A DESCRIPTION OF U.S. POST-GRADUATION NURSE RESIDENCY PROGRAMS AND PATIENT OUTCOMES THEY MAY AFFECT

By

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Table of Contents

ABSTRACT

Research Objective: The objective of this study was to establish a description of Nurse Residency Programs (NRPs) to identify if there is treatment fidelity across programs, a first step to enable a study that assesses the impact of NRPs on patient outcomes.

Background: The increasing complexity of the healthcare environment and concern regarding newly licensed RNs' ability to cope with the reality of care has resulted in the development of a variety of nurse residency program initiatives. Unknown is the extent to which various elements and components are implemented across programs. Unknown are which nurse-sensitive outcomes may be influenced by nursing residencies.

Study Aims: 1) To describe NRPs across US community, public, and teaching hospitals and 2) To identify patient outcomes believed by critical care nurses to be influenced by nursing residencies.

Methods: Aim 1: Program attributes were measured using a 24-item survey based on the Minnick and Robert's conceptual framework. The survey was sent to known NRP Directors or Chief Nursing Officers at 1,011 US hospitals identified in the 2010 American Hospital Association dataset. Two-hundred and three surveys were returned. Aim 2: Data were collected from three focus groups that included 19 critical care nurses from the Southeastern US region.

Results: Aim 1: 9.4% of hospitals reported operating a NRP. NRP Models included: University HealthSystem Consortium (UHC, 22.1%), Facility-Based (FBM,

53.7%), and “Other” (24.2%). Small hospitals (< 250 beds) are not likely to support nursing residencies. Significant ($p < .01$) differences among and within program model types, in terms of career planning, project requirements and project type, and mentoring were noted. Aim 2: Critical care nurses identified outcomes for NRPs that were consistent with nurse-sensitive outcomes described in the health services literature.

Conclusions: The extent of differences within and across program types indicates a lack of treatment fidelity needed to detect objectively the impact of NRPs on patient outcomes. The expansion of NRPs may be limited by the number of hospitals of a size able to support such programs. Efforts to identify patient outcomes likely to be influenced by NRP participants should be expanded beyond critical care.

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Finally, to my family and friends, I cannot begin to adequately express my gratitude for your unyielding support. I am thankful for everything that you have agreed to put on hold until the dissertation was completed. I am blessed to have been rewarded with great parents who have been emotionally and financially supportive throughout my education. And lastly, to my significant other Jeff, whose support is indescribable. I am eternally grateful.

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AACN	American Association of Colleges of Nursing
ASN	Associate of Science Degree in Nursing
BSN	Baccalaureate Science Degree in Nursing
CCNE	Commission on Collegiate Nursing Education
COTH	Council of Teaching Hospitals
FBM	Facility-Based Model
FTE	Full Time Equivalent
IOM	Institute of Medicine
IQR	Interquartile Range
MSN	Master's of Science Degree in Nursing
NRP	Nurse Residency Program
PC	Program Coordinator
RF	Resident Facilitator
RN	Registered Nurse
UHC	University HealthSystem Consortium

CHAPTER I

AN OVERVIEW OF U.S. NURSE RESIDENCY PROGRAMS

This dissertation reinforces the need and describes an approach for studying nurse residency programs. In Chapter I, the problem and purpose of the study, nurse residency programs, and research questions are described. In Chapter II, relevant literature, theoretical and conceptual frameworks, and current methodology are described. In Chapter III, methodological details of the study are presented. In Chapter IV, results from data analyses are presented. In Chapter V, the meaning, significance, and implications of the findings, and limitations and alternative explanations, and recommendations for future research are discussed.

Problem Statement and Study Purpose

Cumulative statistics calculated from the National Council for State Boards of Nursing (2012) for 2007 through 2011 indicated that more than 720,000 newly licensed registered nurses were eligible to enter the US workforce during this time span. Due to the increasing complexity of the healthcare environment and the belief by new graduates and nurse executives that newly licensed nurses are not prepared for the realities of care (Nursing Executive Center, 2006), a variety of programs have been introduced to support the transition of the new nurse graduate from the role of student

nurse to the role of professional nurse. Examples of these programs include internships, externships, preceptorships, mentorships, and nursing residencies.

Nursing residencies are an example of transition programs that are gaining popularity among new graduate nurses and hospital leaders (Nursing Executive Center, 2006). However, subjective accounts suggest disparity in how various aspects of these programs are implemented and evaluated (Ruth, 2009). Lacking is a complete description of the structural components of all current US nurse residency programs (NRP). Hence, the first purpose of this dissertation study is to identify the structural components of US nurse residency programs. Without such a study it will not be possible to describe the components of nurse residency programs or to design future studies where these components are studied in relation to patient outcomes.

To date, only process-related outcomes of nurse residency programs have been evaluated. Examples of process-related outcomes include evaluation of nurse residents' autonomy and perceived control (Williams, Goode, Krsek, Bednash, & Lynn, 2007), effect of nurse residency programs on organizational retention and return on investment (Halfer, Graf, & Sullivan, 2008; Pine & Tart, 2007; Williams, et al., 2007), and lastly, nurse resident job satisfaction (Altier & Krsek, 2006). Results of these studies described improvements in the participants' perceived competence and confidence, organizational retention and return on investment, and overall nurse resident satisfaction with the program. Lacking are studies describing the effect of nurse residency programs on patient outcomes. Therefore, the second purpose of the proposed study is to identify patient-specific outcomes that are described by critical

care nurses to be influenced by nurse residency programs. Understanding these data may provide specific patient outcomes that can be evaluated in future, more robust, studies.

A Description of Nurse Residency Programs

The American Nurses Association recently adopted a resolution to support nurse residency programs and other initiatives that facilitate the new nurse's successful integration into the work environment (Trossman, 2009). In 2010, a report was released from the Institute of Medicine (IOM) recommending the implementation of nurse residency programs for graduates of pre-licensure and advanced practice degree programs (National Academy of Sciences, 2012). Programs described as nursing residencies are offered before and after graduation. The Veterans Affairs Learning Opportunity Residency (VALOR) Scholarship Program is an example of a pre-graduation residency program model (United States Department of Veterans Affairs, 2008). However, the focus of this study is on post-graduation nursing residencies. The most prominent example of post-graduation nurse residency program models is the result of a partnership between University HealthSystem Consortium (UHC) and the American Association of Colleges of Nursing (AACN).

The UHC/AACN NRP model (hereafter referred to as the UHC model) is currently used in 62 academic medical centers across the US with plans to include all 107 UHC-affiliated academic medical centers in the future (Joint Commission on Accreditation of

Healthcare Organizations, 2002; University HealthSystem Consortium, 2010). The primary goal of the UHC/AACN NRP is to assist nurses, through a one-year series of education- and work-focused experiences, to successfully integrate knowledge and practice to produce the best patient outcomes (Krugman, Bretschneider, Horn, Krsek, Moutafis, & Smith, 2006). Other examples of post-graduation nurse residency programs include state-based and hospital-based models (Beyea, von Reyn, & Slattery, 2007; Bratt, 2009, Diefenbeck, Plowfield, & Herman, 2006; Wandel, 1995). Similar to the UHC/AACN NRP model, these programs assist nurses through various education- and work-focused experiences to meet program outcomes over a specified period of time. For state and hospital leaders the significance of nurse residency programs relates to two primary concepts - improvement in organizational retention and enhanced recruiting efforts of new nurses.

Retention

Neuhauser (2002) wrote that the overall goals of orientation programs are to educate and acclimatize new staff nurses into the organization in a manner that promotes retention. However, current research supports that new nurses need greater support than that found in customary orientation programs where education and acclimation are the primary focus (Altier & Krsek, 2006; Hardyman & Hickey, 2001). For example, in order to provide competent care, feel successful, and make the choice to stay in the organization, Altier and Krsek (2006) suggested, in addition to a positive and in-depth orientation, that a supportive preceptorship is essential.

