	3
Certification	0	0	8	2
Training and prior background	0	2	0	0

Task Transfer from Physician to Physician Assistant

Hospital administrators, physicians, and PAs were questioned regarding the potential for tasks to be transferred from a physician to a PA. The intent of the question

was to determine if tasks were eligible for transfer from the physician to the PA. Probing was conducted to gather additional information regarding what specific tasks were eligible for transfer. Probing also provided information outlining how the decision is made to transfer tasks from the physician to the PA. All participant groups (physicians, PAs, and hospital administrators) unanimously agreed that a wide range of tasks could be transferred from physicians to PAs. Table 5 includes the tasks cited by each participant group that can be transferred from physicians to PAs.

Table 5

Potential Transfer of Tasks from Physician to Physician Assistant

Task	Physician	Physician Assistant	Hospital Administrator
Admissions	6	3	0
Grand rounds	6	5	2
Documentation	8	6	7
Procedures	3	5	3
Reviewing results	2	5	3
Prescribing medications	0	3	3
Routine patient care	3	4	4
Ordering tests	1	2	3
Preliminary diagnosis	0	4	2
Formulate treatment plans	2	4	2
Unknown	0	0	2

One-third (n = 4) of the hospital administrators indicated they were unaware of the process by which physicians and PAs determined which tasks to transfer. However, six administrators noted the process would be determined by how PAs are regulated in the territory by the Virgin Island Medical Practice Act, hospital by-laws, and hospital policy on the scope of PAs. Four administrators mentioned the importance of communication between the physician and PA (33%) to ensure the physician is aware of

the PA's capabilities and experience level. Three administrators noted the understanding and communication was critical because not all PAs had the same medical background, training, education, and skill set.

All PAs believed that a wide range of tasks could be transferred to them from the physician. PA-4 stated:

> Yes. Prescription writing is a major one. I write on average 15-20 scripts a day that have to be signed by the attending physician. PAs have prescriptive rights in every other state and territory besides the Virgin Islands. There is no need for a physician to sign every single chart and prescription in the department. It is a barrier to flow. Having to pull the physician away from other duties to sign charts and prescriptions is a waste of time and affects throughput. The hassle of co-signature is a major blockage of flow in the department and is also another barrier not seen at most establishments in the U.S. [sic]

Three of the PAs (30%) agreed with the statement made by PA-4.

When probed about what tasks were eligible for transfer from the physician to the PA, 100% of the PA participants indicated any task was eligible for transfer provided the education and training was provided. In the absence of the education and training allowing PAs to take on all tasks, 50% of PA participants noted that more bedside procedures could be transferred to competent and qualified PA.

Physician assistants were questioned how the determination was made to transfer tasks from physician to PAs. All PAs indicated that no formal protocols existed so they referred to the "understanding and working relationship" they had with the supervising physician. PA-2 said, "No formal protocol. There is a casual understanding that as long

as the PA is properly supervised, the PA can perform within the attending's scope of practice and competency." PA-4 indicated the following:

> Other duties are either understood from working experience with the physician, or there is a formal conversation and plan to carry out regarding specific tasks. In the emergency department, we rely heavily on communication with our supervising physician and they can delegate certain tasks given the experience of the mid-level practitioner.

PA-10 noted that upon being hired by the hospital, a formal protocol was presented that contained the following:

> What PAs can and cannot do in the ER without any discussion with the midlevels on staff. There has been no discussion of any changes to these guidelines since they were issued. They want the midlevels to discuss most patient encounters and want the physicians to look at all x-rays.

Nine out of 10 physicians indicated they would be willing to transfer tasks to a PA. P-4 refrained from saying yes or no and instead offered the following:

> It depends on the PA. A PA who is well trained, understands their limitations and their assets can make your life easier; not so much making management but rather note writing, PE and writing orders in collaboration with me. No real issues transferring tasks but making sure that there is true working relationship it takes a long time to amass the clinical intuition for a MD with post-graduate training. PAs take much longer to develop that function.

Tasks cited as being eligible for transfer included general care (30%) and documenting histories and physicals (80%) (see Table 5).

Physicians were also questioned regarding how the determination was made to transfer tasks from the physician to the physician assistant. Three out of 10 physicians noted they would adhere to practice guidelines, legislation, and scope of practice in making the determination. One physician noted they had never worked with a PA so they noted their uncertainty in regard how they would make this determination. The remaining six physicians (60%) noted they would make this determination in one of several ways. Concerning transfer of tasks, the following were noted: observing the PA's skill set to identify the best tasks eligible for transfer, developing a formal understanding of each provider's roles so each party understands their roles and responsibilities from the onset, and engaging in a discussion between the two providers to determine which tasks should be transferred.

Obstacles to Task Transfer from Physician to Physician Assistant

Hospital administrators, physicians, and PAs were asked about the obstacles that prevented transferring of tasks from physicians to PAs. The intent of this interview question was to understand obstacles that exist barring the transfer of tasks from the physician to the PA. Although one hospital administrator noted there were no obstacles to task transfer, 40% ($n = 4$) noted the lack of PA acceptance from the physicians was an obstacle. Lack of acceptance was expanded upon to include political obstacles such as doctors feeling as though they were being pushed out ($n = 2$) and workload obstacles ($n = 2$) (administrators feeling as though the workload was not enough in every department to support a PA, a physician, or physicians). The third obstacle and largest in terms of

response rate (6 out of 10 hospital administrators) was the lack of available PAs on the island (see Table 6).

Table 6

Obstacles to Task Transfer

Obstacle	Physician	Physician Assistant	Hospital Administrator
Lack of trust	2	1	3
Limited prior experience	2	0	1
None	1	5	1
Lack of available PAs	3	0	6
Unable to prescribe medications	1	1	0
Patient acceptance	1	0	6
MD limited time to train PA	1	2	1
Organizational acceptance	0	1	4
Recruitment barriers	0	0	1
MD job security concerns	0	0	2
MD acceptance	0	3	4

Three (30%) physician cited the lack of PA candidates available for employment on the island, the absence of training (n = 3) combined with the need to have more skilled PAs on staff (n = 3), patient acceptance of PA as proxy (n = 1), lack of DEA licensing in the territory for PAs (n = 1), and one said no obstacles. P-2 shared the following: "Obstacles that prevent physicians from transferring certain duties may be the result of certain physicians in the group not feeling comfortable with trusting a PA in providing medical care."

Table 6 is a summary of the responses from all stakeholder groups regarding the obstacles to transferring tasks from physicians to PAs. Leading obstacles to task transfer included the lack of available PAs (n = 9), physician acceptance (n = 7) patient acceptance (n = 7) and no obstacles (n = 7). PAs noted major obstacles to task transfer as

the availability of the attending physician (n = 2) and medical staff by-law recognition of the profession (n = 4). PA-9 stated, "Obstacles include the acceptance of PAs amongst the medical staff and the organization in which the PA is employed."

Including Physician Assistants in Staffing Model

The intent of interview question "What are the challenges with including a PA in your staffing model" was to determine what the benefit(s) would be of including a PA in the staffing model. For hospital administrators critical areas of concern in regard to including PAs in the staffing model were issues related to recruitment and retention, (n = 5), challenges to adding PAs to the model (n = 3), and the benefits should the staffing mix be appropriate (n = 1). When queried on the challenges of including PAs in the staffing model, HA-1 offered the following:

> Sometimes physician assistants may be a slight encumbrance, requiring an inconvenient amount of the physicians' time, especially in the early stages of the partnership. Physicians are ultimately responsible for their assistants' work and must provide an adequate educational experience, conduct chart reviews, and ensure regular oversight of their clinical activities.

Additional challenges identified by the 12 hospital administrators included acceptance of the PA profession (n = 4), ability to supervise PAs work appropriately (n = 2), understanding PA's roles and responsibilities (n = 2), and the level of autonomy that should be allowed (n = 4).

Working Relationship between PA and Supervising Physician

Physician assistants were asked, "What are the challenges of working with a supervising physician?" Physicians were asked, "What are the challenges of working with a physician assistant?" The intent of these questions was to determine what the working relationship was between physicians and PAs. Further probing of the participants identified underlying themes of acceptance and the understanding of the PAs role within the hospital. Physician assistants noted several challenges in regard to working with their supervising physician. The major theme noted by 60% (n = 6) of the PA participants was the supervising physician's lack of understanding the role of PAs in the hospital. Additional challenges noted by the PAs included maintaining an understanding of each supervising physician's practice styles (n = 3) and the supervising physician's unwillingness to accept feedback and input from the PA (n = 2).

Similar to the PA participants, the physician participants were questioned about the challenges of working with physician assistants. Several main themes arose in the physician responses regarding challenges. The first major theme noted by 50% (n = 5) of physician participants was the lack of medical experience and training the PAs had after completing 2 years of graduate education. P-1 noted, "They require a tremendous amount of training after PA school. Upon graduation, they can do little without assistance. Many physicians do not like new graduates because they create more work than they contribute for several months, if not years." P-4 stated, "Helping them know their limitations and when to ask for help is important as many of the physician assistant's I have worked with seem to present a bit arrogant." A concern noted by one of

the physicians was the potential for physicians to become obsolete and replaced with less educated and less trained providers.

Potential Patient Perceptions of Physician Assistants

Potential patients were asked, "Have you ever been treated by a physician assistant?" The intent of this question was to understand how the potential patient stakeholder group perceived PAs in the healthcare delivery system. Of the 10 potential patient participants, a PA had never treated two. Eight of the 10 responded that they had been treated by a PA and indicated they felt the PA was competent to perform the care provided. One of the 10 respondents noted they would prefer to be treated by a nurse practitioner because they would feel more comfortable with the extended education, which generally exceeded that of a PA.

When asked, "What are your opinions regarding the competencies of physician assistants in regard to providing patient care?" PP-1 said,

> I have complete confidence in the physician assistant. The patient care has been professional and very thorough. The physician assistant has taken as much time as necessary to explain, in detail, every aspect of my care. I have found each physician assistant to be very competent.

Other responses mirrored PP-1's response by noting comfort receiving treatment from PAs for minor ailments especially if the PAs were able to provide definitive treatment plans and articulates the various ailments and diagnoses.

When asked, "If you had a choice of between being treated by a physician assistant or a physician for a major concern, which would you choose and why?" All 10 potential patient participants indicated they would prefer to be treated by a physician.

The two main reasons cited for choice of a physician for a major concern included were competency (n = 3) and thoroughness (n = 4).

When asked whom they would prefer for treatment of a minor concern, two potential patients said physician, two said either physician or PA, and six said PA. The reasons given by the six potential patients for seeing a PA for a minor concern (a) less waiting time for a service (n = 3), (b) competency (n = 2), and (c) more time spent with the patient (n = 1). Three potential patient participants said they would prefer a physician because of a smaller chance of a physician missing a potentially major condition or ailment.

Regardless of whether the potential patient participants had or had not received treatment from a PA in the past, all potential patient participants offered insight into the functions they believed PAs were able to perform in the hospital setting. PP-1 shared the following, "I believe the physician assistant can check on patient progress, read, enter patient notes, and interpret charts, treat injuries, diagnose illness and prescribe medications and know when to consult the physician on a case by case basis." Four of the 10 potential patient participants referred to supporting the medical staff and reducing the wait time for patients. PP-5 specifically noted, "Relieve some of the patient load of more highly trained physicians whose attention may be needed in more complex cases." Other responses noted by six out of 10 participants indicated the PA could assume duties that should not necessarily be the primary responsibility of the physician including following up on orders, tests, and minor patient care needs.

Benefits of Physician Assistants in a Hospital Setting

Hospital administrators, physicians, and PAs were asked, "What are the benefits of using a physician assistant in the hospital setting. The intent of this question was to understand the benefits various stakeholder groups identified when a PA was added to the staffing model in the hospital setting. Benefits cited by PAs for having PAs in the hospital setting included reducing the physician's workload (n = 3) by assuming charting and documenting responsibilities, driving quality-improvement initiatives within their department and for facilities struggling with financial resources PAs provide a cost-effective staffing solution (n = 4) (see Table 7). PA-8 offered the following:

> PAs are proficient in an organized setting they are amiable to team-based approach to health care, PAs do not wish to practice independently, wish to collaborative work with staff. In addition, PAs must re-certify every six years for licensing and maintain CMEs, steering a self-disciplined continued education; PAs have fast-paced learning environments during school, which exposes them to rigors of practice.

PA-10 noted, "The benefits are increased productivity and patient satisfaction at decreased costs as PA's cost roughly half of what physicians cost. In rural settings it is often difficult to recruit physicians."

When queried on the benefits of using a PA in a hospital setting, hospital administrators' primary response was that PAs can serve as a physician extender allowing physicians to provide access to care in small rural settings where care may have been unobtainable prior to the PA being available (n = 4). Other benefits noted by hospital

administrators were on the opportunity to free up physician time to provide direct patient care (n = 1), and increasing patient satisfaction (n = 2).

Table 7

Benefits of Using Physician Assistants

Benefit	Physician	Physician Assistant	Hospital Administrator
Free up physician time	6	3	1
Streamline patient care	3	2	1
Always available	4	1	3
Extension of physician	4	3	4
Increased productivity	1	3	2
Increased patient satisfaction	1	3	2
Cheaper than hiring physicians	1	4	1

Role of Physician Assistants in Small, Rural Hospitals

Physicians, hospital administrators, and PAs were asked, "What role do you see physician assistants playing in the medical workforce shortage among small, rural hospitals. The intent of this question was to understand the role of the PA in the rural hospital setting. Probing the participants regarding what the roles of the PA were provided insight into how the PA can impact the physician workload. A summary of responses is presented in Table 8. Hospital administrators offered a multitude of potential roles of PAs including improving access to health care services by staffing rural clinics (n = 4) and serving in the absence of the physician (n = 4).

Table 8

Potential Role of Physician Assistants in Rural Hospitals

Impact	Physician	Physician Assistant	Hospital Administrator
Improved access to care	4	5	4
Free up physician time	5	4	8
Always available	3	3	2
Implement telemedicine services	3	2	1
Support the current system	2	3	1
Able to provide primary/general care	4	5	4

Similar to the hospital administrator participants, the PA participates were asked to explain the role they thought PAs would play in the medical workforce shortage of small rural hospitals. Small rural hospitals are underutilizing PAs who are able to serve as primary care providers and assume care for minor medical needs was cited by five of the 10 PA participants. PA-3 offered the following:

> I see physician assistants as being the cornerstone of the medical workforce of small rural hospitals. Despite their relatively low cost, they can work in all departments, and can be cross-trained if necessary. They can be utilized in research, quality improvement, management, and leadership positions. They possess the clinical knowledge as well as the maturity and versatility needed to make an institution function and beyond this, they enjoy what they do.

All 10 of the physician participants noted that PAs would be the future of rural health care. The only reason cited for their response was the inability to attract doctors to rural areas. Despite the unanimous agreement, physicians also stipulated the following conditions (a) that PAs never operate without supervision ($n = 4$) and (b) that in

drastically short-staffed rural areas only seasoned PAs be recruited and employed to ensure there are reduced potentials for poor outcomes (n = 1).

When questioned on the benefit PAs add to the medical workforce, four of the 10 physician participants noted the following: streamlining patient care, reducing physician workload by transferring particular tasks to midlevel providers, and increasing the quality of care. P-6 espoused, "Benefits include less time spend by the MD performing menial duties. A PA can help to extend the physicians time and availability to the other patients." In addition, P-9 indicated that, "Increase in productivity, improved patient satisfaction because of increased time spent with patients; some have different clinical backgrounds that can bring new ideas, financially so much cheaper to have PAs seeing patients instead of having to hire additional physicians."

Time-Motion Self-Reported Survey Data

The time-motion self-report questionnaire consisted of tasks grouped into categories: Direct Patient Care, Indirect Patient Care, Personal, and Miscellaneous (see Appendix D). For simplification, similar tasks on the survey were combined together for data analysis. The tasks writing orders and telephone orders were combined into a single category of writing orders. Telephone calls and handheld device were combined into a personal communications category and the items bathroom and meals were also combined.