Bobay, Gentile, and Hagle (2009) described that additional time may be needed to achieve a level of competence. The length of customary orientation programs using preceptorships is reported to vary from eight weeks up to one year depending on specialty or practice area chosen (Almada, Carafoli, Flattery, French, & McNamara, 2004). Salt, Cummings, and Profetto-McGrath (2008) described that lengthier orientation programs improve new graduate retention rates. However, they could not conclude if this was due to increased time or to specific components of the programs' content. Bobay and colleagues (2009) agreed that the caliber of the content to which the new graduate is exposed is equally important to amount of time exposed.

Intending to reinforce clinical skills and decrease turnover by exceeding customary orientation curriculum in duration, focus, and complexity, nurse residency programs aim to provide a necessary link between educational and real-life experiences (Nursing Executive Center, 2006). By promoting both personal and professional development through the processes of empowerment and social network building (Nursing Executive Center, 2006), transition programs which include preceptorships and mentorships are reported to improve retention of new nurses (Eigsti, 2009; Lee, Tzeng, Lin, & Yeh, 2009; Persaud, 2008). But, there is variability in how retention rates are defined and reported.

For example, in their studies Eigsti (2009), Lee et al (2009), and Persaud (2008) addressed nurse retention differently. Eigsti (2009) and Persaud (2008) defined retention rate as those nurses who remained in their hiring units. On the other hand, Lee et al (2009) measured turnover rates in lieu of retention rates. Lee et al (2009)

defined turnover as the percentage of resignations from the organization among new nurses. Overall, the variability in definition, setting, and participant inclusion among these studies demonstrates the challenge presented when attempting to interpret or generalize retention results to larger cohorts of new graduates. This variability restricts program comparisons based on improved retention rates. This variability also supports the need for research that seeks to define and identify which specific components of nurse residency programs influence nurse resident retention within a particular unit, area, or the organization. This study aims to identify the specific structural components of all US nurse residency programs.

Recruitment

Some institutions use various models and attributes of transition programs as a recruiting tool, promising new nurses an easier transition into nursing practice or into the hospital setting through empowerment and social networking (Lindsey & Kleiner, 2005; Molinari, Monserud, & Hudzinski, 2008; Nelson, Godfrey, & Purdy, 2004). However, the recruitment effects of nurse residency programs have not been reported at either the organizational or unit level. For example, Lindsey and Kleiner (2005) proposed a nurse residency program for senior-level nursing students with the purpose of positively affecting recruitment, clinical orientation time, and retention of new graduates. Molinari et al (2008) reported that recruitment was a goal of the rural nurse residency program they described. Nelson and colleagues (2004) described a mentorship program for non-licensed baccalaureate nursing students, initiated to

provide the student with opportunities for skill development and improvement in critical thinking. However, in each study the reported variables focused on the participants' satisfaction with the program. These studies did not describe whether participation in a program resulted in improved post-graduation hire rates as compared to hire rates before the programs were implemented.

Gaps

Although nurse residency programs have been described as the pinnacle of orientation programs (Nurse Executive Center, 2006), five primary gaps are identified:

1. A complete description of the structure of US nurse residency programs is lacking.
2. Outcomes related to nurse residency programs have been limited to program-related outcomes and it remains undetermined which patient outcomes are most likely to be directly affected by nurse residency programs.
3. Effects of nurse residency programs on retention and recruitment efforts remain undetermined at the unit level.
4. Nurse residency programs positively influence retention rates at the organizational level (Altier & Krsek, 2006; Beecroft, Kunzman, & Krozek, 2001; Lindsay & Kleiner, 2005; Molinari, et al., 2008; Williams, et al., 2007); however, the studied effects have been limited to one-year after the program. Additionally, the effects of cash incentives and curricula structure requiring one-year of service confound the results of these studies.
5. Effects of nurse residency programs on recruitment efforts at the organizational level are undetermined.

Significance to Society

People expect that their health care provider is adequately educated to provide them with safe, high-quality, cost-effective care (Smith, Schussler-Fiorenza, & Rockwood, 2006). Essentially, society is interested in nurse residency programs for three reasons:

1. Cost of care

2. Safety

3 Satisfactory health care experiences.

Cost of Care

In 2009, the US committed $2.5 trillion dollars or 17.6% of the gross domestic product (GDP) towards healthcare (National Coalition on Health Care, 2009). This researcher is unable to identify any specific amount provided to hospitals. However, in 2006, $650 billion US dollars were allocated above the expected government-based expenditure and related to outpatient care and administrative costs (National Coalition on Health Care, 2009). In a study conducted by Waldman, Kelly, Arora, & Smith (2004), of one hospital's annual operating budget (US $500 million) the main driver of cost was the replace-and-train cycle of nurses, where 3.4 to 5.8 percent (US $17 – 29 million) of the operating budget was devoted to nursing turnover costs. Unknown is how much of this cost was specific to new graduate turnover. The current healthcare debate coupled

with continued threats of rising healthcare costs lend legitimacy to any patient concerns that this cost, if not already, may be passed on to them (Auerbach & Kellerman, 2011).

Nurse turnover is costly for healthcare organizations in terms of workforce instability, productivity and financial losses, recruitment requirements, and resource consumption (Jones, 2004; VHA, Inc., 2002). Turnover consumes both financial and human capital that could be used to enhance quality improvement programs, staff development, and retention activities (Jones, 2004; VHA, Inc., 2002). These factors are woven into the curricula of transition programs identified as nurse residency programs (Lindsey & Kleiner, 2005; Nursing Executive Center, 2006). One nurse residency program leader advocated that quality improvements and the development and retention of staff will enhance patient satisfaction (VHA, Inc., 2002); however, there are no studies that correlate programs or select program processes with improved patient- or health-related outcomes.

When considering human capital, it is important to understand the volume of nurses being described. The Bureau of Labor Statistics (2009) reported that there were approximately 2.6 million registered nurses working in the US, with 1.56 million of them working in US hospitals. National statistics support that approximately 10% of hospital nursing care is provided by new nurses (Berkow, Virkstis, Stewart, & Conway, 2009; Fagin, Maraldo, & Mason, 2006; National Council for State Boards of Nursing, 2009a; Nursing Executive Center, 2007). National turnover rates for new graduate nurses range from 35% to 61% for this population (Casey, Fink, Krugman, & Propst, 2004).

Undetermined is whether either of these figures represents a significant value regarding incurred costs to patients, overall safety, or patient satisfaction with care.

The turnover rate for new graduate nurses does not significantly differ with other professions that have similar population characteristics. For example, the *Washington Post* reported in 2008 that 50% of new teachers resign their first position within five years. Ingersoll (2001) described a similar phenomenon among teachers that is also seen among nurses – early and large amounts of migration among teachers to different school districts as a result of job dissatisfaction and under-preparation for reality of the role. Although there are descriptions of the positive effects of nurse residency programs on retention (Pine & Tart, 2007), identification of the effect of specific program components remain unknown. Before specific interventions which may enhance the cost-effectiveness of nurse residency programs can be suggested it is necessary to first describe the structural components of these programs.

Safety and Satisfaction

The Joint Commission on Accreditation of Healthcare Organizations (2002) reported that 24% of studied errors were related to human resource errors and methods for training staff. However, the extent to which nurse residency programs, as a training method, may influence error rates is uncertain. The Institute of Medicine (1999) reported that approximately 44,000 to 98,000 Americans die each year from medical errors and yet the extent to which these are mostly due to nursing, given that most are system errors, and how many of these errors may actually be due to new

graduates, is unknown. Lee et al (2009) reported that new graduates do make mistakes, but the difference between outcomes of new nurses and experienced nurses is unknown.

Two gaps are identified in relation to the societal significance of nurse residency programs:

1. Overall, it is unknown how many errors are caused by new nurses or the effect of these errors on society.
2. In order to compare the effect of nurse residency programs on patient outcomes it is necessary to identify which outcomes competent registered nurses believe can be affected by those programs.