The survey did not list a specific amount of time for participants to use when dividing a typical workday into tasks. Because of this, each survey contained timings that summed to slightly different total workday hours. As a result, the data were

analyzed by computing the percentage of time specified for each task where the denominator was the total time listed for each responder.

Physician Assistant Perceived Time Spent on Selected Tasks

Table 9 includes the percentage of time the PA perceived was spent on various tasks and the percentage of time that the PA perceived that physicians spent of various tasks.

Table 9

Physician Assistant Perceptions of Task Allocation

Task	PA Self-Assessment Percent of Time	PA Assessment of Physician Percent of Time	Difference in Percent
Direct patient care	**51.6**	**38.7**	**12.9**
Taking history and physical exam	19.4	12.9	6.5
Procedures	3.2	0	3.2
Daily rounding / follow-up	19.4	12.9	6.5
Discharge instructions	9.7	6.5	3.2
Family meetings	0	6.5	-6.5
Indirect patient care (%)	**31.5**	**29**	**2.5**
Reviewing results	0	6.5	-6.5
Documentations	19.4	9.7	9.7
Communications	0	6.5	-6.5
Writing orders	12.1	6.5	5.6
Personal Activities	**12.1**	**19.4**	**-7.3**
Personal communications	4.8	9.7	-4.9
Bathroom and meals	7.3	9.7	-2.4
Miscellaneous	**4.8**	**12.9**	**-8.1**
Travel	4.8	3.2	1.6
Teaching	0	0	0
Professional development	0	0	0
Meetings	0	9.7	-9.7

Note: The data reflects three physicians and one PA.

Physician Perception of Task Allocation

Displayed in Table 10 are the mean (*M*) and standard deviations (*SD*) for the percentage of time spent on each task for the three physicians reviewing themselves and a PA in their department.

Table 10

Physician and Physician Assistant Perceptions of Task Allocation

	Physician on Physician %		Physician on PA %		Difference in Perceptions%
Task	*M*	*SD*	*M*	*SD*	*M*
Direct Patient Care	**49.3**	**12.8**	**38.2**	**2.4**	**11.1**
Taking history and physical exam	12.6	5.9	11.2	4.8	1.4
Procedures	0.3	0.5	0	0	0.3
Daily rounding / follow-up	23.3	6.5	20.2	7.6	3.1
Discharge Instructions	4.1	1.7	6.7	1.5	-2.6
Family meetings	9.1	3.1	0	0	9.1
Indirect Patient Care	**29.7**	**4.5**	**42.6**	**4.2**	**-12.9**
Reviewing results	2.7	2.3	0	0	2.7
Documentation	10.8	9.4	23.5	2.1	-12.7
Communications	3.5	1.9	9.1	4	-5.6
Writing orders	9.4	0.8	9.9	0.8	-0.5
Other	3.3	5.7	0	0	3.3
Personal	**10.5**	**2.4**	**13.8**	**2.3**	**-3.3**
Personal communications	5.2	2.5	6.9	2	-1.7
Bathroom and Meals	5.3	0.3	6.9	0.9	-1.6
Miscellaneous	**10.5**	**8.9**	**5.5**	**3.5**	**5**
Travel	4.9	4.4	5.5	5.3	-0.6
Teaching	0	0	0	0	0
Professional development	0	0	0	0	0
Meetings	5.6	9.8	0	0	5.6

Note: The data reflects three physicians and one PA

Comparison of Perceived Time Spent of Selected Tasks

The surveyed PAs indicated they spent slightly more than one-half (51.6%) of their day and a physician spent less time (38.7%) on direct patient care. Indirect patient care was approximately 30% of the tasks for the PA reviewing their self (31.5%) and the PA reviewing the physician (29%). The PAs believed that a physician spent 19.4% of their day on personal tasks and 12.9% of their day on miscellaneous tasks. Similarly, the PAs reported spending 12.1% on personal tasks and only 4.8% on miscellaneous tasks.

The PA believed a PA spent 12.9% more time on direct patient care tasks and 15.3% less time on miscellaneous and personal tasks than a physician. The PA marked much more time spent on meetings and communications for a physician as compared to a PA. The categories other, teaching, and professional development did not receive any time amounts from the PA.

Physicians reported they spent approximately one-half of their day ($M = 49.3$, $SD = 12.8$) on direct patient care while a PA was perceived to spend less time ($M = 38.2$, $SD = 2.4$). The physicians believed a PA spent more time ($M = 42.6$, $SD = 4.2$) on indirect patient care than they spent ($M = 29.7$, $SD = 4.5$). Personal tasks were divided approximately the same by the physicians and miscellaneous tasks were believed higher for the physician ($M = 10.5$, $SD = 8.9$) than the PA ($M = 5.5$, $SD = 3.5$).

The physicians believed a PA spent 11.1% less time on direct patient care tasks and 12.9% more time on indirect patient care than a physician did. The physicians also marked more time spent on meetings for a physician as compared to a PA. The categories of other, teaching, and professional development did not receive any time amounts from the physicians.

Based on the findings, the PA and physicians surveyed did not agree on the proportion of time spent on direct and indirect patient care. Participants believed that they spent a larger percentage of time on direct patient care than the other provider did. Both providers did agree that physicians spent more time in meetings.

Analysis of Time-Motion Data

The time-motion data consisted of tasks grouped into five categories: Direct Patient Care, Indirect Patient Care, Education, Personal, and Miscellaneous. Time-motion data were collected during an 18-day period. Three of the four physicians and the PA in the clinical department who participated in the interview agreed to participate in the time-motion study. The clinical department employed one PA. The observations were grouped by the categories listed in Table 11 and percentages were computed for the time the providers spent in each category during the half-day observed. The observations resulted in five data points for the PA and 13 data points for the physicians in each task category. If a task was not observed, the data point recorded was zero. After the data points were grouped into their predefined categories, the mean and standard deviations were computed for the percentage of time spent in each task. The difference in means was also computed.

The PA observed spent 54% of time on indirect patient care (M = 54.2, SD = 23.2) and the majority of this time was spent on documentation (M = 32.2, SD = 16.4). Direct patient care tasks were recorded much less often (M = 17.9, SD = 11.1). The PA spent nearly 28% of their time on education (M = 7.4, SD = 16.5), personal tasks (M = 8.2, SD = 17), and miscellaneous tasks (M = 12.3, SD = 7.5), combined. The tasks recorded most often for the PA were documentation (32.2%), exams, procedures, and

follow-up (18%). Family meetings (0.4%) and writing orders (2%) were recorded the least for the observed PA.

The three physicians observed spent 55% of their workday on indirect patient care (M = 54.4, SD = 19.1) and the majority of this time was spent on documentation (M = 31.9, SD = 10.8). Direct patient care tasks were recorded less often (M = 15.1, SD = 5.5) whereas, educational tasks were observed more often for the physicians (M = 15.3, SD = 23.3). Personal tasks were rarely observed (M = 2.2, SD = 2.3) and miscellaneous tasks comprised about a tenth of the day (M = 13, SD = 10.4). Documentation and professional development tasks were recorded most often for the physicians. The tasks physicians spent the least amount of time on family meetings, personal tasks, and reviewing results.

Physicians spent 9.5% more time on professional development tasks and 7.9% more time on teaching compared to the PA. The PA spent 6% more time on personal tasks and 4.3% more time on exams, procedures, and follow-up tasks. Indirect patient care only differed by 0.2% and direct patient care differed by 2.8% between the provider types.

Shown in Table 12 is a side-by-side comparison of the self-report findings and the time-motion data. The difference in mean percentages is also displayed in Table 11.

Table 11

Time-Motion Study of Physician Assistant and Physicians

Task	Physician Assistant		Physician		Difference in Means
	M	*SD*	*M*	*SD*	
Direct patient care (%)	**17.9**	**11.1**	**15.1**	**5.5**	**2.8**
Exams, procedures, and follow-up	17.5	11	13.2	5.6	4.3
Family meetings	0.4	0.8	1.9	2.7	-1.5
Indirect patient care (%)	**54.2**	**23.2**	**54.4**	**19.1**	**-0.2**
Documentation	32.2	16.4	31.9	10.8	0.4
Reviewing results	6.7	5.1	3.5	5	3.2
Communications	13.3	4.6	14.5	8.7	-1.2
Writing orders	2	1.9	4.5	5	-2.5
Education (%)	**7.4**	**16.5**	**15.3**	**23.3**	**-7.9**
Professional development	5.9	13.1	15.3	23.3	-7.9
Teaching	7.4	16.5	15.3	23.3	-7.9
Personal (%)	**8.2**	**17**	**2.2**	**2.3**	**6**
Bathroom breaks and meals	8.2	17	2.2	2.3	6
Miscellaneous (%)	**12.3**	**7.5**	**13**	**10.4**	**-0.7**
Obtaining medical supplies	12.3	7.5	13	10.4	-0.7

In discussing the role of hospitalists as preparatory background for this undertaking informal conversations with physicians and PAs revealed a few strongly held beliefs. The main one was that patient interaction consumed the biggest part of their day. Because literature attesting to this labor activity was not in the public domain this information became more interesting. To test the notion that providers perceive they spend the majority of their time interfacing with patients two data gathering activities were incorporated into the study: formal interviews about this self-held notion and time motion observations of the daily activities in the hospital.

Direct patient care displayed the largest difference between perceived time and actual time spent on these tasks for both the physician (Difference = 34.2) and PA (Difference = 33.7). Both providers believed they spent approximately 33% more of their workdays on direct patient care than the actual observations revealed. Both providers also did not list education as a daily task in the self-report questionnaire. It was determined in the time-motion data that physicians spent 15.3% of their day (*SD* = 23.3) and the PA spent 7.4% of their day (*SD* = 16.5) on education.

The results from the self-report survey showed that each provider felt they spent approximately one-half of their days on direct patient care. According to the time-motion data, the percentage of time spent on direct patient care for both providers was less than 20%. The results suggest both providers spend most of their day on indirect patient care and most specifically on documentation.

Table 12

Self-Reported Tasks Versus Time-Motion Data

	Self-report		Time-motion		Difference in means
Task (%)	*M*	*SD*	*M*	*SD*	
Physician					
Direct patient care	49.3	12.8	15.1	5.5	34.2
Indirect patient care	29.7	4.5	54.4	19.1	-24.7
Education	0	0	15.3	19.1	-15.3
Personal	10.5	2.4	2.2	2.3	8.3
Miscellaneous	10.5	8.9	13	10.4	-2.5
Physician assistant					
Direct patient care	51.6		17.0	11.1	33.7
Indirect patient care	31.5		54.2	23.2	13.6
Education	0		7.4	16.5	-7.4

Personal	12.1	8.2	17	3.9
Miscellaneous	4.8	12.3	7.5	-7.5

Emerging Themes

The researcher arrived at emerging themes after creating three categories and subcategories by coding responses from the participants and grouping key terms and concepts. Emerging themes fell into three categories; (a) benefits and challenges of working with PAs, (b) role of PAs, and (c) acceptance of PAs. Within these categories the following themes were identified; limited PA role, reduction of physician workload, and variable PA competency level. Subthemes to emerge included the role of PAs, improving patient care, filling shortages, the supervision of PAs, developing protocols for duty and establishing a procedure for delegation of responsibilities. The use of NVivo 10 assisted in compiling the themes by creating nodes and conducting queries using text search and word frequency (see Appendix I).

Theme 1: Reduction of Physician Workload

The first emergent core theme of the study was the apparent benefit PAs bring to the organization in terms of reducing a physician's workload. Data revealed that respondents noted PAs could reduce the workload of their supervising physicians. Interview question responses revealed a total of 26 times that the participants felt PAs would reduce physician workloads allowing them to focus on more acute patients, share the workload by reducing the 'overworked' feeling of the physician, and reducing physician workloads via task transfer to the PA provider. Physicians unanimously agreed (100%) that the use of PAs would reduce their workload, followed by 83% of hospital administrators who supported this theme. Surprisingly, only 49% of PAs believed that

they could reduce the physicians' workload followed by 20% of potential patients who concurred with the theme.

Representative of this theme were comments from HA-3 and PA-2. HA-3 who stated, "The benefit would be that the physician can spend more time with their patients and less time running down results and following up on orders and miscellaneous matters." PA-2 noted, "With proper training, a PA can significantly reduce the workload on a Physician by charting/documenting and performing time-consuming procedures." There was general agreement that a benefit of having PAs on staff could be a reduction in physician workload. There were two subthemes identified within the core theme of reducing the physician workload; (a) improving patient care and (b) filling shortages.

Subtheme: Improving patient care. To support the core theme of reduction in the physician workload, adding a PA to the staffing model could improve patient care was identified as a subtheme. Sixty-seven percent of the hospital administrators supported the theme followed by 30% of potential patients. Only 20% of physicians and 10% of PAs believed that adding a PA to the staffing model would improve patient care. Referenced 14 times, participants stated in their responses benefits of adding a PA to the staffing model include reducing medical errors, improving patient satisfaction, improving communication, and brining new and innovative health care treatments and procedures to the delivery of healthcare. Representative of this subtheme were comments from HA-4 who stated, "Benefits would include better patient care, patient satisfaction, the likelihood to reduce medical errors" and PA-9, "Using PA's in the hospital setting is beneficial to providing streamlined patient care.

Subtheme: Filling shortages. The second subtheme identified in support of the main emergent theme of reducing the physician workload was filling shortages in the workforce shortage. Interview question responses revealed that on 21 separate occasions that benefits of adding a PA to the staffing model could help to fill workforce shortages. The use of PAs filling shortages in workforce was supported by 83% of hospital administrators, 80% of physicians, and 30% of the PAs. Filling shortages could be achieved through the provision of 24-hour care in emergency rooms and urgent cares, sharing on-call time, staff satellite clinics, and being available in the absence of physicians. Representative of this subtheme were comments from HA-5 who stated, "Physician Assistants can help to extend the workforce by acting as fillers when physicians are not available" and HA-10, "I see the PAs filling the gaps and assisting in providing quality patient care."

Theme 2: Limited PA Role

The second emergent core theme identified related to the limited role of PAs. Participants readily shared their thoughts and perceptions regarding the roles PAs have within the organization during the interview. The limited role of PAs was supported by 92% of hospital administrators, 80% of potential patients, 50% of physicians, and 20% of PAs. Twenty-six times the limited role was referenced in participant responses including collecting medical histories, general patient care tasks, noninvasive procedures, and medical record documentation. Representative of this core theme were comments from PP-4 who stated, "Assisting the doctor as she feels fit, maybe the way a nurse would" and P-3, "More than adequate for routine care."

Theme 3: Variable PA Competency Level

The third emergent core theme addressed the variability of PA competency levels. Thematic analysis revealed 20 references made to the varying levels of PA competency. The variability of PA competency levels was discussed by 90% of physicians, 67% of hospital administrators. Only 20% of PAs and 10% of potential patients mentioned the variability of PA competence. Competency levels were referenced in various ways including; less than that of an MD, individually based, and parallel with clinical exposure and experience. Physicians and hospital administrator's responses differed from the PA participants in that they shared a similar consensus that PAs present with varying competency levels. The PA participants however, felt as though PAs in general are competent. Representative of this theme are comments from PA-4 who stated, "PAs are well trained on a general scale allowing them to have a broad knowledge base of various medical conditions and treatments." P-2 noted, hospitals should not overuse them since their training is not as extensive as physicians'" and P-1 indicated, "Competency is individually based. Every PA is very different even from the same program."

Subtheme: Supervision of PA. To support the core emergent theme of variable PA competency levels, supervision of the PA was referenced 16 times in participant responses. Supervision of the PAs was referred to by 60% of physicians, 60% of PAs, and 33% of hospital administrators. References made to the supervision of the PA included: functioning under the supervision of a physician, advanced procedures that can be done under supervision, and PAs require direct supervision. Representative of this subtheme are comments from HA-11 who stated, "PAs function under the supervision of a physician", HA-10 noted "They serve a critical role in ensuring patients under a physician's

supervision receive the equal quality care that a physician would provide" and P-2 indicated, "Essential but requiring supervision."