Significance to Healthcare

Healthcare administrators are interested in nurse residency programs for two reasons: cost (as it relates to training and turnover) and ability to possibly recruit new nurses to the organization. Health care costs, in relation to nurse residency programs, have been presented as returns on investment ranging from 884.7% to 1,373.5% (Golden, 2008; Pine & Tart, 2007) with replacement costs due to turnover ranging from $698 million to $1 billion US dollars (HSM Group, 2002; Nursing Executive Center, 2007; Webber, 2005). However, comparisons of these costs are limited due to variability in calculation methods.

For example, replacement costs within these calculations have focused on salaries for preceptors and orientees, facility and meeting costs, and program

coordination fees (Golden, 2008; Pine & Tart, 2007), but unconsidered is loss of productivity, use of supplemental or resource nurses, closed beds, deferred patients, and use of overtime (Jones, 2004). Although a methodology for estimating turnover costs has been described it has only been tested in one hospital resulting in limited generalizability (Jones, 2005). However, this is pertinent because many authors use figures from Jones' (2005) study as the benchmark for estimating replacement costs (1.2 – 1.3 times a nurse's average salary). Though nurse residency programs are costly to run, return on investment of residency programs, in terms of reduced turnover costs, are estimated to be as high as 67.3% (Beecroft, et al., 2001).

Nurse residency programs have demonstrated the capacity to influence nurse satisfaction and retention (Altier & Krsek, 2006; Fink, Krugman, Casey, & Goode, 2008; Jones & Gates, 2007); however, the influence of retention of new nurses on patient outcomes is not well understood (Jones & Gates, 2007). Improved staffing patterns and staff satisfaction are described as having a positive influence on nurses' intent to leave and overall organizational retention rates (Aiken, Clarke, Sloane, Lake, & Cheney, 2008). Nurse residency programs are described as having a positive influence on staff satisfaction (Altier & Krsek, 2006; Williams, et al., 2007; Krugman, et al., 2006; Williams, Sims, Burkhead, & Ward, 2002). One may deductively preclude that nurse residency programs influence patient outcomes; however, the effect of nurse satisfaction on patient outcomes is not known.

Six gaps are identified from the significance of nurse residency programs on healthcare:

1. Though NRPs seem intuitively cost-effective, calculating a return on investment is complex (Nursing Executive Center, 2006)
2. Although organizational retention numbers appear positive, authors have limited the time studied to one year and effects on professional retention are undetermined
3. Effects of nurse residency programs on professional and organizational recruitment efforts is undetermined
4. According to the Joint Commission on Accreditation of Healthcare Organizations (2002) the return on investment in nursing orientation will be reflected both in cost savings related to continuous orientation needs as well as seen in improvements in the safety and quality of care provided; however, at this time measures of safety and quality care that are related to nurse residency programs have not been clearly described
5. Hospital systems are reticent to provide cost calculation strategies but from the standpoint of public policy, one may ask should healthcare leaders continue to infuse dollars into programs that may or may not improve, or even influence, patient outcomes
6. At this time, the argument for causation between nurse residency programs, staff satisfaction, and patient outcomes is unsubstantiated

Significance to the Discipline of Nursing

The discipline of nursing has an interest in nurse residency programs for three reasons: continuity of professional values, recruitment into and retention within the profession, and improved nursing competency. Professional nursing paradigms have shifted five times since Florence Nightingale published *Notes on Nursing* (Grypma, 2009); however, from among these paradigms it is unclear which sets of values are used

by different undergraduate academic and nurse residency programs. Also, any effects of those values on nursing practice and patient outcomes have not been identified.

Health and healthcare outcomes in acute care settings are reported to be positively influenced by well-trained, competent nurses (Blegan, Vaughn, & Goode, 2001; Jones & Gates, 2007). Yet it is reported that new graduate nurse's lack adequate preparation for entering the workforce to meet the growing demands of today's healthcare environment (Beyea, von Reyn, & Slattery, 2007). This suggests that negative outcomes would be expected from nurses that are not well-educated, and not competent. For example, if hospital-based educators cannot adequately support the transition of new nurses, then these new nurses may not function as competent nurses, may not be satisfied with nursing practice, and may not want to stay in the professional practice area, let alone the organization (Altier & Krsek, 2006; Anderson, Linden, Allen, & Gibbs, 2009; Winfield, Melo, & Myrick, 2009). In order to fully describe the influence of these programs on nurse-sensitive patient outcomes then characteristics of these programs and patient-related outcomes must be defined.

There are four gaps identified from the significance to the discipline of nursing:

1. The discipline of nursing needs to ensure the continuity of professional values; however, these values must first be described in regards to which sets of values are used by each program.
2. Having a certain type, length, or particular paradigm of focus among nurse residency programs have not been shown to ensure that continuity of professional values was or was not achieved
3. Effects of NRPs on professional and organizational recruitment efforts are undetermined

4. Unknown is the effect of nurse residency programs on professional retention

Of the knowledge gaps identified throughout this chapter, two clear themes emerge. There is a lack of understanding about the structure of programs labeled as nursing residencies and a lack of understanding about which patient outcomes the programs may influence. This dissertation study was designed to examine the structural components of nurse residency programs because they have not been described. Without such description it is not possible to identify which components may influence patient outcomes. If maximum value of these programs is to be possible, then nursing needs to know not only the structure of these programs but which patient outcomes are most likely to be affected directly by this intervention.

Research Questions

The purposes of this dissertation study and related research questions include:

1. To describe the components of nurse residency programs:
    a. What are the structural components of nurse residency programs?
    b. What is the difference of the various structural components between nurse residency programs?

2. To identify patient-specific outcomes described by critical care nurses to be influenced by nurse residency programs:
    a. What specific patient outcomes are affected by nursing care in critical care units?
    b. How, if at all, may nurse residency programs influence these outcomes?
    c. What characteristics do nurse residency programs possess that may influence patient outcomes in critical care units?

CHAPTER II

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Kane (2006) described the goal of health outcomes research as attaining the best estimate of the relationship between a specific treatment and a distinct outcome. Minnick (2009) cautioned that outcomes assessment studies must have design rigor to guide prudent utilization of intellectual and resource capital because the results of these studies may be used as a guide for organizational development and policy genesis. Kane (2006) explained that robust outcomes studies have a clear model of salient factors, including their relationship to the outcomes of interest. However, the specifics of those factors depend primarily on the treatment of interest and the character of the variables selected for study (Kane, 2006). In this chapter an analysis of the theoretical framework that guided this study of nurse residency programs is presented. A review of relevant literature related to nurse residency programs is discussed. And, current methodology that has been used to study nurse residency programs is described and analyzed.

Theoretical Framework Analysis

A system is defined as the conceptualization of a set of interrelated elements (Von Bertalanffy, 1975). Von Bertalanffy (1975) proposed that by first knowing the components of a system, and then by understanding the relationship between those components, that higher levels of conceptualization may be realized. One approach for

understanding and conceptualizing the transactions taking place within and among the components of the system is by labeling and operationally defining these components (Abbey, 1970).

Von Bertalanffy (1975) labeled these transactions as entropy, evolution, equifinality, multifinality, and feedback and defined them in the following ways. Entropy was the tendency to enhance uncertainty through dissipation or dissolution. Evolution was the counterforce to entropy and describes how systems develop toward higher organized states and increased complexity. Equifinality was the overall capacity for systems to change. Multifinality implied that an end state has various possibilities. The model of conflicting forces of entropy and evolution, when joined with equifinality or multifinality, can explicate many kinds of dynamic vital processes. The feedback loop allowed for systems to be self-directing and was an important concept of systems theory. Control of subsystems through feedback is the conceptual pinnacle of systems theory because feedback allows for total system integration and accounts for the possibility of unified action.