Subtheme: Development of protocols. The second subtheme in support of the core emergent theme was the need for developed protocols. The need for the development of protocols was supported by 58% of hospital administrators, 40% of physicians, and 40% PAs. Identified 15 times in participant responses, the need for developed protocols was referenced in multiple ways including; vague, liability concerns, and need for revision. Comments representative of this subtheme include; PA-9 who stated, "There are formal protocols that we all adhere to which are delineated by credentialing in the hospitals and sometimes by the licensing boards. Those tend to be vague and loose in their interpretations." and HA-8 stated, "all legal and regulatory "Ts" must be crossed and "Is" dotted before PAs are fully integrated into the health care model in an institution. Also, various disciplines will differ in how they can utilize PAs so it is not a "one size fits all" scenario."

Subtheme: Procedures for delegation. The third subtheme identified in support of the core emergent theme was that of the need for procedures to delegation. Concern regarding the need for delegation procedures was supported by 90% of physicians, 83% of hospital administrators, and 60% of PAs. This subtheme was referenced 25 times by interview participants. PA-2 noted, "There is a casual understanding that as long as the PA is properly supervised, the PA can perform within the Attending's scope of practice and competency." P-8 said, "Haven't had a PA before but if I did I would refer to the licensure guidelines and practice act" and P-2 posited, "A formal understanding outlining the

responsibilities/duties is best. This allows the provider to determine which tasks are appropriate based upon licensure and practice act regulations."

Subtheme: Acceptance and understanding of PAs. In combination with limited and basic roles, respondents discussed the acceptance and understanding of the PA. The fourth subtheme to emerge in support of the core emergent theme was that of the acceptance and understanding of the PA within the hospital. Finally, 75% of hospital administrators and 60% of physicians indicated concern regarding the acceptance of the PA within the organization. No comments were made from the PA or potential patient participant group regarding the acceptance and understanding of PAs. Thematic analysis revealed 15 references made toward the challenge of acceptance of the PA. Comments representative of this subtheme include; HA-4 who stated, "Obstacles I would think at this point would include acceptance of PA's" and PA-9 indicated, "Obstacles include the acceptance of PA's amongst the medical staff and the organization in which the PA is employed."

Chapter Summary

Chapter 4 includes a review of the data the data analysis and findings for the qualitative case study. Data collection commenced after obtaining IRB approval and completing the pilot study. Four separate interview tools were used to gather data from the identified convenience sample of participants. Interview data were recorded and transcribed and NVivo 10 was used to code and analyze the data. Upon analysis of the data and review, the following emergent core themes were identified (a) benefits and challenges of working with PAs (b) role of PAs and, (c) acceptance of PAs. Subthemes to emerge were the role of PAs, improving patient care, filling shortages, the supervision

of PAs, developing protocols for duty, and establishing a procedure for delegation of responsibilities. Chapter 4 also includes relevant responses from participants regarding their perceptions of PAs and time-motion data collected via observation. The time motion analysis revealed that less than 20% of all activities for both PAs and physicians were spent on direct patient care.

Discussed in the chapter are the descriptive characteristics of the sample, summary of the results, and a detailed statistical analysis of the data. Chapter 5 contains a summary of the findings and the conclusions drawn from the data analyzed in this chapter. The chapter concludes with implications, significance to leadership, recommendations for hospital administrators, and recommendations for further study.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The purpose of the case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands. Small, rural hospital administrators face many barriers to providing optimal treatment and services and may include staffing shortages, inadequate capital resources, and nonexistent roles of delineation. Complicating the barriers is the remote geography of many facilities and islands are the most remote. . Understanding the barriers related to staffing shortages was of particular interest because the author works for a rural hospital. Not only does this observer see the challenges faced by patients, the facility, and the community in terms of seeking and providing care but also a PA program has recently located a satellite extension on the island.

Sometime within the 21st century, the medical staff in the Virgin Islands took interest in the PA concept and one was hired at the hospital. The idea was that by changing the staffing model with a PA perhaps some of the barriers to care might improve. While various managerial theories were considered, that of task shifting appeared to offer the most improvement. Task shifting in this regard is the transfer of activity from the physician to the PA. The goal of the research was to explore the use of PAs in a rural hospital located in the U.S Virgin Islands, to understand how PAs were used, how they were accepted, and how their use impacted the medical workforce shortage. The belief was that shifting a certain volume of tasks to the PA would permit the physician to focus more on critically ill patients and augment direct patient care

The purpose of Chapter 5 is to provide insight on how the research questions can be answered based on the research, to discuss the research in light of other research, and

to make recommendations regarding the use of physician assistants based on the research and the literature. Presented in Chapter 5 are summarized findings, a review of the research questions, and of the limitations and implications for the study. The chapter concludes with recommendations for hospital administrators and future research.

To establish a link between the interview questions and research question some assumptions were made. The core assumption was that when the participants answered the interview questions, they were basing their responses on their knowledge of physician assistants. The assumptions for the time-motion study was that the time spent on tasks within observation periods were tasks that would be provided regardless of the time of day or week. A series of interviews were undertaken and a time-motion study of hospital-based physicians and one PA were undertaken. The results of the interviews and time-motion study are included in the findings, analysis of the data, emerging themes, implications of the study, significance to leadership, recommendations, and recommendation for further research.

Addressed in Chapter 1 were the problem and the focus of the research; to explore the use of PAs in a small, rural hospital located on an island in the Virgin Islands to understand how PAs were used, how the PAs were accepted, and how the PA's usage impacted the medical workforce shortage. The problem on the island was the same as in many locales throughout North America - medical workforce shortages have led to physician shortages resulting in increased utilization of and dependence upon PAs (Zwijnenerg & Bours, 2011). Within Chapter 1, the topics of significance, background, theoretical framework, assumptions, scope, and limitations of the study were addressed. A list of definitions was included.

Chapter 2 is a summary of current and historical literature on physician assistants, rural hospitals, and health professional shortages. The chapter included an overview of task shifting and importance of productivity and output. Other topics included hospital based providers and history of PAs in the Virgin Islands.

Chapter 3 was the methodology section and included an explanation of why qualitative exploratory case study research was used. Also Chapter 3 included information on (a) how the participants were selected for the study, (b) the research method, (c) design appropriateness, (d) population, and (e) data collection and analysis. In essence, the method of qualitative interviews and quantitative time-motion studies and self-reports was utilized to obtain an accurate view of the participants' perceptions and documenting labor activities of hospital based physicians and physician assistants.

Chapter 4 was the results from the data collected. Five themes emerged that may contribute to expansion in the use of physician assistants, their scope and their available in the Virgin Islands. The themes are (a) lack of PA acceptance from the physician, (b) there are tasks eligible for transfer to the PA, (c) the lack of PAs, (d) there is a lack of understanding of the PAs role among physicians, and (e) based on the time motion data the actual time spent on hospital based direct patient care was less than 20% of all activities for both PAs and physicians.

Research Questions

The purpose of the research was to explore the use of PAs in a small, rural hospital located on an island in the Virgin Islands to understand how PAs were used, how the PAs were accepted, and how the PA's usage impacted the medical workforce shortages. The following overarching research question guided the study: What are the

benefits of including hospital based physician assistants in the workforce at small rural hospitals?

The following research question guided the study: What are perceptions of the role of rural hospital based physician assistants? The following sub questions (SQs) were used to guide the study:

- SQ1. What is the distribution of tasks between hospital-based physicians and PAs?
- SQ2. What hospitalists' tasks might be transferrable to a PA?
- SQ3. What are the obstacles and benefits regarding use of a hospital PA?

The research questions provided the structure for the current study. The questions provided a focus and direction for the research, interviews, observations, analysis, and results. Exploration of the research questions took place through the interview question responses provided by each participant and the observations collected via the time-motion studies. Presentation of the results is by interview question, with following presentation of the emergent core themes.

Primary Research Question

What are perceptions of the role of hospital based physician assistants at a rural hospital?

Indicated in the results were that the benefits of including hospital based PAs in a small rural hospitals would reduce physician workloads by transferring tasks such as charting and documentation from the physician to the PA. Physicians observed in the time-motion studies spent approximately 32% of their time documenting (chart entry primarily). If the duties were shifted to the PA, the physician may perhaps have an

additional time available to focus on providing and performing more involved patient care. Other benefits identified were increases to patient satisfaction, reduced wait times, staffing in clinics, and positive improvements to the quality of care.

Due to the hardships in recruiting physicians to rural communities, the addition of PAs in the areas is hoped to improve retention of the physician corps and more broadly expanded service to the community. Physicians would feel less strain regarding practice patterns and be provided with support from the PA allowing them to focus on other clinical duties.

Additionally, those residing in the island community will benefit when PAs are added to the workforce for a number of reasons. Just the added presence of another health provider improves access to care in general. More so physician assistants can assume non-urgent clinical duties, staff clinics, provide coverage for the physicians, and fill gaps in care allowing for better continuity whether micropolitan or metropolitan. In the absence of physicians the PA can carry out the physicians' orders and ensure that many aspects of the patients care are addressed and attended to. The PA may consult with the physician without requiring them to remain in the facility at all times.

Sub-question 1

What is the distribution of tasks between hospital-based physicians and PAs?

There were no major differences in the distribution of tasks between the physicians and the PA at a small rural hospital. Documented in the time-motion component of the study was that the PA's role in the hospital setting clearly pointed out that the PA functions with similar practice patterns as the physicians. In this study the PA and physicians averaged 54% of their time providing indirect patient care of which

32% was spent on documenting for both participant groups. Physicians spent roughly double the amount of time on education (15%) than that of the PA (7%); the PA spent slightly more time on direct patient care (18%) than the physicians (15%). No one category stood out more than any other in terms of distribution of tasks or time. Ultimately the PA was able to assume many duties of the physician making the concept of task transfer a viable one for this setting.

Sub-question 2

What hospitalists' tasks might be transferrable d to a PA?

Documented in the results of the qualitative interviews was favorable support for the task transfer concept from physician to PA. Recognized in the time-motion observations was a similar distribution of time in terms of the time the PA and physicians spent on various tasks. Considering the two findings, one can safely conclude that (conservatively) 50% of the physician's daily duties in a hospitalist role can be transferred from the physician to the PA (although researchers have observed considerably more in ambulatory care settings). Due to limited understanding and varying levels of PA acceptance within this hospital, it is suggested that more indirect care activities be transferred. The issue is centered on acceptance and understanding of the PA's role. This can happen if objective information is promulgated and perhaps further periods of observation undertaken.

Sub-question 3

What are the obstacles and benefits regarding use of a hospital PA?

Outlined in the findings from the qualitative interviews were obstacles regarding the use of PAs within the research site to include the lack of available PAs, acceptance

from the organization and physicians, patient acceptance, and limited experience. An additional barrier surrounded the lack of clarification regarding the nature of the PA's scope of practice. Hospital administrators and physicians both expressed concerns regarding what the scope of practice is for the PA. Although PAs scopes of practice are detailed in the U.S. Virgin Island licensure laws and within the organizations own Physician Assistant Scope of Practice, an uncertainty persisted as to what PA roles and abilities are or should be. While enablers were not investigated in detail, one potential enabler regarding the use of PAs at the organization is the ability to define the PA's role. It was mentioned that such clearly defined roles could be better communicated.

Workforce Shortage

The growing medical workforce shortage is a nationwide problem, as domestic medical school graduation rates are not keeping pace with population growth. This is compounded not only by an expanding populace but an aging one, sustainability of chronic diseases, and the demand for new technology (Sargen, Hooker, & Cooper, 2011). Nationally the number of visits per capita is also increasing and unprecedented large numbers of physicians are in retirement zones (AHA, 2004). Additional stress to the physician shortage includes the 2003 decision made by the Accreditation Council for Graduate Medical Education placing restrictions on resident duty hours (Moote, Krsek, Kleinpell, & Todd, 2011). In some areas, the lack of medical providers is limiting many hospitals in their ability to provide care (AHA, 2004). Projections from 2010 estimated physician shortages would be 125,000 by the year 2025 (Stuemky, 2013). Three added factors stress the projection: (a) a significant number of physicians are entering into retirement, (b) the rapidly expanding number of seniors creating a large demand upon the

health care system, and (c) the demand the proposed Patient Protection and Affordable Care Act will result in 30 million individuals adequately insured to enter into the system seeking care and services (Brown, 2013; Moote et al., 2011; Ritchie, 2013; Stuemky, 2013).

Complicating the workforce shortage crisis, hospitals in rural communities face other challenges such as shortage of beds, increased patient transfers due to lack of available clinical specialties or providers, and longer emergency room holds due to unavailable inpatient beds (Escarce & Kapur, 2009).

Hospital Employment

The dominant means of providing inpatient care and one of the fastest growing specialties in medicine is hospital-based care. The rapid growth is fueled by patients' pursuit of higher quality medical care, the decrease in residents, and the financial benefits of hospitalist based medical care (Hinami, Whelan, Miller, Wolosin & Wetterneck, 2012; Levy & Singh, 2013). "Nearly two thirds of hospitals across the nation are served by hospitalist providers" (Hinami et al., 2012, para. 1). Hospitalist programs are growing in popularity due to the increases in efficiency via reducing costs and length of stays (Fulton et al., 2011).

Because of the continued growth, hospital administrators need more medical staff to provide necessary care (Levy & Singh, 2013; "The Phoenix Group," 2008). The limited number of available hospitalists eliminates recruitment as the sole option for increasing staff numbers ("The Phoenix Group," 2008). Alternative initiatives include encouraging providers in other specialties to become hospitalists and allowing more foreign medical graduates to enter into the U.S. Health System ("The Phoenix Group,"

2008). Another viable solution requires hospital administrators to turn to PAs and NPs to fulfill the staffing needs (Dhuper & Choksi, 2009; "Integrating PAs and NPs," 2009; Levy & Singh, 2013; Moote et al., 2011).

In addition to supplementing the hospitalist workforce, PAs offer a solution to the potential for physician burnout and threats to physician morale, which may lead to turnover. In a 2012 study of 3,105 hospitalists across the nation offered, Hinami et al. (2012) found that hospitalist's value controlled over their personal time, however, their satisfaction with personal time was low.

Physician Assistants

Health administrators, alert to new and emerging labor sources have turned to the PA and NP to fill the role (Moote et al., 2011). With the addition of PAs to the staffing model, the hospital administrators are able to bridge the physician shortage gap (Ritchie, 2013; Stuemky, 2013). The option to utilize PAs is a more viable solution that will work in the short term as the PA profession is growing faster than that of the physician profession (Moote et al., 2011).

Physician assistants and NPs have been utilized since 1967 in health care settings and when utilized correctly "provide services traditionally performed by physicians" (Moote et al., 2011 p. 452). Physician assistants can practice in nearly any clinical setting and are capable of embracing the team based approach to hospital medicine which is beneficial to treating severely ill patients and complex medical conditions (Levy & Singh, 2013; Stuemky, 2013).

While challenges may exist in terms of adding the PA to the staffing model, a growing number of hospital based programs continue to add the PAs to their staffing

models as they are unsuccessful in recruiting board certified internal medicine physicians (Hospitalist Management, 2008; Jones & Cawley, 2009). According to the Society of Hospital Medicine (SHM) statistics, "16% of hospitalist groups now employ physician assistants" ("Consider midlevel providers," 2008, p. 6). Approximately 37% of the PAs who work in inpatient settings, reported functioning as a "hospitalist PA in 2006, up from 6% two years earlier" ("Consider midlevel providers," 2008, p. 6).

Increases in the utilization of hospital based PAs in ongoing but the literature is far from adequate. In addition, the work patterns of hospitalist providers across various practice models remain unknown (Fulton et al., 2011; Hinami et al., 2012). Finally, many workforce analysts rarely include PAs in provider counts, workforce projections, or recommendations (Morgan, Strand de Oliveira, & Short, 2011). This study was undertaken to assist with meeting the needs and making the case for the importance of including PAs in staffing models and workforce projections – especially in rural underserved areas

Summary of Findings

Emerging themes fell into three categories; (a) benefits and challenges of working with PAs, (b) role of PAs, and (c) acceptance of PAs. Within these categories the following themes were identified; PA roles, reduction of physician workload, and variable PA competency level. Subthemes that emerged included the impatient role of PAs, improved patient care, filling shortages, supervision of PAs, protocols for duty, and establishing a procedure for delegation of responsibilities. This section includes a presentation of the findings in light of the literature.

Stakeholder Perceptions of Physician Assistants

Understanding the perception each stakeholder group has of PAs is important to realize the barriers that must be removed in order to utilize the providers to the best of their capability and to yield the greatest return to the organization. The potential patient participants noted 60% of the time that they would prefer to be treated by a PA for a minor medical concern while 100% of the potential patient participants would prefer to be treated by a physician for a major medical concern, given the option. Potential patients felt they would be seen quicker than if they were to wait to be seen by a physician and would receive the same treatment from a PA as they would from a physician for minor concerns. The two main reasons cited for their choice to be treated by a physician for a major medical concern were based upon competency and education.

Half of the interviewed physicians noted that PAs had limited education and experience and concluded they require more one on one time with a supervising physician when they originally begin practicing. Interestingly, the PA participants noted one of their challenges in working with supervising physicians was their limited time to train and educate. Twenty-five percent of the time hospital administrators noted time that PAs were competent to provide the duties within their scope of practice as long as there is a supervising physician available.

Included in the 2011-2012 Association of American Medical Colleges Consumer Survey, 2,053 patient participants provided their perceptions of when they would be willing to seek their care from a PA (Ritchie, 2013). When asked, 50% of participants noted they preferred to seek a physician when looking for a new provider, while 23% indicated they would seek a PA or NP and 26% allowed they had no preference (Ritchie,

2013, para. 2). When asked what provider type they would seek when timeliness was the driving force, 60% of participants opted to see a PA or NP while 25% indicated they would wait to see a physician (Ritchie, 2013, para. 3). The results document timeliness of care as a determining factor when seeking care. Other findings from the study documented the patients' willingness to be seen by a PA for care if they had already been treated by one in the past and that patients are more open to the concept of care delivered by a PA or NP given the impending health care reforms (Ritchie, 2013).

In a 2009 study, researchers recorded what occurred when residents and attending physicians were replaced with PAs to analyze the care they provided and patient satisfaction rates (Dhuper & Choksi, 2009). Dhuper and Choksi (2009) wrote "PAs who worked with primary care physicians were well accepted by patients and providers and that they maintained or improved the quality of health care delivered in those practices in which they were employed" (p. 136).

Physicians who have had experience working alongside PAs in the academic setting had positive responses and feedback as noted in a 2009 study in which researchers examined the use of PAs as hospitalists in academic settings (Jones & Cawley, 2009). Physicians appreciated the continuity of care provided, as the provider is generally an employee of the facility (Jones & Cawley, 2009). Respondents shared positive feedback 91% the time when probed regarding the use of PAs in the hospitalist setting (Jones & Cawley, 2009). Similar results were obtained in the current study as physicians who had previously worked alongside PAs valued the relationship and appreciated their professional skill set.

Lack of Physician Acceptance

One of the problems within the Virgin Islands is the lack of PA acceptance by the physicians. This lack of acceptance is not new after almost a half century of utilization and was cited as an obstacle to adequate task transfer by 40% of hospital administrators and 30% of PAs when asked. When queried regarding the barriers, none of the physicians thought there was a lack of acceptance of the PAs as a barrier. Interestingly 50% of the physicians interviewed noted there were no barriers barring physicians from transferring tasks to the PA; however, 20% noted the lack of trust and 30% noted the lack of experience. In addition, physician's noted 60% of the time that transferring tasks to the PA would free up their time allowing them to concentrate on more complex cases and providing direct patient care.

Although adding a PA to the staffing model may appear to be a viable solution to address workforce shortages physician acceptance of PAs remained a controversy among some. The reluctance has been cited elsewhere including PAs in the staffing mix and concerns over patient safety and discrepancies in education as barriers (Ritchie, 2013). Results from the current study uncovered the same perceptions amongst the physicians, patients and some of the hospital administrators. While 50% noted there were no barriers, the remaining 50% cited there were barriers to transfer including lack of education. In a study conducted by the Bantam Group, researchers allowed that 66% of physicians felt a hospitalist certification credential would be valuable for PAs (Stuemky, 2013). The researchers concluded that PAs who obtain and maintain this credential might be more appealing to the physicians who once felt unsure of their abilities (Stuemky, 2013).

Physician unfamiliarity with PAs' roles and responsibilities remains a significant obstacle to PAs' effective deployment in the hospital setting ("Integrating PAs and NPs," 2009). Obtaining physician buy-in and acceptance prior to incorporating these providers in the staffing model will reduce misunderstandings regarding their roles within the organization ("Consider midlevel providers," 2008). Consideration should also be given to the potential for the physician to feel as though they are being pushed out of the health care system as cost containment is of utmost importance for policy makers and administrators. In a 2012 survey, participants noted that 92% of physicians were "unsure where the health system will be or how they will fit into it three to five years from now" ("Physicians Foundation," 2012). Their lack of assurance that they will remain a critical component in the future of health care may be the very reason they are unwilling to accept the PA concept.

Task Transfer

All participant groups unanimously agreed that there are tasks eligible for transfer from the physician to the PA. When queried as to the tasks that could be transferred, those of admissions (9%), rounding (14%), and documentation (24%) were cited most often. Time-motion data documented the majority of the hospital based PAs activities were indirect patient care (54% of the time). This non-face-to-face activity includes documentation, writing orders, communication and reviewing results. Similarly, physicians spend approximately 54% of their time on the same or similar indirect patient care activities. PAs spend 46% of their time divided on personal time (8%), education (7%), and miscellaneous tasks (12%). The remaining one-fifth (18%) of the PA's time was spent on direct patient care.

Indicated in the results was that PAs were already spending the majority of their time in the areas that were cited by stakeholders as potential areas for task transfer. Three decades ago Johnson and colleagues at Kaiser Permanente (Johnson, Freeborn, & McCally, 1985) cited the same misunderstanding by physicians of what PAs could do or were doing. They noted this observation as far back as 1980. This raises the question as to whether additional tasks can be transferred from the physician to the PA freeing up more of their time to provide direct patient care because what is perceived differs from what is reality. Along the line, one potential patient participant specifically noted, "Relieve some of the patient load of more highly trained physicians whose attention may be needed in more complex cases" (PP-5). The response was of particular interest as the focus of the study was the impact physician assistants had in small rural hospitals and the participant's response was focused on allowing the specialist physician more time on critical patients while the PA focused on the less acute patient needs.

If both the PA and physician participants are spending equal amounts of time on the same thing then theoretically there should be no barriers to transferring more duties to the PA. Transferring similar or like duties to the PA would relieve a large portion of time the physician previously spent on indirect patient care activities and allow the physician to expand the amount of time spent on providing direct patient care and complex cases. Findings from the current study indicate that both direct and indirect patient care activities can be transferred from the physician to the PA.

Task transfer, skill mix and role substitution concepts are being explored by policy makers worldwide to address the worsening physician workforce shortage (Morgan et al., 2011). Physician assistants are an integral part of the health care team

and become the right hands of the physicians they work alongside (Stuemky, 2013). Physician assistants are capable of performing varied functions within the organization including writing prescriptions and discharge summaries, general admissions, rounding and histories and physicals ("Consider midlevel providers," 2008; Stuemky, 2013). Although PA hospital experience has not been delineated to any extent, those PAs who do practice in hospital environments often perform duties that substantially overlap with those of the physician (Morgan et al., 2011). Morgan et al.'s findings were substantiated by the results of the current study.

The addition of the PA to the hospitalist team yields great benefits for all stakeholders including increased efficiency, increased patient satisfaction, access to care that may have otherwise been inaccessible, increased revenues, and allowance for more flexibility in their physician counterpart schedules (Stuemky, 2013). A 2011 study of 74 academic centers noted significant opportunities for improvement in PA utilization (Moote et al., 2011). Favorable patient outcomes are noted when PAs are included in hospitalist teams with roles which may include chart documentation, discharge summaries, and creating follow-up plans (Jones & Cawley, 2009).

Physician Assistants Shortages

In this small island study, the lack of PAs was cited by 50% of hospital administrators and 30% of physician participants as a barrier to task transfer. The challenges offered by hospital administrators for obtaining PAs included the ability to recruit and retain PAs (42%) and the acceptance of the position within the staffing model (33%).

At the same time, 40% of PAs interviewed noted that they provide cost effective staffing solutions. One PA commented, "PAs cost roughly half of what physicians cost. In rural settings it is often difficult to recruit physicians" (PA-10). Complicating the already identified shortage of PAs is the financial situation the organization is facing. A hospital administrator noted, "Our facility [VI] is facing a lot of financial challenges so the biggest challenge would be financially based as we most likely can't afford them" (HA-3). Additional barriers towards the lack of availability is due to the lower than market rate salaries offered by the Virgin Islands and the difficulty of recruitment as the PA professional is in high demand.

In 2013, the number of actively licensed PAs was 84,000 spread over 56 US jurisdictions, which was undergoing a rapid expansion (Hooker & Muchow, 2014). However, the majority of PAs practicing are in private practice settings (Cawley & Hooker 2013). A projected 39% increase in PA jobs is expected between 2008 and 2018; however, again the majority of the positions are in private practice settings (Stuemky, 2012). The rapid decline in physician availability will persist regardless of the increasing numbers of PAs; however, their inclusion in the staffing model will help to alleviate the crisis (Moote et al., 2011). Rural areas already plagued by staffing shortages will face even greater shortages than their urban counterparts (Brown, 2013).

Role of the Physician Assistant

The role of the PA remains an area of uncertainty in this hospital environment. Hospital administrators noted 17% of the time the challenge of working with PAs was due to the lack of understanding of the PAs' role and responsibilities. Physician assistants shared the same concern and noted 60% of the time that their role was not

understood or unknown within the organization by their supervising physician. This, in their minds, resulted in underutilization. None of the physician participants admitted to a lack of understanding of the PA's role; however, 33% of hospital administrators and 40% of PA participants noted the lack of physician acceptance of the PA as the prime reason why a barrier to task transfers remains. Although physicians indicated they were aware of what PAs roles were, they remained reluctant to transfer tasks to them.

Physician assistants are a helpful addition to the medical staff granted their roles and duties are clearly delineated in the organizations by-laws and credentialing process ("Consider midlevel providers," 2008). Licensing regulations within the Virgin Islands Medical Practice Act clearly delineate the role of the PA. Additionally, the internal PA policy and scope of practice delineated by the hospital administrators further refine and delineate the tasks the PA is eligible to perform. Regardless of the guidelines and policies, suggested in the results of the study was that confusion or uncertainty over the PAs role persists.

A challenge noted by other hospitalist programs is the lack of definition regarding the PAs scope of practice ("Consider midlevel providers," 2008; "Integrating PAs and NPs," 2009). In addition to the PAs' scope of practice, administrators are encouraged to develop clear guidelines providing the extent and depth of supervision required for the supervising physician to ensure PAs receive consistent and meaningful direction (Glazier, 2012; Stuemky, 2013).

Finally, administrators and supervising physicians are encouraged to seek PAs who possess the clinical experience and skill set experience necessary to perform their duties, understanding that the PA with less experience will require more education and

initial supervision (Stuemky, 2013). Administrators must fully understand state practice regulations in order to develop sound job descriptions and to ensure the PA is utilized appropriately (Stuemky, 2013). Orientation programs should be tailored to the organization and clinical practice documenting the roles of both the PA and their physician counterparts (Stuemky, 2013). Finally, administrators and physician counterparts should introduce the PA to patients as a colleague emphasizing trust and confidence (Stuemky, 2013).

Provision of Care

Shown in the analysis of the results from the self-report survey was that each provider felt they spent approximately half of their day on direct patient care. According to the time-motion data, the percentage of time spent on direct patient care for both providers was less than 20%.

Both providers believed they spent approximately 33% more of their workdays on direct patient care than the actual observations displayed. The three physicians observed spent 55% of their workday on indirect patient care with the majority of their time spent on documentation. Likewise, the PA observed spent more than half (54%) of the workday on indirect patient care with the majority of this time spent on documentation.

An apparent disconnect is noted between what the physician thinks they can handoff and what the PAs believe they can take on. Researchers in a 2012 study of 400 PAs from both rural and urban geography found that rural PAs reported "broader scopes of practice, more autonomy, and less access to physician supervision than urban PAs" (Sawyer & Ginde, 2012).

Direct patient care allows physicians to build relationships and become familiar with the patient, their condition, and their needs. The results from the current study included that roughly 45% of the physician's time was spent on providing direct patient care reducing the ability to build the relationships. Patient relationships was as the most satisfying part of the physicians job according to 80% of the 13,575 physicians who participated in a 2012 survey seeking information regarding physician practice patterns and perspectives ("Physicians Foundation," 2012). Taking the finding into consideration and reviewing the results from this study should encourage more physicians and hospital administrators to entertain the concept of task shifting certain duties to a PA.

Limitations of the Study

No study is without limitations and this study is no exception. The number of stakeholders participating in the study was small, albeit the setting was a small rural hospital on a small island in the Caribbean Ocean. Many efforts to enroll a larger sample size of stakeholders were met with resistance and further challenges are attributed to lack of political and leadership support. Several physicians and hospital administrators did not want to participate due to the current conflict within the hospital surrounding PAs and their scope of practice.

Another limitation is the *n of one* – problematic in all case reports. The n of one concept is a standard in case report documentation but also problematic on an island with only one hospital that holds the only clinic. In the study presented here, only one PA was observed, although 10 PAs participated in the interview. Physician assistants in other locations engage in more direct patient care and by all accounts are utilized more fully than the one PA observed in this study. Because of the small *n*, this researcher was not

able to draw a correlation between what the physicians and PAs did, and what they think they could do.

Implications and Policy Analysis

Healthcare administrators, physician leaders, and policy makers have the opportunity to transform the delivery of health care in rural inpatient settings. Coupled with the decrease in the available physician workforce and the impending increase in health care consumers, stakeholders have the occasion to re-evaluate the traditional delivery of health care and implement settings and environments to support the rural patient population (Dall et al., 2013).

Prior to the undertaking, few studies involved hospital based labor activities of PAs in rural settings (much less islands). Although the case study was specific to a small rural hospital in the Virgin Islands, the results may have implications for other isolated and remote hospitals. Shown in the results was that PAs provided higher levels of care than their supervising physicians thought they did, there was a need for increased acceptance of PAs, recruitment and retention of PAs in rural settings was critical, and PAs were and will continue to be the caregivers in rural inpatient settings in the future.

A number of implications came from the study. The leading one is the need to understand more about the concept of task transfer within the health care setting. Other important implications are perceptions and misperceptions of physicians and patients about PAs. In the end there is a compelling need to clarify their roles within the inpatient health care setting and the need for improved PA utilization policy within the Virgin Islands.

Task Transfer

Based on the study's findings, PAs appear to undertake similar tasks as physicians in the hospital setting. However, the PAs are perceived to do less by their supervising physicians than they are already doing – an observation over 35 years old. The results of the study support seminal findings showing PAs do similar if not the same labor activities as their supervising physician counterparts for the most part (Record, 1981). Task transfer is one example of how the workforce in rural health care settings can be improved (Anderson & Hampton, 1999). The findings from the study maintain the Division of Labor theoretical framework as referenced by theorists Marx and Smith who outlined in the theory the concept of productivity and overspecialization of work leading to unsatisfied employees (Goodacre, 2010).

One method of implementation of the common labor technique is the assignment of roles and responsibilities and then a periodic review how the activity is performed. The lack of role delineation in rural inpatient settings may contribute to the mixed perceptions of PAs, their competency, and the ability to deliver care. Due to the ongoing decline in physicians in rural settings, the implementation of the task transfer technique would provide physicians with the opportunity to provide more direct patient care and focus on the critical patients while the lower acuity patients can be treated and managed by the PA with the physician's guidance. The transfer of tasks would make good use of each provider's available time and expertise.

Perception

The findings reiterate those from the early 1980s showing that what the physician perceives the PAs are doing remains different from what they are actually doing (Johnson

et al., 1985). Perceptions were found to be limited regarding the awareness on the value physician assistants add to the organization. Stakeholder awareness of the PA's value and purpose within the organization and more specifically within the inpatient setting is needed immediately to ensure they are providing the most value to the organization.