Putt (1978) added that the systems frame of reference is best understood as a multipart collection of interrelated social factors and institutional mechanisms which respond to a subset of societal needs and demands. A systems approach requires that researchers first identify and describe the successive states of the system and then assess each of them in terms of their own contribution toward meeting the purposes and goals of the system (von Bertalanffy, 1973). This approach demands that researchers accurately examine and describe the components and environments within

which the system functions (von Bertalanffy, 1975). Description and examination are key purposes of the proposed study of nurse residency programs. However, to use a systems frame of reference to study nurse residency programs (NRPs), a conceptual framework based on general systems theory but specific to nursing is needed.

Conceptual Framework Analysis

Minnick (2009) described a conceptual framework of variables that influence patient outcomes based on von Bertalanffy's general systems theory that is specific to nursing and can be used to guide an exploration of nurse residency programs. Developed by Minnick and Roberts in 1991, this conceptual framework (see Figure 1) identified system-specific attributes (e.g., capital, employment requirements, and organizational structure) and offers potential relationships among these attributes as they relate to patient outcomes. This framework provided a model allowing for descriptive analysis of the components of nurse residency programs once measurable criteria were identified for each attribute (Minnick, 2009).

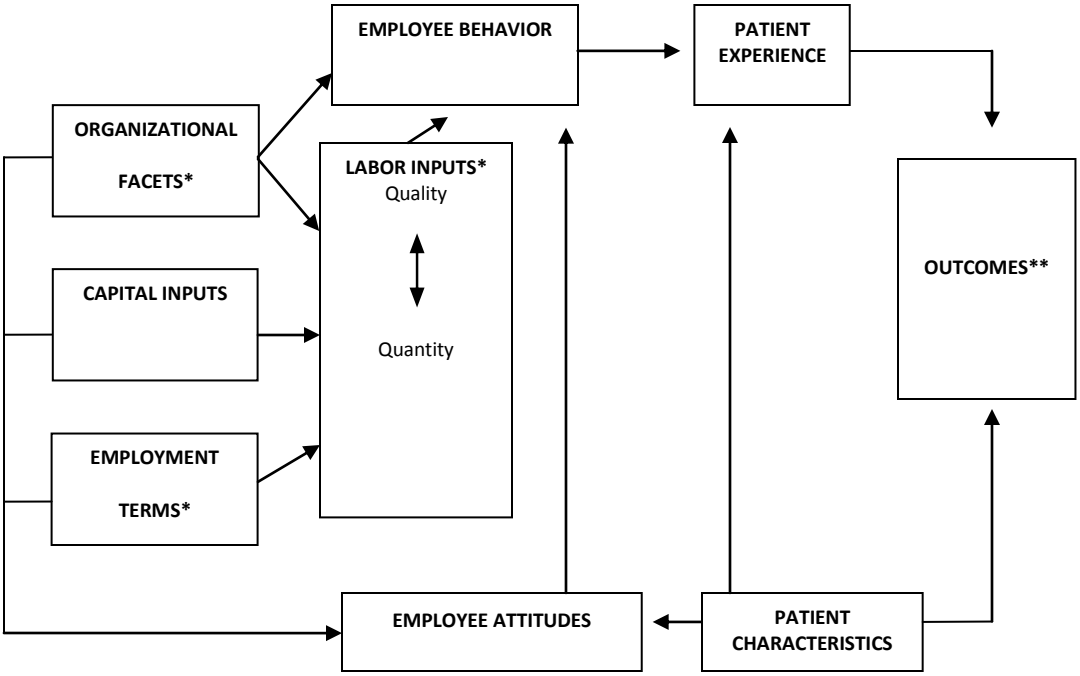

Figure 1. Minnick's and Roberts' Conceptual Framework of Variables influencing Patient Outcomes (Minnick, 2009).

A complementary conceptual framework also based on von Bertalanffy's general system theory was described by Mitchell, Srinivasan, West, Franks, Keenan, Henderson et al (2005). Their model identified specific attributes of a medical residency program (e.g., capital, employment terms, organizational facets, and outcomes).The model presented by Mitchell et al (2005) identified measureable factors and provided greater detail about many of the concepts presented in the model described by Minnick (2009). For example, the model described by Mitchell et al (2005) illustrated potential relationships among capital (e.g., computers, education sites), employment terms (e.g., funding and reimbursement), and organizational facets (e.g., health system

practice characteristics) as they related to medical residents' performance in patient care. However, this model did not illustrate a feedback transaction, an important concept in systems theory (Von Bertalanffy, 1975).

Both models suggested that residents' behavior and attitude, influenced by previous experiences and contextual factors, may be correlated to patients' perceptions of experience, and ultimately to outcomes. Likewise, patients' behavior and attitude, also influenced by previous experiences and contextual factors, were suggested to effect outcomes. Combining the concepts from these two models added specific, testable criteria to the overall conceptual framework and provided additional avenues for generating research related to nurse residency programs. By integrating components from each category of the two frameworks (organization, employee, and patient), the synthesized model became more robust in its ability to explain the current reality of nurse residency programs (Meleis, 2007). Figure 2 illustrates the synthesized conceptual framework of nurse residency-related, nurse-related, and patient-related variables that were predicted to influence outcomes.

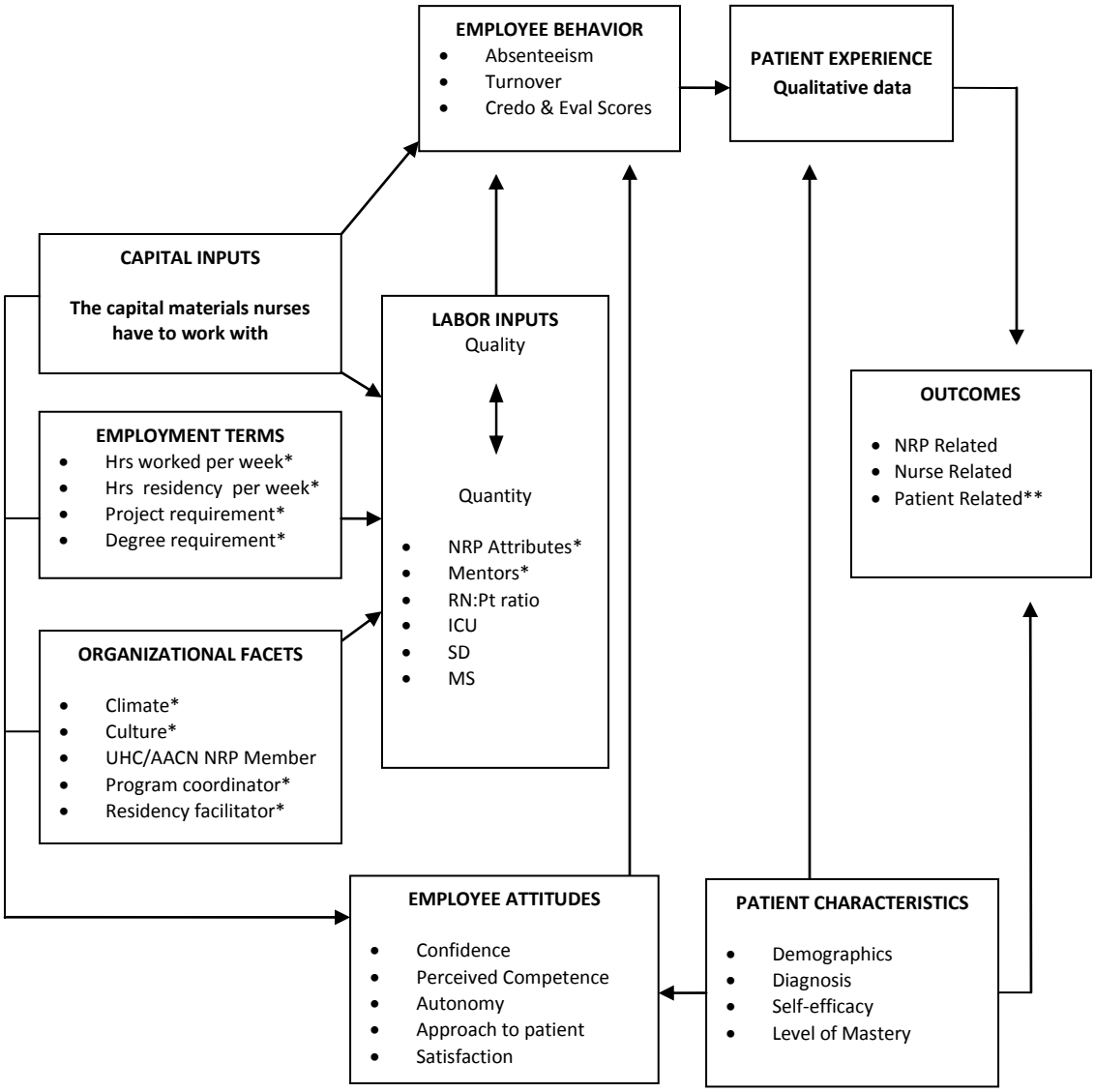

Figure 2. A conceptual framework of NRP-related variables influencing outcomes. Modified from Minnick (2009) and Mitchell, et al (2005).

(Key: *= Concepts to be examined by survey; **= Concepts to be examined by focus groups)

Based on the model in Figure 2, outcomes may be influenced by three primary variable types - the organization (i.e., capital inputs, employment terms, organizational

facets, and labor inputs), the employee (i.e., behaviors and attitudes), and the patient (i.e., characteristics and experiences). The model also suggests that employment terms and organizational facets influence each other and that together they influence labor inputs. Labor inputs are suggested to have an influence on employee behavior. It is posited by Minnick (2009) that these three factors may have an effect on outcomes.

As is required by the tenets of general systems theory, outcomes are believed to have a feedback mechanism (Von Bertalanffy, 1975). In the conceptual framework described by Minnick (2009), outcomes are believed to influence both employment terms and organizational facets directly and labor inputs indirectly. However, before these types of relationships, adjusted relationships, or cause-and-effect can be evaluated, it is necessary to describe the various components of nurse residency programs and identify specific outcomes (de Vaus, 2006). Examples of variables for each concept are presented in the synthesized model (see Figure 2).

Outcomes of nurse residency programs can be categorized as those related to the program, the nurse, or the patient (Commission on Collegiate Nursing Education, 2008). Studied NRP-related outcomes have included retention (Altier & Krsek, 2006; Beecroft, Kunzman, & Krozek, 2001; Bratt, 2009; Lindsey & Kleiner, 2005), return on investment (Pine & Tart, 2007), recruitment (Lindsey & Kleiner, 2005), and turnover (Williams, Goode, Krsek, Bednash, & Lynn, 2007). Studied nurse-related outcomes of these programs have included nurses' job satisfaction (Altier & Krsek, 2006; Anderson, Linden, Allen, & Gibbs, 2009; Goode & Williams, 2004; Williams, et al., 2007), role transition (Fink, Krugman, Casey, & Goode, 2008), and perceived autonomy (Goode &

Williams, 2004; Williams, et al., 2007). These studies will be discussed in more detail later in this chapter. Unclear is which patient outcomes may be influenced by nurse residency programs. This lack of knowledge supports a need for the second purpose of the proposed study. However, to study the effects of nurse residency programs on patient outcomes a more streamlined model than the one presented in Figure 2 is needed.

Based on von Bertalanffy's general systems theory, and the conceptual frameworks described by Minnick (2009) and Mitchell et al (2007), Figure 3 depicts a refined conceptual framework that will be used for the proposed study of nurse residency programs. From the schematic model in Figure 3 one may infer that employment terms and organizational facets influence each other. Combined, these concepts are posited to influence labor inputs and ultimately patient outcomes (Minnick, 2009).

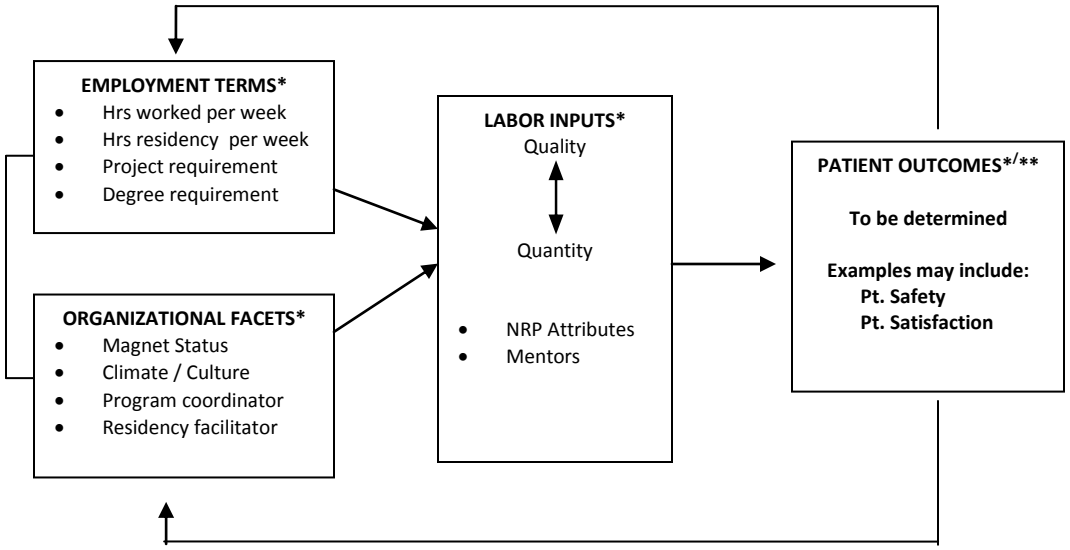

Figure 3. A conceptual framework of NRP-related variables influencing patient outcomes. Modified from Minnick (2009) and Mitchell, et al (2005).

(Key: *= Concepts to be examined via survey; **= Concepts to be examined via focus groups)

Employment terms are items related to nurse residents or nurse residency programs and include hours spent working with patients, hours of residency activities, and program requirements (specific degree, project completion). Organizational facets include characteristics of the facility such as Magnet status, climate, culture, membership in a nurse residency consortium. Organizational facets also include specific program aspects such as residency coordinator and resident facilitator roles. Labor inputs include issues related to the quality or quantity of labor required for nurse residency programs. Examples of labor inputs include presence or absence of nurse residency programs, length of the program, use of preceptors, mentors, and nurse-to-

patient ratios. These three factors are posited to affect patient outcomes (Minnick, 2009).

Conceptual Gaps

1. A limitation of systems theory is the ability to operationalize the concepts due to the theories generality. Therefore, a framework specific to nursing was sought.
2. A limitation of Minnick's and Roberts' framework is the complexity of the feedback interactions which are difficult to test in one research study. Therefore, a streamlined conceptual model based on unstudied variables is presented in Figure 3.
3. One cannot study what has not been described. Therefore, I am conducting the proposed study to describe the structural components of nurse residency programs. Secondly, I am seeking to describe which patient outcomes these programs may influence.

Critical Analysis of Relevant Nurse Residency Literature

The following is a critical analysis of the literature relevant to nurse residency programs in terms of need for the study, instrument issues, methodological issues, and analysis issues. In a recent survey, nurse executives indicated that many new nurses do not possess the needed critical thinking or technical skills at the projected level (Beecroft et al, 2004; Nurse Executive Center, 2006). This perceived skill deficiency has been described as a leading factor associated with increased job stress, nurse dissatisfaction, and early departure from the bedside (Altier & Krsek, 2006; Fink, et al., 2008; JCAHO, 2002; Keller, Meekins, & Summers, 2006).