Rural organizational leaders face hardships in delivering care as the number of physicians available for rural practice continues to decline. The physicians who remain are unable to deliver the quality and amount of care necessary to maintain the health of the population. Rural organizations may find it even harder to provide care when the current labor pools are overworked and understaffed (Perlino, 2006).

Findings from this study support social acceptance theories as the PA profession continues to struggle with acceptance from supervising physicians. On the other hand, the findings from this study conflict with Legler et al. (2007) showing that PAs are widely accepted after years of scrutiny.

Management

Management generally supports the need for recruitment and retention of PAs in rural inpatient settings and the need for advances in social cognitive theories, which support the concept that new techniques and behaviors are learned via observation and replication (Bandura, 1986). Informing hospital administrators of the PAs' abilities and actual functions may pave the way for increased utilization of PAs in workforce staffing models especially where a lack of physicians exists. To achieve an optimal state of organizational efficiency and to ensure the delivery of safe care, hospital administrators need optimal staffing levels. Obtaining these levels requires active recruitment followed by retention measures to ensure providers remain on staff.

The intent of the Affordable Care Act was to improve Medicaid reimbursement for rural hospitals so they have reliable revenue streams. Physician assistants occupy rural hospitals and clinics at greater levels than they do in urban settings requiring them to treat more chronic diseases, which are otherwise treated by physicians. Because of the study, the implication is that PAs may be more amenable to going to these places and may provide staffing relief in these areas, as they would have more freedom to practice than they would in traditional urban settings. The financial implications of hiring PAs are less than those of hiring physicians are. Rural facilities can capitalize on the increase in revenue streams if they are able to provide care in a cost effective manner. Findings from the study support the theory of division of labor that increasing staffing ratios to patients at optimal levels can improve outcomes and efficiencies not generally recognized when staffing is scarce.

Policy Legislation

Identified in the results of the study were gaps in Virgin Islands legislation regarding the scope of practice for PAs and indicated a need for re-assessment of the legislation in the U.S. Virgin Island regarding PAs. A gap analysis is recommended to identify the approved labor activities outlined per the scope of practice versus the actual labor activities being performed by the PAs. The re-evaluation is supported as the data, suggested that PAs are providing more services than the majority of the stakeholders think they are doing.

The largest gap in the Virgin Islands PA Act is the need for prescriptive privileges. Currently in the Virgin Islands, enabling and reimbursement legislation exist but none for prescribing. In contrast with the 50 U.S. states where PAs have prescriptive

privileges, the U.S. Virgin Island legislation appears more conservative than it needs to be.

Recommendations for health care administrators, physician leaders, and policy makers have the opportunity to transform the delivery of health care in rural inpatient settings were drawn directly from the qualitative case study's results. However, with little literature pertaining to the use of PAs in rural hospital settings, there are additional recommendations for further research. The recommendations are provided in the next section.

Recommendations for Hospital Administrators

The study consisted of a sample of 42 participants: 10 physicians, 10 PAs, 12 potential patients, and 10 hospital administrators, who shared their perceptions and experiences regarding how PAs were used, how the PAs were accepted, and how the PA's usage impacted the medical workforce shortage. Implicated in the results from the study was the need for education amongst the participating stakeholder groups. Education for the different stakeholder groups is recommended to broaden their understanding of PAs, their value, and their roles within the organization. Shown in the results were mixed feelings from each provider group regarding barriers to transfer, roles within the organization, and the value PAs had in the health care organization. A better understanding of the PA profession may yield more acceptance and utilization amongst the stakeholder groups.

Recruiting PAs to any organization results in an increase of productivity at a lower cost ("Consider midlevel providers," 2008). Retaining the providers is just as important as recruiting them is. Physicians should offer and be expected to educate and

respect the PA providers. Embracing them as a part of the health care team and care-giving environment is another morale enhancing strategy ultimately leading to employee retention ("Consider midlevel providers," 2008).

Finally, documented in the findings from the study was an overlapping labor activity for the PA and the supervising physicians. Based upon the finding, it is recommended that rural hospital leaders engage in task shifting from the physician to the PA to alleviate workforce shortages and improving access to care.

Recommendations for Future Research

Future research is recommended to further understand the roles of hospital based PAs in small rural hospitals. The research requires a larger sample of hospital based PAs and a more in-depth study of their labor activities. The intent is to understand where the efficiencies lie in their employment, what are the divisions of labor are, and where the maximum economy of scale resides. Such research is recommended using the quantitative method so a statistical analysis of data can provide a more comprehensive look at the daily labor activities of hospital based PAs compared to their supervising physicians. A quantitative study is also recommended for new insights and information on the diverse roles hospital based PAs play within the organization.

Data gathered in the study indicated physicians were aware of the PAs roles; however, the physicians remain reluctant to transfer tasks to them. Research geared towards understanding physician reluctance towards PAs in terms of task allocation and their ability to perform certain tasks is warranted. Such research is recommended using a qualitative method as the method provides greater depth and detail allowing the

researcher to probe further and obtain more information related to their reluctance to task transfer.

Chapter Summary

Chapter 5 concludes the study with implications, recommendations, and recommendations for future research. The qualitative exploratory case study involved the perceptions and experiences of physicians, PAs, potential patients, and hospital administrators. All participants shared their perceptions and experiences regarding how PAs were used, how the PAs were accepted, and how the PA's usage impacted the medical workforce shortage. Themes and patterns were revealed regarding the perceptions of PAs, the daily labor activities of PAs, the benefits of PAs, as the lack of PAs in the Virgin Islands. Relevant literature was introduced and examined concerning PAs, task transfer, medical workforce shortages, and the Virgin Islands. The results added to the literature on hospital based PAs in small rural hospitals and medical workforce shortages. The qualitative exploratory case study may help hospital administrators and physicians identify the value of PAs and seek to incorporate them into their staffing models in an effort to reduce barriers to care in rural areas and freeing up the physicians time to focus on more critical patient needs.

References

Abrass, C. K., Ballweg, R., Gilshannon, M., & Coombs, J. B. (2001). A process for reducing workload and enhancing residents' education at an academic medical center. *Academic Medicine, 76*, 798-805. doi:10.1097/-00001888-200108000-00009

Association of American Medical Colleges (AAMC). (2010). *Physician Shortages to Worsen Without Increases in Residency Training*. Retrieved from https://www.aamc.org/download/150584/data/physician_shortages_factsheet.pdf

Agency for Healthcare Research and Quality. (2011). The number of nurse practitioners and physician assistants practicing primary care in the United States: *Primary care workforce facts and stats No. 2.* Retrieved from http://www.ahrq.gov/research/pcwork2.htm

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179-211. doi:10.1016/0749-5978(91)90020-T

Allen, D., & Pilnick, A. (2005). Making connections: Health care as a case study in the social organization of work. *Sociology of Health & Illness, 27*, 683-700. doi:10.1111/j.1467-9566.2005.00469.x

American Academy of Nurse Practitioners (AANP). (2012). *About us*. Retrieved from http://www.aanpcertification.org/ptistore/control/index

American Board of Medical Specialties (ABMS). (2012). *About board certification*. Retrieved from http://www.abms.org/About_Board_Certification/means.aspx

American Hospital Association (AHA). (2004). Addressing the workforce shortage. *AHA News, 40*(10), 5. Retrieved from http://www.ahanews.com

American Hospital Association (AHA). (2014). *Fast Facts on US Hospitals.* [Fact sheet]. Retrieved from http://www.aha.org/research/rc/stat-studies/fast-facts.shtml

American Midwifery Certification Board. (2012). *About us*. Retrieved from http://www.amcbmidwife.org/c/104/about-us

Anderson, D. M., & Hampton, M. B. (1999). Physician assistants and nurse practitioners: Rural-urban settings and reimbursement for services. *The Journal of Rural Health, 15*, 252-263. doi:10.1111/j.1748-0361.1999.tb00746.x

Antonelli, M. (2008). Medical licensure in the United States: Past, present, and future. *Hawaii Medical Journal, 67*(6), 162-163. Retrieved from http://www.hmaonline.net

Arain, M., Campbell, M. J., Cooper, C. L., & Lancaster, G. A. (2010). What is a pilot or feasibility study? A review of current practice and editorial policy. *BioMed Central Medical Research Methodology*, *10,* 1067-1073. doi:10.1186/1471-2288-10-67

Areej, J., & Rabia, J. (2013). Eliciting time motion study with involved pharmacist interventions in an emergency department of a tertiary care hospital. *Journal of Medical Sciences, 13*(7), 555-562. doi:10.3923/jms.2013.555.562

Ballermann, M., Shaw, N., Mayes, D., Gibney, R., & Westbrook, J. (2011). Validation of the Work Observation Method by Activity Timing (WOMBAT) method of conducting time-motion observations in critical care settings: An observational study. *BioMed Central Medical Informatics and Decision Making, 11*(3), 2-12. doi:10.1186/1472-6947-11-32

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall

Barrett, J. (2007). The researcher as instrument: Learning to conduct qualitative research through analyzing and interpreting a choral rehearsal. *Music Education Research, 9*, 417-433. doi:10.1080/14613800701587795

Bender, E. (2012). Severe shortage of physicians expected by end of decade. *Psychiatric News, 47*(21), 1-1, 28. Retrieved from http://www.psychnews.org

Bickman, L., & Rob, D. J. (Eds.) (2009). *The Sage handbook of applied social research methods* (2nd ed.). Thousand Oaks, CA: Sage.

Bohm, E. R., Dunbar, M., Pitman, D., Rhule, C., & Araneta, J. (2010). Experience with physician assistants in a Canadian arthroplasty program. *Canadian Journal of Surgery, 53*, 103-108. Retrieved from http://canjsurg.ca/

Braddock, I. H., & Snyder, L. (2005). The doctor will see you shortly: The ethical significance of time for the patient-physician relationship. *Journal of General Internal Medicine*, *20*, 1057-1062. doi:10.1111/j.1525-1497.2005.0217.x

Bratt, J. H., Foreit, J., Chen, P., West, C., Janowitz, B., & De Vargas, T. (1999). A comparison of four approaches for measuring clinician time use. *Health Policy and Planning, 14*, 374-381. doi:10.1093/heapol/14.4.374

Braun, V., & Clarke, V. (2006). Using the maticanalysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. doi:10.1191/1478088706qp063oa

Brodie, B. (1991). Watchful care: A history of America's nurse anesthetists. [Review of the book *Watchful care: A history of America's nurse anesthetists,* by M. Bankert]. *Journal of American History, 78*, 358. doi:10.2307/2078198

Brown, J. (2013). United States faces physician shortage in near future. *Managed Healthcare Executive, 23*(1), 32-33. Retrieved from http://managedhealthcareexecutive.modernmedicine.com/

Brugna, R. (2006). The physician assistant role in geriatric medicine and rehabilitation. *Physical & Occupational Therapy in Geriatrics, 25*(2), 67-76. doi:10.1300/J148v25n02_05

Budzi, D., Lurie, S., Singh, K., & Hooker, R. (2010). Veterans' perceptions of care by nurse practitioners, physician assistants, and physicians: A comparison from satisfaction surveys. *Journal of the American Academy of Nurse Practitioners, 22*, 170-176. doi:10.1111/j.1745-7599.2010.00489.x

Burgess, S. E., Pruitt, R. H., Maybee, P., Metz, A. E., & Leuner, J. (2003). Rural and urban physicians' perceptions regarding the role and practice of the nurse practitioner, physician assistant, and certified nurse midwife. *The Journal of Rural Health, 19*, 321-328. doi:10.1111/j.1748-0361.2003.tb00648.x

Cassel, J., Webb-Wright, J., Holmes, J., Lyckholm, L., & Smith, T. (2010). Clinical and financial impact of a palliative care program at a small rural hospital. *Journal of Palliative Medicine, 13*, 1339-1343. doi:10.1089/jpm.2010.0155

Cawley, J. F. (2007a). Physician assistant education: An abbreviated history. *Journal of Physician Assistant Education, 18*(3), 6-15. Retrieved from http://paeaonline.org

Cawley, J. F. (2007b). Physician assistant education: Challenges to physician assistant education. *Journal of Physician Assistant Education, 18*(4), 7-8. Retrieved from http://paeaonline.org

Cawley, J. F. (2008). Physician assistants and Title VII support. *Academic Medicine, 83*, 1049-1056. doi:10.1097/ACM.0b013e3181890533

Cawley, J. F., & Hooker, R. (2003). Physician assistants: Does the US experience have anything to offer other countries? *Journal of Health Services Research & Policy, 8*(2), 65-67. doi:10.1258/135581903321466012

Cepeda, G., & Martin, D. (2005). A review of case studies publishing in management decision: Guides and criteria for achieving quality in qualitative research. *Management Decision, 43*, 851-876. doi:10.1108/00251740510603600

Chiyarth, H. T. (2006). Who serves the underserved? Predictors of physician care to medically indigent patients. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine, 10*, 259–282. doi:10.1177/1363459306064477

College of Family Physicians of Canada, The. (2011). *Position Statement: Physician Assistants.* [Policy paper] Retrieved from http://www.cfpc.ca/ProjectAssets/Templates/Resource.aspx?id=3309

Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research, 12*, 229-238. doi:10.1023/A:1023254226592

Colwill, J. M., Cultice, J. M., & Kruse, R. L. (2008). Will generalist physician supply meet demands of an increasing and aging population? *Health Affairs, 27*, 232-241. doi:10.1377/hlthaff.27.3.w232

Consider midlevel providers to ease understaffing pains. (2008, February). *Hospitalist Management Advisor, 4*(2), 1-12. HCPro, Inc. Retrieved from http://www.hcpro.com/content/204228.pdf

Cooper, D. R., & Schindler, P. S. (2011). *Business research methods* (11th ed.). New York, NY: McGraw-Hill.

Cooper, R. A. (2007). New direction for nurse practitioners and physician assistants in the era of physician shortages. *Academic Medicine, 82*, 827-828. doi:10.1097/ACM.0b013e31812f7939

Creswell, J. W. (2008). *Educational research*: *Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson.

Critical Care Workforce Partnership. (2001). *The aging of the U.S. population and increased need for critical care services.* Retrieved from http://www.aacn.org/wd/practice/docs/publicpolicy/critical_care_workforce_position_statement.pdf

Dall, T. M., Gallo, P. D., Chakrabarti, R., West, T., Semilla, A. P., & Storm, M. V. (2013). An aging population and growing disease burden will require a large and specialized health care workforce by 2025. *Health Affairs, 32*, 2013-2020.doi:10.1377/hlthaff.2013.0714

Daniels, M. R., & Regens, J. L. (1980). Physician assistants as health care delivery mechanism: Incidence and correlates of state authorization. *Policy Studies Journal, 9*, 242-250. doi:10.1111/1541-0072.ep11817172

Daniels, Z. M., VanLeit, B. J., Skipper, B. J., Sanders, M. L., & Rhyne, R. L. (2007). Factors in recruiting and retaining health professionals for rural practice. *The Journal of Rural Health, 23*, 62-71. doi:10.1111/j.1748-0361.2006.00069.x

Denzin, N. K., & Lincoln, Y. S. (2011). *The Sage handbook of qualitative research* (4th ed.). Thousand Oaks, CA: Sage.

Dhuper, S., & Choksi, S. (2009). Replacing academic internal medicine residency program with a physician assistant – Hospitalist model: A comparative analysis study. *American Journal of Medical Quality*, *24*, 132-139. doi:10.1177/1062860608329646

Doan, Q., Sabhaney, V., Kissoon, N., Sheps, S., & Singer, J. (2011). A systematic review: The role and impact of the physician assistant in the emergency department. *Emergency Medicine Australia, 23*, 7-15. doi:10.1111/j.1742-6723.2010.01368.x

Donelan, K., Buerhaus, P., DesRoches, C., Dittus, R., & Dutwin, D. (2008). Public perceptions of nursing careers: The influence of the media and nursing shortages. *Nursing Economic$, 26*, 143-165. Retrieved from http://www.nursingecoomics.net

Dookhan, I. (2004). *History of the Virgin Islands*. Kingston, Jamaica: Stephensons Litho Press.

Druss, B., Marcus, S., Olfson, M., Tanielian, T., & Pincus, H. (2003). Trends in care by nonphysician clinicians in the United States. *New England Journal of Medicine*, *348*, 130-137. doi:10.1056/NEJMsa020993

Duckett, S. J. (2005). Health workforce design for the 21st century. *Australian Health Review, 29*, 201-210. doi:0.1071/AH050201

Eastaugh, S. R. (2010). Hospital productivity and information technology. *Journal of Health Care Finance, 36*(4), 27-37. Retrieved from http://www.healthfinancejournal.com

Ellis, S. (2012a, February 10). JLH financial troubles worsen. The St. Croix Avis, p. 3.

Emrich, A. B. (2005). Physician shortage projected in 2020. *Grand Rapids Business Journal, 23*(41), B3. Retrieved from http://www.grbj.com

Escarce, J. J., & Kapur, K. (2009). Do patients bypass rural hospitals? Determinants of inpatient hospital choice in rural California. *Journal of Health Care for the Poor and Underserved, 20*, 625-644. doi:10.1353/hpu.0.0178

Everett, G., Uddin, N., & Rudloff, B. (2007). Comparison of hospital costs and length of stay for community internists, hospitalists, and academicians. *Journal of General Internal Medicine*, *22*, 662-667. doi:10.1007/s11606-007-0148-x

Exline, J. (2004). CEO's perceptions of hospitalists: Diffusion of the strategy. *Hospital Topics*, *82*(1), 18. doi:10.3200/HTPS.82.1.18-24

Ferraro, K. F., & Southerland, T. (1989). Domains of medical practice: Physicians' assessment of the role of physician extenders. *Journal of Health and Social Behavior, 30*(2), 192-205. Retrieved from http://www.sagepub.com

Fine, I. (2007, October 15). Physician shortage impending in U.S. *Ophthalmology Times,* p. 4. Retrieved from http://www.ophthalmologytimes.modernmedicine.com

Fischer, C. T. (2009). Bracketing in qualitative research: Conceptual and practical matters. *Psychotherapy Research, 19*, 583-590. doi:10.1080/10503300902798375

Francis, G. (2011). *What is Medicaid?* Retrieved from http://ltg.gov.vi/what-is-medicaid.html

Frankel, R., Naslund, D., & Bolumole, Y. (2005). The white space of logistics research: A look at the role of methods usage. *Journal of Business Logistics, 26*, 185-208. doi:10.1002/j.2158-1592.2005.tb00211.x

Friedman, E. (2008). The uncertain future of primary care. *Trustee Magazine*, *61*(9), 12. Retrieved from http:www.trusteemag.com

Fulton, B., Scheffler, R., Sparkes, S., Auh, E., Vujicic, M., & Soucat, A. (2011). Health workforce skill mix and task shifting in low income countries: A review of recent evidence. *Human Resources for Health, 9*(1), 1. doi:10.1186/1478-4491-9-1

Gelo, O., Braakmann, D., & Benetka, G. (2008). Quantitative and qualitative research: Beyond the debate. *Integrative Psychological & Behavioral Science, 42*, 266-290. doi:10.1007/s12124-008-9078-3

Geryane, M., Hanna, G., & Cuschieri, A. (2004). Time-motion analysis of operation theater time use during laparoscopic cholecystectomy by surgical specialist residents. *Surgical Endoscopy, 18*, 1597-1600. doi:10.1007/s00464-003-8210-1

Glazier, J. J. (2012). The case for the physician assistant. *Clinical Medicine, 12*, 494-495. doi:10.7861/clinmedicine.12-5-494a

Goodacre, H. (2010). Technological progress and economic analysis from Petty to Smith. *European Journal of the History of Economic Thought, 17*, 1149-1168. doi:10.1080/09672567.2010.522240

Gorman, M. (2011). Supporting medical staff and patients in a new era. *Physician Executive, 37*(5), 40-43. Retrieved from http://www.icumedicine.com/pdfs/supporting_medical_staff.pdf

Green, L. V., Savin, S., & Lu, Y. (2013). Primary care physician shortages could be eliminated through use of teams, nonphysicians, and electronic communication. *Health Affairs, 32*(1), 11-9. doi:10.1377/hlthaff.2012.1086

Grumbach, K., Hart, L., Mertz, E., Coffman, J., & Palazzo, L. (2003). Who is caring for the underserved? A comparison of primary care physicians and nonphysician clinicians in California and Washington. *Annals of Family Medicine, 1*, 97-104. doi:10.1370/afm.49

Grzybicki, D. M., Sullivan, P. J., Oppy, M., Bethke, A. M., & Raab, S. S. (2002). The economic benefit for family/general medicine practices employing physician assistants. *The American Journal of Managed Care, 8*, 613-620. Retrieved from http://www.ajmc.com

Guarte, J., & Barrios, E. (2006). Estimation under purposive sampling. *Communications in Statistics: Simulation & Computation, 35*, 277-284. doi:10.1080/03610910600591610

Guttman, C. (2006). Physician extenders an asset: Be aware of liability issues. *Dermatology Times, 27*(8), 38. Retrieved from http://www.dermatologytimes.modernmedicine.com

Hamilton, G. M., & Decloe, M. D. (2011). Reviewing the evidence for Canada's physician assistant initiative. *University of Toronto Medical Journal, 88*(2), 88-90. Retrieved from http://utmj.org/utmjupload/journals/2/articles/1335/public/1335-1893-1-PB.pdf

Hart, L. G., Larson, E. H., & Lishner, D. M. (2005). Rural definitions for health policy and research. *American Journal of Public Health, 95*, 1149-1155. doi:10.2105/AJPH.2004.042432

Hendrich, A., Chow, M., Skierczynski, B. A., & Lu, Z. (2008). A 36-hospital time and motion study: How do medical-surgical nurses spend their time? *The Permanente*

Journal, 12(3), 25-34. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037121/

Henry, L., & Hooker, R. (2008). Autonomous physician assistants in remote locations: Perspectives from the communities they serve. *Journal of Physician Assistant Education*, *19*(1), 34-37. Retrieved from http://www.paeaonline.org/index.php?ht=action/GetDocumentAction/i/25192

Henry, L., Hooker, R., & Yates, K. (2011). The role of physician assistants in rural health care: A systematic review of the literature. *The Journal of Rural Health, 27*, 220-229. doi:10.1111/j.1748-0361.2010.00325.x

Hinami, K., Whelan, C., Miller, J., Wolosin, R., & Wetterneck, T. (2012). Job characteristics, satisfaction, and burnout across hospitalist practice models. *Journal of Hospital Medicine*, *7*, 402-410. doi:10.1002/jhm.1907

Hinkel, J. M., Vandergrift, J. L., Perkel, S. J., Waldinger, M. B., Levy, W., & Stewart, F. M. (2010). Practice and productivity of physician assistants and nurse practitioners in outpatient oncology clinics at National Comprehensive Cancer Network institutions. *Journal of Oncology Practice, 6*, 182-187. doi:10.1200/JOP.777001

Hongoro, C., & McPake, B. (2004). Series: How to bridge the gap in human resources for health. *The Lancet*, *364,* 1451-1456. doi:10.1016/S0140-6736(04)17229-2

Hooker, R. S. (2006). Physician assistants and nurse practitioners: The United States experience. *The Medical Journal of Australia, 185*(1), 4-7. Retrieved from http://www.mja.com.au

Hooker, R. S., Cawley, J. F., & Asprey, D. P. (2010). *Physician assistants: Policy and practice* (3rd ed.). Philadelphia, PA: F. A. Davis.

Hooker, R. S., Kuilman, V. L., & Groningen, S. (2011). Physician assistant education: Five countries. *The Journal of Physician Assistant Education, 22*(1), 53-58. Retrieved from http://www.paeaonline.org

Hooker, R.S. & Muchow, A. N. (2014). The 2013 census of licensed physician assistants. *Journal of American Academy of Physician Assistants, 27(7),* 35-39. doi:10.1097/01.JAA.0000450807.90835.49

Howell, E.E., Bessman, E.S., & Rubin, H.R. (2004). Hospitalists and an Innovative Emergency Department Admission Process. *Journal of General Internal Medicine, 19,* 266-268. doi.10.1111/j.1525-1497.2004.30431.x

Hutchinson, L., Marks, T., & Pittilo, M. (2001). The physician assistant: Would the US model meet the needs of the NHS? *British Medical Journal, 323*, 1244-1247. doi:10.1136/bmj.323.7323.1244

Itani, K.M.F., Hoballah, J., Kaafarani, H., Crisostomo, A.C., & Michelassi,F. (2011). Could international medical graduates offer a solution to the surgical workforce crisis? Balancing national interest and global responsibility. *Surgery*, *149*(5), 597-600. doi:10.1016/j.surg.2010.12.011

Jenner, E. A., Watson, P. B., Miller, L. L., Jones, F. F., & Scott, G. M. (2002). Explaining hand hygiene practice: An extended application of the theory of planned behaviour. *Psychology, Health & Medicine, 7*, 311-326. doi:10.1080/13548500220139412

Jesitus, J. (2006, March). Physician extenders fill need, but…. *Dermatology Times*, *27*(3), 124. Retrieved from http://www.dermatologytimes.modernmedicine.com

Johnson, R. E., Freeborn, D. K., & McCally, M. (1985). Delegation of office visits in primary care to PA and NPs: The physicians' view. *Physician Assistant, 9*(1), 159-160. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10314606

Jones, M. (2012). A brief history of the registration of nurses. *British Journal of Health care Assistants, 6*(1), 41-44. Retrieved from http://www.healthcare-assistants.co.uk/

Jones, P. E. (2008). Doctor and physician assistant distribution in rural and remote Texas counties. *Australian Journal of Rural Health, 16*, 12. doi:10.1111/j.1440-1584.2008.01026.x

Jones, P. E., & Cawley, J. F. (2009). Workweek restrictions and specialty-trained physician assistants: Potential opportunities. *Journal of Surgical Education, 66*(3), 152-157. doi:10.1016/j.jsurg.2009.03.033

Joslin, V., Cook, P., Ballweg, R., Cawley, J., Miller, A., Sewell, D., . . . Lane, S. (2006). Value added: Graduate-level education in physician assistant programs. *Journal of Physician Assistant Education, 17*(2), 16-30. Retrieved from https://www.paeaonline.org

Kaplan, M. A. (2012, Oct 01). Patching the pipeline: Physician shortage in the U.S. *The Hispanic Outlook in Higher Education, 23*, 19-21. Retrieved from https://www.hispanicoutlook.com

Karami, A., Rowley, J., & Analoui, F. (2006). Research and knowledge building in management studies: An analysis of methodological preferences. *International Journal of Management, 23*, 43-52. Retrieved from http://www.ijm-apm.com

Keuhn, B. M. (2007). Global shortage of health workers, brain drain stress developing countries. *Journal of the American Medical Association, 298*, 1853-1855. doi:10.1001/jama.298.16.1853

Kleinpell, R.M., Ely, E.W., & Grabenkort, R. (2008). Nurse practitioners and physician assistants in the intensive care unit: An evidence-based review. *Critical Care Medicine, 36*(10), 2888-2897. doi:10.1097/CCM.0b013e318186ba8c

Kleshinski, O., Dunn, T. G., & Kleshinski, J. F. (2010). A preliminary exploration of time management strategies used by physicians in the United States. *International Journal of Medical Education*, *1*, 47-54. doi:10.5116/ijme.4c23.117d

Larson, E. H., Palazzo, L., Berkowitz, B., Porani, M. J., & Hart, L. G. (2003). The contribution of nurse practitioners and physician assistants to generalists care in Washington state. *Health Services Research, 38*, 1033-1050. doi:10.1111/1475-6773.00161

Leech, N. L., & Onwuegbuzie, A. J. (2011). Beyond constant comparison qualitative data analysis: Using NVivo. *School Psychology Quarterly, 26*(1), 70-84. doi:10.1037/a0022711

Leggat, S. G. (2007). Effective health care teams require effective team members: Defining teamwork competencies. *BioMed Central Health Services Research*, 7(17). doi:10.1186/1472-6963-7-17 Retrieved from http://www.biomedcentral.com/1472-6963/7/17

Legler, C. F., Cawley, J. F., & Fenn, W. H. (2007). Physician assistants: Education, practice and global interest. *Medical Teacher, 29*, 22-25. doi:10.1080/01421590601034696

Lehmann, E., Van Deamme, W., Barten, F., & Sanders, D. (2009). Task shifting: The answer to the human resources crisis in Africa? *Human Resources for Health, 7*(49), 1-4. doi:10.1186/1478-4491-7-49

Levy, J. W., & Singh, S. (2013). Teaming up for better hospital medicine. *Journal of American Academy of Physician Assistants, 26*(10). doi:10.1097/01.JAA.0000434972.21676.13

Lieber, E. (2009). Mixing qualitative and quantitative methods: Insights into design and analysis issues. *Journal of Ethnographic & Qualitative Research, 3*, 218-227. Retrieved from http://www.jeqr.org

Lipner, R. S., Bylsma, W. H., Arnold, G. K., Fortna, G. S., Tooker, J., & Cassel, C. K. (2006). Who is maintaining certification in internal medicine--and why? A national survey 10 years after initial certification. *Annals of Internal Medicine, 144*, 29-36. doi:10.7326/0003-4819-144-1-200601030-00007

Lofters, A. (2012). The "brain drain" of health care workers: causes, solutions and the example of Jamaica. *Canadian Journal of Public Health = Revue Canadienne De Sante Publique*, 103(5), e376-e378.

Madorran-García, C., & de Val-Pardo, I. (2006). An analysis of the strategies for public hospitals. *Health Services Management Research, 19*, 251-263. doi:10.1258/095148406778951484

Management solutions on combating workforce shortages. (2005). *Healthcare Financial Management, 59*(1), 1-7. Retrieved from http://www.hfma.org

Marczyk, G., DeMatteo, D., & Festinger, D. (2005). *Essentials of research design and methodology*. Hoboken, NJ: Wiley.

Martin, K. E. (2000). A rural-urban comparison of patterns of physician assistant practice. *Journal of the American Academy of Physician Assistants, 13*(7), 49-72. Retrieved from http://journals.lww.com/jaapa/pages/default.aspx

Marx, K., & Engles, F. (1848). *The Communist Manifesto*. London, England: Author

Mason, P., Augustyn, M., & Seakhoa-King, A. (2010). Exploratory study in tourism: Designing an initial, qualitative phase of sequenced, mixed methods research. *International Journal of Tourism Research*, *12*, 432-448. doi:10.1002/jtr.763

McCabe, D. (2007). The next wave: "Physician extenders?" *Canadian Medical Association Journal, 177*, 447. doi:10.1503/cmaj.071041

McLean, T. (2005). The 80-hour work week: Why safer patient care will mean more health care is provided by physician extenders. *Journal of Legal Medicine, 26*, 339-384. doi:10.1080/01947640500218349

McPake, B., & Mensah, K. (2008). Task shifting in health care in resource-poor countries. *The Lancet, 372*, 870-871. doi:10.1016/S0140-6736(80)61375-6

Melgar, T., Schubiner, H., Burach, R., Aranha, A., & Musial, J. (2000). A time-motion study of the activities of attending physicians in an internal medicine and internal medicine – pediatrics resident continuity clinic. *Academic Medicine, 75*, 1138-1143. doi:10.1097/00001888-200011000-00023

Meltzer, D., & Chung, J. (2010). U.S. trends in hospitalization and generalist physician workforce and the emergence of hospitalists. *Journal of General Internal Medicine*, *25*, 453-459. doi:10.1007/s11606-010-1276-2

Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From theory to intervention: Mapping theoretically derived behavioral determinants to behaviour change techniques. *Applied Psychology: An International Review, 57*, 660-680. doi:10.1111/j.1464-0597.2008.00341.x

Mongan, P., Van der Schuur, L., Damiano, L., & Via, D. (2003). Developing meaningful metrics of clinical productivity for military treatment facility anesthesiology departments and operative services. *Military Medicine, 168*, 880-884. Retrieved from http://www.amsus.org/

Montague, J. (1994). MDs acknowledging value of physician extenders. *Hospitals & Health Networks, 68*(7), 62-62. Retrieved from http://www.hhnmag.com/

Moote, M., Krsek, C., Kleinpell, R., & Todd, B. (2011). Physician assistant and nurse practitioner utilization in academic medical centers. *American Journal of Medical Quality, 26*, 452-460. doi:10.1177/1062860611402984

Morgan, P., Strand de Oliveira, J., & Short, N. M. (2011). Physician assistants and nurse practitioners: A missing component in state workforce assessments. *Journal of Interprofessional Care*, *25*, 252-257. doi:10.3109/13561820.2010.501917

Mullan, F. (2005). The metrics of the physician brain drain. *The New England Journal of Medicine, 353*, 1810-1818. doi:10.1056/NEJMsa050004

Murray, R. B., & Wronski, I. (2006). When the tide goes out: Health workforce in rural, remote and indigenous communities. *Medical Journal of Australia, 185*(1), 37-38. Retrieved from https://www.mja.com.au/

National Advisory Committee on Rural Health and Human Services. (2008). *The 2008 report to the secretary: Rural health and human services issues.* Retrieved from ftp://ftp.hrsa.gov/ruralhealth/committee/nacreport2008.pdf

National Health Service Corps (NHSC). (2012). *About us*. Retrieved from http://nhsc.hrsa.gov/corpsexperience/aboutus/index.html

Nelson, K. M. (2008). On inspiration and leadership: A conversation with Barbara Sabol, M.A., R.N. and Henrie M. Treadwell, PhD. *American Journal of Public Health, 98*, 1553-1555. doi:10.2105/AJPH.2007.133561

Neuman, W. L. (2006). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Boston, MA: Pearson.