High amounts of stress, dissatisfaction, and turnover of nurses is extremely costly to the healthcare system (Fink et al, 2008). Dependent upon personal and organizational attributes, fiscal estimates for orienting new graduates range from $22,000 to $100,000 per each graduate, making continuous orientation programs costly and a cause for concern among hospital administrators and funders of care (Beecroft, et al., 2001; Jones & Gates, 2007; Nursing Executive Center, 2006; Pine & Tart, 2007; Winfield, et al., 2009). Many organizations have implemented programs designed to slow down or reverse the continuous or "train-and-replace" orientation cycle with a "train-and-retain" type of cycle (Jones & Gates, 2007; Keller et al, 2006; Neuhauser, 2002; Rosenfeld, Smith, Iervolino, & Bowar-Ferres, 2004; VHA, Inc., 2002). It has been hypothesized that retention alone may justify the sizeable investments in nurse residency programs (JCAHO, 2002).

To counter negative effects of transition and to enhance a cycle of retention and improved returns on investment, nursing employers support a variety of extended orientation programs, collectively labeled as transition programs. Described programs include internship models (Eigsti, 2009; Newhouse, Hoffman, Suflita, & Hairston, 2007), mentorship models (Halfer, et al., 2008; Hayes & Scott, 2007; Sherrod, Roberts, & Little, 2008; Santucci, 2004; Persaud, 2008), preceptorship models (Beecroft, McClure, Hernandez, & Reid, 2008; Olson, et al., 2001; Sorenson & Yankech, 2008), and nurse residency program models (Anderson, et al., 2009; Beecroft, et al., 2001; Beyea, et al., 2007; Herdrich & Lindsay, 2006). These terms are used interchangeably in the literature to describe various types of some transition programs and to describe specific

components of other transition programs. Hence, individual descriptions of various curricular models identified as nurse residency programs have variable structures, processes, and outcomes (Beecroft, et al., 2004; Beyea, et al., 2007; Diefenbeck, Plowfield, & Herrman, 2006; Herdrich & Lindsey, 2006; Keeler, et al., 2006; Krozek, 2008; Krugman, et al., 2006; Molinari, et al., 2008; Olson, et al., 2001; Owens, Turjanica, & Scanion, 2001; Rosenfeld, et al., 2004; Williams, Sims, Burkhead, & Ward, 2002).

For example, the structures of described nurse residency programs vary in purpose, program duration, content focus, and facilitation methods (Fink, et al., 2008; Goode & Williams, 2004; Herdrich & Lindsay, 2006; Keller, et al., 2006; Krugman, et al., 2006; Nursing Executive Center, 2006; Pine & Tart, 2007; Rosenfeld, et al., 2004). Concepts addressed within various nurse residency program curricula include variable lengths of orientation, use of mentoring, and structured education sessions (Fink, et al., 2008; Goode & Williams, 2004; Herdrich & Lindsay, 2006; Keller, et al., 2006; Krugman, et al., 2006; Rosenfeld, et al., 2004). This variability limits generalizability of study findings and supports the need to conduct a study that describes the structure and content of nurse residency programs. Identifying the specific components of all US nurse residency programs will provide a definitive description of these types of transition programs.

Nurse Residency Outcomes

Studied nurse residency program-related outcomes have included retention (Altier & Krsek, 2006; Beecroft, et al., 2001; Bratt, 2009; Golden, 2008; Lee, et al., 2009; Lindsey & Kleiner, 2005), return on investment (Pine & Tart, 2007), recruitment (Lindsey & Kleiner, 2005), and turnover (Williams, et al., 2007). Studied nurse-related outcomes of these programs have included job satisfaction (Altier & Krsek, 2006; Anderson, et al., 2009; Goode & Williams, 2004; Williams, et al., 2007), role transition (Fink, et al., 2008), and perceived autonomy (Goode & Williams, 2004; Williams, et al., 2007). Lacking are studies describing patient-related outcomes of nurse residency programs.

Program Related Outcomes

National turnover rates for new graduate nurses range from 35% to 61% for this population (Casey, et al., 2004). Replacement costs due to turnover are reported to range from US $698 million to US $1 billion (HSM Group, 2002; Nursing Executive Center, 2007; Webber, 2005). Health care costs, in relation to nurse residency programs, have been presented as percentages of returns on investment ranging from 673% to 1373.5% (Beecroft, et al., 2001; Golden, 2008; Pine & Tart, 2007), but comparisons of these costs are limited due to variability in calculation methods.

There are descriptions of the positive effects of nurse residency programs on retention (Pine & Tart, 2007). However, identification of the effect of specific program components remains unknown. Current nursing retention studies have focused on

organizational retention, defined as nurses staying in their current role at their hiring organization (Golden, 2008; Lee, et al., 2009).

Effects of nurse residency programs on recruitment efforts at the organizational level are undetermined. For example, Lindsey and Kleiner (2005) proposed a nurse residency program for senior-level nursing students with the purpose of positively affecting recruitment, clinical orientation time, and retention of new graduates. However, the authors did not evaluate the program for these variables. Rather, study variables focused on student satisfaction with the program.

Nurse Related Outcomes

The influence of nurse residency programs on new nurse graduates' attitudes regarding job satisfaction and control over practice have been described (Altier & Krsek, 2006; Fink, et al., 2008; Williams, et al., 2007). For example, Altier and Krsek (2006) evaluated the effect of participating in a 1-year nurse residency program on nurses' overall job satisfaction concluding that only two out of ten satisfaction measures (satisfaction with praise and satisfaction with professional opportunities) were statistically significant. This study is limited by the fact that the participant group was used as their own control and included only baccalaureate prepared nurses in an inpatient hospital setting.

In a qualitative study on graduate nurse experiences Fink et al (2008) identified three primary dimensions leading to dissatisfaction which reportedly echoed research outcomes from previous studies. These dimensions included frustration with the work

environment, dissatisfaction with the hospital system, and effect of interpersonal relationships with colleagues and managers. As acknowledged by Fink and colleagues, this frustration may be a normal part of the transition process from student nurse to professional nurse and should be interpreted with caution due to the diversity of the sample and study sites.

Additionally, Williams et al (2007) evaluated the one-year outcomes of the UHC/AACN nurse residency program, including perception of skill development, control over practice, and job satisfaction. They identified a "V-shaped" pattern during data analysis of the control over practice and job satisfaction variables. This pattern illustrated that at study point 1 (program entry) the participants had a high level of job satisfaction and reported control over practice. At collection point 2 (6 months) the level of job satisfaction and control over practice decreased. At the final collection period (12 months) the participants' levels of job satisfaction and control over practice increased. Williams and colleagues related this high-low-high pattern to reality shock, as previously described by Kramer (1974). Overall, these studies demonstrated that levels of job satisfaction waxes and wanes during the first year of practice. The authors' surmised that due to supportive components embedded within nurse residency programs that new nurse graduates may report enhanced control over practice and overcome challenges that inhibit job satisfaction.

Patient Related Outcomes

In the *Standards for Accreditation of Post-Baccalaureate Nurse Residency Programs*, the Commission on Collegiate Nursing Education (2008) published a list of seven patient outcomes that may be influenced by nurse residents. These outcomes included: (1) Management of the Changing Patient Condition, (2) Patient and Family Education, (3) Pain Management, (4) Evidence-Based Skin Care Practice, (5) Fall Prevention, (6) Medication Administration, and (7) Infection Control. However, lacking are studies describing patient outcomes that may be influenced by nurse residency programs.

Collecting data about specific outcomes that nurses believe may be influenced by nurse residency programs allows for future studies to compare specific program components and selected outcomes (Kane, 2006). Moreover, specific nurse residency program attributes have not been identified in existing outcome studies limiting the ability for cause-and-effect inferences. This limitation supports the need for research identifying the attributes and outcomes of nurse residency programs. One pilot focus group, designed by this author to identify nurse residency program attributes and patient outcomes, was completed prior to the initiation of this study.