Nixon, R. (1971). *63 - Special message to the Congress proposing a national health strategy.* Retrieved from http://www.presidency.ucsb.edu/ws/?pid=3311

Norcini, J. (2011). Criteria for good assessment: Consensus statement and recommendations from the Ottawa 2010 Conference. *Medical Teacher, 33*, 206-214. doi:10.3109/0142159X.2011.551559

Nurse Practitioners' Association of Ontario. (2009). *Submission to Social Policy Committee response to Bill 179: Regulated Health Professions Statute Law Amendment Act.* Retrieved from http://npao.org/wp-content/uploads/2011/07/NPAO-Submission-Bill-179-Oct520092.pdf

Nusbaum, N. J. (2009). Commentary: Physician retirement and physician shortages. *Journal of Community Health, 34*, 353-356. doi:10.1007/s10900-009-9165-5

O'Brien, J. (2003). How nurse practitioners obtained provider status: Lessons for pharmacists. *American Journal of Health-System Pharmacy, 60,* 2301-2307. Retrieved from http://www.ajhp.org/

O'Connor, T., & Hooker, R. (2007). Extending rural and remote medicine with a new type of health worker: physician assistants. *Australian Journal of Rural Health, 15*(6), 346-351. doi:10.1111/j.1440-1584.2007.00926.x

O'Leary, K. J., Liebovitz, D. M., & Baker, D. W. (2006). How hospitalists spend their time: Insights on efficiency and safety. *Journal of Hospital Medicine, 1*(2), 88-93. doi:10.1002/jh.88

Pascuzzi, T. A., & Quenzer, R. (2009). Getting care levels right from beginning to end. *Healthcare Financial Management*, *63*(1), 92-95. Retrieved from http://www.hfma.org

Pathman, D., Konrad, T., Dann, R., & Koch, G. (2004). Retention of primary care physicians in rural health professional shortage areas. *American Journal of Public Health, 94*, 1723-1729. doi:10.2105/AJPH.94.10.1723

Patmas, M. (2010). Hospital-employed physician networks: Are primary care physician undervalued? *Physician Executive*, *36*(6), 12-14. Retrieved from http://www.acpe.org/publications/pej

Paulus, R. A., Davis, K., & Steele, G. D. (2008). Continuous innovation in health care: Implications of the Geisinger experience. *Health Affairs, 27*, 1235-1245. doi:10.1377/hlthaff.27.5.1235

Perlino, C. M. (2006). *The public health workforce shortage: Left unchecked, will be protected?* Washington, DC: American Public Health Association. Retrieved from http://www.apha.org/NR/rdonlyres/8B9EBDF5-8BE8-482D-A779-7F637456A7C3/0/workforcebrief.pdf

Philpot, R. J. (2005). *Financial returns to society by National Health Service corps scholars who receive training as physician assistants and nurse practitioners.* Gainesville, University of Florida.

The Phoenix Group. (2008, March 6). *The Phoenix Group tackles hospitalist workforce shortage* [Press release]. Retrieved from http://www.reuters.com/article/2008/03/06/idUS138622+06-Mar-2008+BW20080306

Physicians Foundation, The. (2012) Current trends of physician shortages. *Manufacturing Close-up*. Retrieved from http://www.physiciansfoundation.org/uploads/default/Physicians_Foundation_2012_Biennial_Survey.pdf

Pizziferri, L., Kittler, A. F., Volk, L. A., Honour, M. M., Gupta, S., Wang, S., . . . Bates, D. W. (2005). Primary care physician time utilization before and after

implementation of an electronic health record: A time-motion study. *Journal of Biomedical Informatics, 38*, 176-188. doi:10.1016/ j.jbi.2004.11.009

Polansky, M. (2007). A historical perspective on postgraduate physician assistant education and the association of postgraduate physician assistant programs. *Journal of Physician Assistant Education*, *18*(3), 100-108. Retrieved from http://www.paeaonline.com

Poplin, C. (2004). Reinventing internal medicine. *Society*, *41*(5), 40-44. doi:10.1007/BF02688216

Porter, M. E., & Teisberg, E. O. (2007). How physicians can change the future of health care. *Journal of American Medical Association, 297*, 1103-1111. doi:10.1001/jama.297.10.1103

Powell, C. (2011). *Nurse practitioners, assistants fill gaps in doctors' ranks. Shortage of doctors, cut in residents' hours, aging baby boomers, health care reform straining resources*. The State. Retrieved from http://www.thestate.com

Powers, C. H. (2010). *Making sense of social theory: A practical introduction* (2nd ed.). Plymouth, UK: Rowman & Littlefield.

Prus, R. (2004). Symbolic interaction and classical Greek scholarship: Conceptual foundations, historical continuities, and transcontextual relevancies. *American Sociologist, 35*, 5-33. doi:10.1007/s12108-004-1001-x

QSR International. (2010). *More flexibility with new node classifications in NVivo 9.* Retrieved from https://www.qsrinternational.com/support_resource-articles_detail.aspx?view=447

QSR International. (2012). *NVivo 10 is now available.* Retrieved from http://www.qsrinternational.com/products_nvivo.aspx

Rachoin, J., Skaf, J., Cerceo, E., Fitzpatrick, E., Milcarek, B., Kupersmith, E., & Scheurer, D. (2012). The impact of hospitalists on length of stay and costs: Systematic review and meta-analysis. *American Journal of Managed Care, 18*(1), e23-e30. Retrieved from http://www.ajmc.com

Rahim, E. (2011). The concept of abstract labour in Adam Smith's system of thought. *Review of Political Economy, 23*(1), 95-110. doi:10.1080/09538259.2011.526296

Ralston, S. (2011). *Doing versus thinking: John Dewey's critique of scientific management.* Retrieved from Social Science Research Network http://ssrn.com/abstract-2255687

Ransom, S. (2009). Future physician shortage remains key health care issue. *Fort Worth Business Press, 24*(30), 16. Retrieved from http://www.fwbusinesspress.com

Record, J. C. (1981). The productivity of new health practitioners. *Springer Series on Health Care and Society, 6*, 37-52. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10314541

Reeb, R. N. (2006). The community service self-efficacy scale: Further evidence of reliability and validity. *Journal of Prevention & Intervention in the Community, 13*, 97-113. doi:10.1300/J005v32n01_07

Richardson, S., & Law, V. (2009). Changing forms of employment and their implications for the development of skills. *Australian Bulletin of Labour*, *35*, 355-392.

Richardson, S. (2009). What is a skill shortage? *Australian Bulletin of Labour*, *35*, 326-354.

Ricketts, T. C. (2000). The changing nature of rural health care. *Annual Review of Public Health, 21*, 639. doi:10.1146/annurev.publhealth.21.1.639

Ritchie, A. (2013). Patients open to expanded role of physician assistants, NPs. *Medical Economics, 90*(12), 52. Retrieved from http:www.medicaleconomics.modernmendicine.com

Rohner, J. J., & Hanno, P. M. (2010). AUA: NPs, PAs will help alleviate work force shortage. *Urology Times, 38*(12), 1-21. Retrieved from http://www.urologytimes.modernmedicine.com

Ronstrom, S. (2010). *The case for shifting more services to midlevel providers*. Retrieved from http://www.beckershospitalreview.com/hospital-management-administration/the-case-for-shifting-more-services-to-midlevel-providers.html

Rooks, J., & Fischman, S. (1980). American nurse-midwifery practice in 1976-1977: Reflections of 50 years of growth and development. *American Journal of Public Health, 70,* 990-996. doi:10.2105/AJPH.70.9.990

Roy, C. L., Liang, C. L., Lund, M., (2008). Implementation of a physician assistant/hospitalist service in an academic medical center: Impact on efficiency and patient outcomes. *Journal of Hospital Medicine, 3*, 361-368. doi:10.1002/jhm.352

Salsberg, E., & Grover, A. (2006). Physician workforce shortages: Implications and issues for academic health centers and policymakers. *Academic Medicine, 81*, 782-787. doi:10.1097/00001888-200609000-00003

Santric-Milicevic, M., Simic, S., & Marinkovic, J. (2012). Health care workforce trends in changing socioeconomic context: Implications for planning. *Healthmed*, *6*, 1375-1383. Retrieved from http://www.healthmed.ba/index.htm

Sargen, M., Hooker, R. S., & Cooper, R. A. (2011). Gaps in the supply of physicians, advance practice nurses, and physician assistants. *Journal of the American College of Surgeons, 212*, 991-999. doi:10.1016/j.jamcollsurg.2011.03.005

Satcher, D., & Higginbotham, E. J. (2008). The public health approach to eliminating disparities in health. *American Journal of Public Health, 98*, S8-S11. doi:10.2105/AJPH.2007.123919

Sawyer, B., & Ginde, A. A. (2012). 316 EMF scope of practice and autonomy of physician assistants in rural versus urban emergency departments. *Annals of Emergency Medicine, 60*(4), S113. doi:10.1016/j.annemergmed.2012.06.294

Schram, T. H. (2006). *Conceptualizing and proposing qualitative research* (2nd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Schneider, E.M. (2004, June). Physician extenders can handle lion's share of ALA-PDT work. *Dermatology Times*, *24*(6), 66-67. Retrieved from http://www.dermatologytimes.modernmedicine.com

Schofield, D. J., Page, S. L., Lyle, D. M., & Walker, T. J. (2006). Ageing of the baby boomer generation: How demographic change will impact on city and rural GP and nursing workforce. *The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy, 6*(4), 1-9. Retrieved from http://rrh.deakin.edu.au

Secomb, J. M., & Smith, C. (2011). A mixed method pilot study: The researchers' experiences. *Contemporary Nurse: A Journal for the Australian Nursing Profession, 39*(1), 31-35. doi:10.5172/conu.2011.39.1.31

Shank, G.D. (2006). *Qualitative research: A personal skills approach* (2nd ed.). Upper Saddle River, NJ: Pearson.

Skinner, B. F. (1953). *Science and human behavior.* New York, NY: Macmillan.

Sloman, K. N., (2010). Research trends in descriptive analysis. *Behavior Analyst Today, 11*(1), 20-35. Retrieved from http://www.baojournal.com

Slomka, J., McCurdy, S., Ratiff, E. A., Timpson, S., & Williams, M. L. (2007). Perceptions of financial payment for research participation among African American drug users in HIV studies [Electronic version]. *Journal of General Medicine, 22*, 1403-1409. doi:10.1007/s11606-007-0319-9

Smith, A. (1776). *The wealth of nations: An inquiry into the nature and causes of the wealth of nations*. London, England: W. Strahan and T. Cadell.

Smith, J., & Firth, J. (2011). Qualitative data analysis: The framework approach. *Nurse Researcher, 18*(2), 52-62. doi:10.7748/nr2011.01.18.2.52.c8284

Society of Hospital Medicine, The (SHM). (2009). Integrating PAs and NPs into hospitalist practice. *Medical Staff Briefing, 19*(8), A1-A4. Retrieved from http://www.hospitalmedicine.org

Sokolowski, R. (2000). *Introduction to phenomenology.* Cambridge, NY: Cambridge University.

Spence, P.R., & Reddy, M.C. (2007). The "Active" Gatekeeper in Collaborative Information Seeking Activities. *Proceedings of the 2007 International ACM*

Conference on Supporting Group Work, 277-280. New York, NY: ACM doi:10.1145/1316624.1316666

Stretton, D., & Bolon, D. (2009). Recruitment and retention of rural hospital administrators: A multifaceted approach. *Hospital Topics, 87*(1), 10-14. doi:10.3200/HTPS.87.1.10-14

Stuemky, J. H. (2013). Physician assistants-making my life and your life easier. *Physician Executive, 39*(4), 38-41. Retrieved from http://www.acpe.org/publications/pej

Thompson, M. (2009) Considering the implication of variations within Delphi research. *Family Practice, 26*, 420-424. doi:10.1093/fampra/cmp051

Thorpe-Jamison, P.T., Culley, C.M., Perera, S., Handler, S.M. (2013). Evaluating the Impact of Computer-Generated Rounding Reports on Physician Workflow in the Nursing Home: A Feasibility Time-Motion Study. *Journal of the American Medical Directors Association*, 14(5), 358-362. doi.org/10.1016/j.jamda.2012.11.008

Toledo-Pereyra, L. H. (2004). America's first English-speaking medical schools. *Journal of Investigative Surgery, 17*(1), 3-7. doi:10.1080/08941930490281282

United States Census Bureau. (2000). *2000 census gateway.* Retrieved from http://www.census.gov/census2000/states/us.html

United States Census Bureau. (2010). *2010 population counts: Virgin Islands.* Retrieved from http://2010.census.gov/news/releases/operations/cb11-cn180.html

U.S. Department of Health and Human Services. (n.d.). *The National Health Service Corps (NHSC): About us*. Retrieved from http://nhsc.hrsa.gov/corpsexperience/aboutus/index.html

U.S. Department of Health and Human Services, Health Resources and Service Administration (HRSA). (2005). *States Health Workforce Profile Virgin Islands*.

U.S. Department of Health and Human Services, Health Resources and Service Administration (HRSA). (2012). *Data and statistics.* Retrieved from http://datawarehouse.hrsa.gov/hpsadetail.aspx

Walker, K., Ryan, G., Ramey, R., Nunez, F., Beltran, R., Splawn, R., & Brown, A. (2010). Recruiting and retaining primary care physicians in urban underserved communities: The importance of having a mission to serve. *American Journal of Public Health*, *100*, 2168-2175. doi:10.2105/AJPH.2009.181669

Wakerman, J. (2004). Defining remote health. *Australian Journal of Rural Health, 12*, 210-214. doi:10.1111/j.1440-1854.2004.00607.x

Weigl, M., Müller, A., Zupanc, A., & Angerer, P. (2009). Participant observation of time allocation, direct patient contact and simultaneous activities in hospital physicians. *BioMed Central Health Services Research, 13*, 251-261. doi:10.1186/1472-6963-9-110

Welch, S. (2012). When there is no doctor in the house. Strategies for accommodating a physician shortage. *Healthcare Executive*, *27*(3), 86-88. Retrieved from http://managedhealthcareexecutive.modernmedicine.com/

Wiemiller, M., Somers, K., & Adams, M. (2008). Postgraduate physician assistant training programs in the United States: Emerging trends and opportunities.

Journal of Physician Assistant Education, 19(4), 58-63. Retrieved from http://paeaonline.org

Wing, P., Langlier, M. H., Salsberg, E., & Hooker, R. S. (2004). The changing professional practice of physician assistants, 1992 – 2000. *Journal of the American Academy of Physician Assistants, 17*, 34-49. Retrieved from http://journals.lww.com/jaapa/pages/default.aspx

Yin, R.K. (2009). *Case study research design and methods* (5th ed.). Los Angeles, CA: Sage.

Yin, R. K. (2011). *Qualitative research from start to finish.* New York, NY: Guilford.

Zheng, K., Guo, M. H., & Hanauer, D. A. (2011). Using the time and motion method to study clinical work processes and workflow: methodological inconsistencies and a call for standardized research. *Journal of the American Medical Informatics Association*, *18*(5), 704-710. doi:10.1136/amiajnl-2011-000083

Zinn, J. L., Guglielmi, C. L., Davis, P. P., & Moses, C. (2012). Addressing the nursing shortage: The need for nurse residency programs. *Association of Operating Room Nurses. AORN Journal, 96*(6), 652-657. doi:10.1016/j.aorn.2012.09.011

Zurn, P., Dal Poz, M. R., Stilwell, B., & Adams, O. (2004). Imbalance in the health workforce. *Human Resources for Health, 2*, 13-12. doi:10.1186/1478-4491-2-13

Zwijnenerg, N. C., & Bours, G. J. (2011). Nurse practitioners and physician assistants in Dutch hospitals: Their role, extent of substitution and facilitators and barriers experienced in the reallocation of tasks. *Journal of Advanced Nursing, 6*, 1235-1246. doi:10.1111/j.1365-2648.2011.05823.x

Appendix A

Recruitment Flyer

LOOKING FOR STUDY PARTICIPANTS

Interested in discussing your view of health care in the Virgin Islands?

Participants will receive a $25 debit card for their participation.

What: Interview on health care.

When: Date to be determined.

Where: Estate Castle Coakley, Christiansted, VI 00820

Time: To be determined.

For more information call ###-###-####

Appendix B

Time-Motion Scorecard

Provider: _____

☐Day 1 ☐Day 2 ☐Day 3 ☐Day 4 ☐Day 5

Start Time	End Time	Activity

Appendix C

Interview Questions

Physicians

1. How satisfied are you with your current workload and the way you spend your time?
2. Do you feel there are tasks you currently perform that could be transferred to a physician assistant?
    a. If yes, which tasks (probe for specific tasks in the categories used to code the time-motion data)?
    b. If yes, are there any obstacles preventing you from transferring these tasks?
3. How do you and the PA determine who will perform what tasks? (probes: do you directly discuss it? Does whoever is available perform it? Is there some sort of formal or informal understanding or protocol for who does what?)
4. What are the challenges of working with a physician assistant?
5. What are the benefits of using a physician assistant in the hospital setting? (probes: What benefits do physician assistants provide to the organization? What are the benefits of adding physician assistants to rural hospitals medical staff?)
6. What are your opinions regarding the competency of physician assistants to provide hospital-based medical treatment?
7. What role do you see physician assistants playing in the medical workforce shortage among small, rural hospitals?

Physician Assistants

1. How satisfied are you with your current workload and the way you spend your time?
2. Do you feel there are tasks currently performed by a physician that could be transferred to you?
    a. If yes, which tasks (probe for specific tasks in the categories used to code the time-motion data)?
    b. If yes, are there any obstacles preventing these tasks from being transferred?
3. How do you and your supervising physicians determine who will perform what tasks? (probes: do you directly discuss it? Does whoever is available perform it? Is there some sort of formal or informal understanding or protocol for who does what?)
4. What are the challenges of working with a supervising physician?
5. What are the benefits of using a physician assistant in the hospital setting? (probes: What benefits do physician assistants provide to the organization? What are the benefits of adding a physician assistant to rural hospitals medical staff?
6. What are your opinions regarding the competency of physician assistants to provide hospital-based medical treatment?
7. What role do you see physician assistants playing in the medical workforce shortage among small, rural hospitals?

Administrators

1. How satisfied would you say your medical staff is with their current workload?

2. Do you feel there are tasks currently performed by a physician that could be transferred to the physician assistant?
    a. If yes, which tasks (probe for specific tasks in the categories used to code the time-motion data)?
    b. If yes, are there any obstacles preventing these tasks from being transferred?
3. How do the physicians and physician assistant determine who will perform what tasks? (probes: are there any formal hospital policies around who can do what?)
4. What are the challenges of including a physician assistant in your staffing model?
5. What are the benefits of using a physician assistant in the hospital setting? (probes: What benefits do physician assistants provide to the organization? What are the benefits of adding a physician assistant to rural hospitals medical staff?
6. What are your opinions regarding the competency of physician assistants to provide hospital-based medical treatment?
7. What role do you see physician assistants playing in the medical workforce shortage among small, rural hospitals?

Potential Patients

1. Have you ever been treated by a physician assistant?
2. What are your opinions regarding the competencies of physician assistants in regards to providing patient care?
3. What functions do you believe that physician assistants can provide within a hospital setting?

4. What are your feelings about having a physician assistant provide treatment for you rather than a doctor?
5. What role does the physician assistant play in a hospital setting?
6. If you had the choice between being treated by a physician assistant or a physician for a minor concern, which would you chose and why?
7. If you had the choice between being treated by a physician assistant or a physician for a major concern, which would you chose and why?

Appendix D

Self-Report Questionnaire

Instructions: Please indicate approximately how much time you spend conducting each of the following activities on a daily basis. Should you choose to utilize the 'Other' category please note the activity in the space provided.

Activity	**Time Spent**
Direct Patient Care	
Taking history and physical exam	
Procedures	
Daily rounding / follow-up	
Discharge Instructions	
Family meetings	
Other	
Indirect Patient Care	
Reviewing results	
Documentation	
Communications	
Writing orders	
Telephone Orders	
Other	
Personal	
Telephone calls	
Handheld device	
Bathroom	
Meals	
Other	
Miscellaneous	
Travel	
Teaching	
Professional Development	
Meetings	
Other	

Appendix E

Participant Cover Letter

Dear Potential Study Participant, (Identifier Code_____)

I am a student at the University of Phoenix working on a Doctor of Health Administration degree. I am conducting a research study for my dissertation entitled: "Role of Physician Assistants in Rural Hospital Settings in The Virgin Islands: A Case Study." The purpose of this exploratory case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands.

Your participation in the study is limited and requires little effort. If you are a physician or PA, I will spend 1 week observing your daily labor activities as a provider at the local hospital on the island of _____. In addition, I will ask that you complete a self-report document regarding your daily activities and engage in a 30 minute interview.
If you are an administrator or potential patient, I will ask you to engage in a 30 minute interview to solicit your views on the use of PAs.

Your participation in the study is completely voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. To withdraw from the study please call or email the researcher to notify them of your wish to withdraw. The results of the research study may be published but your name will not be used and your results will be maintained in confidence.

Your confidentiality will be protected in the research because no identifying information or protected health information will be collected or shared. Although there may be no direct benefit to you, the possible benefit of your participation is the provision of new information that may lead to increased recruitment and retention of physician assistants, which can increase physician productivity, patient satisfaction, reduce medical error, and improve quality for residents of the Virgin Islands. No potential risks have been identified.

If you have any questions concerning the research study, or if you would like to receive a copy of the results of the study once it has been completed, please call me at (###) ###-####.

Sincerely,

_____

Julia Beresford

Appendix F

Informed Consent Form

Dear _____,

My name is Julia Beresford and I am a student at the University of Phoenix working on a Doctor of Health Administration degree. I am doing a research study entitled "Role of Physician Assistants in Rural Hospital Settings in The Virgin Islands: A Case Study." The purpose of this exploratory case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands.

Your participation will involve; completion of a brief self-report questionnaire documenting your daily labor activities; observation of your daily work activities at the hospital on _____ for a period of 4 hours per day for one week and participation in a face to face interview at Estate Castle Coakley regarding the regarding which tasks can be transferred to a PA, as well as the obstacles and enablers associated with using a PA. The audiotaped interview will take thirty minutes to complete. Your participation in this study is voluntary. You can decide to be a part of this study or not. Once you start, you can withdraw from the study at any time without any penalty or loss of benefits. The results of the research study may be published but your identity will remain confidential and your name will not be made known to any outside party.

In this research, there are no foreseeable risks to you except "none".

Although there may be no direct benefit to you, a possible benefit from your being part of this study is the provision of new information that may lead to increased recruitment and retention of physician assistants, which can increase physician productivity, patient satisfaction, reduce medical error, and improve quality for residents of the Virgin Islands.

If you have any questions about the research study, please call me at (###) ###-#### or via email at xxxxxxx@yahoo.com. For questions about your rights as a study participant, or any concerns or complaints, please contact the University of Phoenix Institutional Review Board via email at IRB@phoenix.edu.

As a participant in this study, you should understand the following:

1. You may decide not to be part of this study or you may want to withdraw from the study at any time. If you want to withdraw, you can do so without any problems. To withdraw from the study you may orally express their request to withdraw or submit a written request outlining your request to withdraw from the study to the researcher and provide your unique alpha numeric code located on your participant cover letter.
2. Your identity will be kept confidential.
3. Julia Beresford, the researcher, has fully explained the nature of the research study and has answered all of your questions and concerns.
4. Interviews will be recorded and transcribed. Data will be kept in a secure and locked area. The data will be kept for five years, and then destroyed.
5. You will be provided with transcripts of the interview allowing for you to check for accuracy.
6. The results of this study may be published. However, no identifying information will be made public

"By signing this form, you agree that you understand the nature of the study, the possible risks to you as a participant, and how your identity will be kept confidential. When you sign this form, this

means that you are 18 years old or older and that you give your permission to volunteer as a participant in the study that is described here."

(☐) I accept the above terms. **(☐) I do not accept the above terms. (CHECK ONE)**

Signature of the interviewee _____ Date _____

Signature of the researcher _____ Date _____

Appendix G

Pilot Study Cover Letter

Dear Potential Pilot Study Participant,

I am a student at the University of Phoenix working on a Doctor of Health Administration degree. I am conducting a research study for my dissertation entitled: "Role of Physician Assistants in Rural Hospital Settings in The Virgin Islands: A Case Study." The purpose of this exploratory case study was to explore the role of physician assistants in a rural hospital in the Virgin Islands.

Your participation in the pilot study is limited and requires little effort. I will spend 4 hours observing your daily labor activities as a provider at the local hospital on the island of _____.

Your participation in the pilot study is completely voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. To withdraw from the study please call or email the researcher to notify them of your wish to withdraw.

Your confidentiality will be protected in the research because no identifying information or protected health information will be collected or shared. Although there may be no direct benefit to you, the possible benefit of your participation is the provision of new information that may lead to increased recruitment and retention of physician assistants, which can increase physician productivity, patient satisfaction, reduce medical error, and improve quality for residents of the Virgin Islands. No potential risks have been identified.

If you have any questions concerning the research study, or if you would like to receive a copy of the results of the study once it has been completed, please call me at (###) ###-####.

Sincerely,

_____

Julia Beresford

Appendix H

University of Phoenix IRB Approval

8-9-13

Dear **Julia Beresford**:

The role of the University of Phoenix Institutional Review Board (IRB) is to review research studies proposed by students, faculty and others to determine compliance with federally mandated regulations and local requirements regarding protection of human subjects in research studies conducted in accordance with University policies. Your IRB Application for the research study titled **Use of Physician Assistants in Rural Hospital Settings in the Virgin Islands: A Case Study** was recently reviewed by the Board. I am pleased to confirm that the Board has determined your IRB Application is approved and your study is determined to be exempt. This means you may proceed with data collection.

Please understand that this approval is subject to the following:

1. The approval is valid for one year from the date of this communication. If your research study is not completed by one year from the date of this communication, the approval will expire and you must resubmit a completed "Request for IRB Time Extension" form and an updated copy of your IRB Application. These should be submitted to the Dissertation Process Liaison for the School of Advanced Studies through SAS Web.

2. IRB approval for your research study is based upon the information you provided in your IRB Application. If any aspects of your research study change significantly (such as a change in scope, data collection sites, etc.), you must notify the Board of the changes and request approval for continuance of the research under the new conditions. This can be done through the "IRB Change Request for Previously Approved Study" form. Please consult with your Dissertation Chair if you have a question as to whether a change you have made requires Board review and approval.

3. Any conditions that may be associated with this approval decision must be satisfied before data collection commences. Notification of fulfillment of conditions to the Board is required and Board concurrence is expected. Notification may be done by contacting the Board at: IRB@phoenix.edu.

4. Please retain this communication as documentation of IRB approval of your study.

5. Any conflict of interest that may occur with regard to your study or your role as the primary researcher must be reported promptly to the IRB.

6. Permission to use published surveys, materials, private databases, or other records must have the explicit approval of the author/owner.

7. Any tape recording associated with data collection must be explicitly stated as part of the Informed Consent to which subjects must agree.

8. Individual identity protection must be maintained and separation of Informed Consent from the primary data collection instrument is required.

If you have any questions about human subject protection in research, please refer to the CITI web site (www.citiprogram.org) or contact the University of Phoenix IRB at IRB@phoenix.edu. Best wishes for the successful completion of your study.

Sincerely,

Freda Z. Hartman, Ph.D.

Institutional Review Board

Appendix I

Themes Endorsed by Interviewee Type

	HA		P	
Theme/Subtheme	N	%	N	%
Limited/Basic PA Roles	11	92%	5	50%
Reduction of Physician Workload	10	83%	10	100%
Variable PA Competency Levels	8	67%	9	90%
Role of PA	12	100%	10	100%
Improving patient care	8	67%	2	20%
Filling shortages	10	83%	8	80%
Supervision of PAs	4	33%	6	60%
Developing protocols for duty	7	58%	4	40%
Establishing a procedure for delegation of responsibilities	10	83%	9	90%
Acceptance and understanding of the PA	9	75%	6	60%
Transferrable tasks	12	100%	10	100%
Perception of the PA	10	83%	10	100%

	PA		PP	
Theme/Subtheme	N	%	N	%
Limited/Basic PA Roles	2	20%	8	80%
Reduction of Physician Workload	4	40%	2	20%
Variable PA Competency Levels	2	20%	1	10%
Role of PA	8	80%	10	100%
Improving patient care	1	10%	3	30%
Filling shortages	3	30%	0	0%
Supervision of PAs	6	60%	0	0%
Developing protocols for duty	4	40%	0	0%
Establishing a procedure for delegation of responsibilities	6	60%	0	0%
Acceptance and understanding of the PA	0	0%	0	0%
Transferrable tasks	6	60%	0	0%
Perception of the PA	0	0%	10	100%

	Total	
Theme/Subtheme	N	%
Limited/Basic PA Roles	26	62%
Reduction of Physician Workload	26	62%

Variable PA Competency Levels	20	48%
Role of PA	40	95%
Improving patient care	14	33%
Filling shortages	21	50%
Supervision of PAs	16	38%
Developing protocols for duty	15	36%
Establishing a procedure for delegation of responsibilities	25	60%
Acceptance and understanding of the PA	15	36%
Transferrable tasks	28	67%
Perception of the PA	30	71%

AUTHOR BIOGRAPHY

Julia Beresford was born and raised on the island of St. Croix in the U.S. Virgin Islands. She spent her entire youth on the island graduating from the St. Croix Country Day School. Her studies continued at the University of North Carolina at Charlotte where she obtained her BA in Criminal Justice. Julia obtained her Masters in Management with a Health care Administration focus from the University of Maryland.

Julia's health care career began at Carolinas Medical Center where she entered the health care field as a registrar. Since then she has held multiple positions including HIPAA Privacy Officer, Compliance Coordinator, Director of Medical Staff Services, Compliance Consultant, and Vice President of Quality and Regulatory Affairs. Julia is the co-owner of a small medical billing company based in the U.S. Virgin Islands and is employed by Johns Hopkins as the Director of the International Program at All Children's Hospital in St. Petersburg, Florida.

Julia has one daughter, Brielle, who has been the driving force behind Julia's continued studies and professional success. Julia began her doctoral journey when her daughter was 3 weeks old and learned to balance life, motherhood, business ownership, and a full-time career simultaneously. In the little amount of spare time she has available, Julia enjoys playing beach volleyball, shopping, traveling, dancing, and time with friends and family.