Focus group pilot. Participants at a large academic medical center were asked to volunteer for the focus group pilot during a residency session and were assured confidentiality regarding their participation and responses. The focus group pilot was an independent-study course assignment; therefore, institutional review board approval

was not sought. However, to ensure confidentiality, participant names were not collected and results were presented to course faculty as aggregate data.

Four nurse residents, eight months into their nurse residency program, agreed to participate. The mean age of the group was 23.25 years (SD = 1.71). All held baccalaureate degrees in nursing and 75% were female.

Appendix A presents the script used with the focus group pilot study. The focus group was conducted in a private room. An attempt was made to videotape the session; however, equipment malfunction prevented videotaping. Audio recording was not used. A nominal group technique (Sample, 1984) was used to obtain answers to the open-ended questions. This technique allowed for note taking and collection of participants thoughts in writing. These notes were used during data analysis. Outcomes from the pilot study are summarized and discussed in Table 1.

Table 1. Outcomes from Focus Group Pilot

Research Question	Participant Response and Ranking	Discussion
What specific patient outcomes are affected by nursing care in critical care units?	1. Pressure ulcer development (skin breakdown) 2. Opportunistic infections (pneumonia/VAP) 3. Length of stay 4. Satisfaction with care	Participants summed up these responses by concluding that they all work together - for example, a pressure ulcer leads to infection which will increase length of stay and ultimately results in decreased satisfaction.
How, if at all, can nurse residency programs influence these described outcomes?	1. Reinforces good practice habits 2. Choice of preceptors 3. Standardization of care 4. Unit rotations	Participants summarized these responses by saying that the primary focus for their residency has been on reinforcement of good habits – that hand washing is integrated into every aspect of care. Participants state that if the unit rotations were provided after several weeks of course-work that the rotations would "probably become more influential".
What specific characteristics do nurse residency programs possess that may influence patient outcomes in critical care units?	• Enhances thoroughness, making you more careful and slower • Enhances enthusiasm and outgoing traits • Organizational ability • Knowledge/intelligence • Initiative • Self-conscious about making a mistake	Participants were not able to agree on rankings about the amount of influence NRPs have on these outcomes. However, a sum of scores for each response indicates that knowledge/ intelligence is most easily influenced while enthusiasm/outgoing traits were least influenced.

Conceptual Gaps

From this review there are <u>five major gaps</u> identified in the current knowledge of nurse residency programs:

1. Although there have been descriptions of individual nurse residency programs (Beecroft, et al., 2004; Beyea, et al., 2007; Diefenbeck, et al., 2006; Herdrich & Lindsay, 2006; Keeler, et al., 2006; Krozek, 2008; Krugman, et al., 2006; Molinari, et al., 2008; Olson, et al., 2001; Owens, et al., 2001; Rosenfeld, et al., 2004; Williams, et al., 2002), there has been no comprehensive description of all US nurse residency programs.

2. Variability in the description and interpretation of published nurse residency program models decreases reliability and complicates generalizability of previous studies that investigated patient- and nurse-related outcomes (Blegen, et al., 2001; Fink, et al., 2008; Herdrich & Lindsay, 2006; Jones & Gates, 2007; Keller, et al., 2006; Krugman, et al., 2006; Pine & Tart, 2007; Rosenfeld, et al., 2004; Williams, et al., 2007).
3. Knowledge regarding nurse residency program curricula structure is scant in the literature, with what is known limited to the University HealthSystem Consortium (UHC) and American Association of Colleges of Nursing (AACN) nurse residency model (Goode & Williams, 2004; Krugman, et al., 2006). Unclear is how these programs are implemented at various healthcare facilities.
4. Retention and return on investment studies related to orientation and transition programs have lacked a consistent consideration of computational variables used to calculate the return on investment (Jones, 2004; Jones, 2005), have been limited to organizational turnover (Golden, 2008; Pine & Tart, 2007), and have not been considered in terms of professional turnover.
5. Unknown are those patient-related outcomes that are influenced by nurse residency programs.

Definition of Terms

Operational definitions of key terms in the survey questions that relate to the two aims of this dissertation study are summarized in Tables 2 and 3. Table 2 presents the operational definitions of key terms related to the first aim of the study. Table 3 presents the operational definitions of key terms related to the second aim of the study.

Table 2. Operational Definitions to Describe Components of Nurse Residency Programs
Note: Numbers relate to Survey Question Number

Research Questions	Operational Definitions	Term Used /Tool
What are the structural components of nurse residency programs?	***Structural Components*** are defined as supportive and leadership characteristics of nurse residency programs	Research question
	Nurse residency program are defined as those programs that self-identify as a nurse residency program, occur in a hospital setting, and focus on new nurse graduates	Research question 1, 3, 4, 12, 14, 24
	Nurse residency program model is the conceptual framework upon which the nurse residency program is designed	2
	Nurse Residents are the new graduate participants in a nurse residency program	4, 5, 6, 7, 8, 10, 18
	(Last) Cohort is the last group of nurse residents who completed the nurse residency program	3, 5, 6, 7, 9, 10, 11, 17, 19, 21, 22, 23, 24
	Nursing degrees include all entry level, associate and baccalaureate RN degrees conferred by accredited schools of nursing	6
	Offered positions include all RN jobs that were available to nurse residents	8
	Projects are defined as any activity that has a start and a finish which is completed to accomplish a specific function to an established quality within specified cost and time limits	9, 10
	Formal career planning is defined as the process used by nurse residents to identify work and educational opportunities and to set career goals	11
	Full time equivalent (FTE) is defined as a way to measure a worker's involvement in a job related task or program. An FTE of 1.0 means the person is equivalent to a full time employee	12, 13
	Program director is the member of the administrative team who is responsible for the nurse residency program	13
	Program coordinator is the person who is responsible for day-to-day activities, leads residency sessions, and manages the nurse residency program	13, 14, 15, 16
	Resident facilitator is the person who assists the program coordinators by leading group discussions during residency sessions	13, 18, 19, 20

	Secretary/Program assistant is the individual who is responsible for paperwork, time and record keeping, acquiring meeting locations, and other clerical related tasks for the program	13
	Preceptor is defined as a RN who is responsible for introducing the nurse resident to organizational standards and unit standards of care	13
	Mentor is defined as a RN who is responsible for guiding the new graduate in goal setting and role transition	13, 21, 22
What outcomes do program leaders describe as having been achieved?	***Outcomes*** are defined as specific program achievements as described by program leaders	RQ, 23
	Program leaders are RN staff and administrators who direct, coordinate, facilitate, or have responsibility for running the nurse residency program	Research question
	Confidence is defined as the nurse residents' reported state of being certain in their ability to perform required tasks effectively	23
	Competence is defined as the state of being qualified to perform required tasks	23
	Patient-related outcomes are defined as: • the end effect of a care process, • an assessable difference in a patient's health status or behavior, • the preferred and real condition of patients recorded at intervals throughout the care process, or • a predictable and assessable patient-focused goal (Arthur, Marfell, & Ulrich, 2009)	24
	Retention is defined as the number of nurse residents who stayed in their hiring unit at the end of the nurse residency program	23

Table 3. Operational Definitions to Identify Patient-Specific Outcomes Described by Critical Care Nurses to be influenced by Nurse Residency Programs

Research Questions	Operational Definitions	Tools
What specific patient outcomes are affected by nursing care in critical care units?	***Patient outcomes*** are defined as: • the end effect of a care process, • an assessable difference in a patient's health status or behavior, • the preferred and real condition of patients recorded at intervals throughout the care process, or • a predictable and assessable patient-focused goal (Arthur, Marfell, & Ulrich, 2009) ***Nursing care*** is defined as tasks and functions which are planned, implemented, or evaluated by a registered nurse	Focus Group Question 1 Question 1
How, if at all, do nurse residency programs influence these described outcomes?	***Nurse residency programs*** are defined as those programs that self-identify as a nurse residency program, occurring in a hospital setting, and focusing on new nurse graduates	Focus Group Question 2
What specific program characteristics of nurse residency programs may influence patient outcomes in critical care units?	Characteristics include technical and critical thinking skills described by critical care nurses	Focus Group Questions 3 and 4

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

In Chapter 3, methodology that was used to describe the structural components of nurse residency programs and to identify patient-related outcomes that may be influenced by these programs is presented. The methodology for each purpose is presented separately in the order of:

1. Research study design
2. Description of the research sample and setting
3. Resources used in data collection
4. Study procedures
5. Definitions of key terms and variables
6. Data collection procedures
7. Data analysis procedures

Overall Research Design

The research design was a descriptive, cross-sectional, mixed methods design. This design was best suited for describing the current reality of nurse residency program variables (Trochim & Donnelly, 2007) because it allowed for description and comparison of differences in the dependent variable among identified independent groups (deVaus, 2006). The mixed methods design allowed for consideration of the two aims of the

study because the current understanding of nurse residency programs and patient-related outcomes influenced by them is in an early, preliminary phase.

The first aim of the study was to describe and compare differences of the components of nurse residency programs. A quantitative method to address this aim allowed for summarization of large amounts of data and generalization based on statistical estimation (Trochim & Donnelly, 2007). The use of a survey tool provided an objective way to collect data about program components. Secondarily, it was relatively inexpensive to administer and was easily mailed to a large number of organizations (Trochim & Donnelly, 2007).

The second aim of the proposed study was to identify patient-specific outcomes that may be influenced by nurse residency programs. A qualitative approach allowed for the collection and interpretation of rich, descriptive detail related to patient outcomes and nurse residency programs (Trochim & Donnelly, 2007). Focus groups, composed of experienced critical care nurses, were used as the qualitative method because these groups allowed for deeper examination of complex issues than would be afforded by other methods (Trochim & Donnelly, 2007).

NURSE RESIDENCY PROGRAM SURVEY

Research Sample

In this study, research subjects were U.S. hospitals and respondents were hospital CNOs or NRP directors. To obtain information from all U.S. hospitals offering a

post-graduation NRP, potential subjects were identified using the *2010 AHA Guide* published by the American Hospital Association. The *2010 AHA Guide* is a national dataset of all US hospitals and health organizations. All potential study participants meeting inclusion criteria were included in the initial survey mailing.

Inclusion and Exclusion Criteria

Inclusion criteria were:

1. Included in the *2010 AHA Guide* – Rationale: The guide is a national dataset of US hospitals
2. 250 beds or greater – Rationale: The majority of new nurse graduates begin their careers in larger hospitals
3. Identified as community, public, or teaching hospital – Rationale: The majority of new nurse graduates begin their careers in these types of hospitals

Exclusion criteria were:

1. Identified as prison hospital, military instillation, psychiatric facilities – Rationale: These types of facilities do not have residency programs
2. Veterans' hospital – Rationale: These facilities have resources that are unavailable to community, public, or teaching hospitals

All hospitals (N = 1,011) meeting the inclusion criteria were selected for inclusion in the study.

Study Procedures

Protection of Participants

An expedited review for ethical approval was sought from the Institutional Review Board at Vanderbilt University Medical Center prior to the initiation of any study activities. The principal investigator (PI) conducted all enrollment and data collection activities. A description of the study's purpose was included with each survey. Informed consent was implied by returning the survey.

Institutional protection. There was minimal, if any, risk to the hospitals participating in the quantitative arm of the study (Vanderbilt University Human Research Protection Program, 2010) because hospitals were numerically coded, all data were presented as aggregate data, and individual respondent identities were not disclosed. Specifically, the PI numerically coded all survey instruments. These codes were used for response-tracking purposes only.

Respondent protection. Although the subjects of this study were organizations, the PI considered protection of the person completing the survey. Survey respondents had minimal, if any, risk. The survey did not ask for opinions which may have endangered the respondents' job. Personal, health, or other individual data were not solicited. All data were presented as aggregated data.

File and data protection. All electronic files were stored on the PI's encrypted thumb-drive. Any written materials or notes were kept in a locked cabinet in the PI's office. Written information was scanned or transcribed into files on the PI's encrypted thumb-drive. Afterward all written material was shredded. All files containing study-

related information were backed-up on a second encrypted thumb-drive which was kept in a locked cabinet in the principal investigator's office.

Subject Enrollment

Due to the descriptive aim of the proposed study, the researcher enrolled all (N = 1,011) hospitals meeting inclusion criteria to improve the likelihood of meaningful subgroup comparisons (deVaus, 2006). The PI distributed survey packets to each hospital via the U.S. Postal Service during the period from August 15 to November 12, 2011. For those facilities known to have a nurse residency program, the survey was addressed to the identified program contact. For those facilities with unknown residency program status, the survey was addressed to the Executive Chief Nursing Officer with a request to complete or forward the survey packet to the correct contact.

A potential disadvantage of using a mailed survey is a low response rate (Trochim & Donnelly, 2007). Therefore, the PI incentivized participants to complete and return the survey by providing a summary of the study's findings at the conclusion of the study. A total of 203 surveys were returned yielding a response rate of 20.1%.

Definition of Measures

Operational definitions that were used to describe the components of nurse residency programs are provided in Table 2 (See page 34). The questionnaire items that measured each component were also identified in the table.

Procedure for Data Collection

Survey Tool Development

A nurse residency program survey tool was designed by the principal investigator and faculty mentors because an appropriate survey tool had not been described in the literature. Considerations for tool construction were based on the conceptual framework and focused on item selection, question content, wording, format, and placement within the tool (Gelinas, Fillion, & Puntillo, 2009; Trochim & Donnelly, 2007). The final survey tool (see Appendix B) contained twenty-four structured questions. Three steps were used to design the survey tool.

Step 1 – Reviewing the Literature. The MEDLINE and OVID databases were searched using the following keywords to identify existing survey tools used to study nurse residency programs: nurse residency program, evaluation, survey, questionnaire, outcomes, and instrument. Three survey tools used to describe nurse residents' perceptions of autonomy, confidence, and competence were found. However, no tools were identified that could be used to describe the components of nurse residency programs.

Step 2 – Creating the Survey Tool. Survey questions written by the PI were independently reviewed by two investigators. This author and the two reviewing investigators categorized all proposed survey questions based on components of the conceptual framework (see Figure 3). Selected survey questions focused on identifying employment terms, organizational facets, labor statistic inputs, and patient-related

outcomes of nurse residency programs. The following table lists these indicators and identifies survey questions measuring the indicator. Questions 1, 2, 3, 23, and 24 were included to obtain information about selected attributes of nurse residency programs.

Table 4. A Categorization of Survey Questions based on Components of the Conceptual Framework

Conceptual Component	**Indicators**	**BSQ Survey Question Number or Source**
Employment Term	1. Hours worked per week 2. Hours of residency per week 3. Project requirement 4. Degree requirement	5 5 7, 8 6
Organizational Facet	1. Magnet status 2. Climate and culture 3. UHC/AACN membership 4. Residency coordinator 5. Residency facilitator	23 7, 8, 9, 10, 20, 22 UHC Website 10, 11, 12, 13 10, 14, 15, 16, 17
Labor Statistic	1. Number of residents 2. Number and type of offered and declined positions 3. Budgeted full-time RN equivalents 4. Mentoring	5 4 10 18, 19
Patient-Related Outcome	1. List of patient related outcomes believed to be most likely affected by NRPs 2. Ranking of the listed patient related outcomes *For more information about these outcome design elements, see page 49.	21, Focus groups 21, Focus groups

Table 2 (see page 35) operationally defines key terms used in the survey and identifies specific survey questions where the term was used. Program and facility

specific demographic characteristics were included in the survey because not all variables of interest were available from the *2010 AHA Guide*. Data collected from the *2010 AHA Guide* were used to supplement facility-specific data collected in the survey and included:

1. Codes representing the various types of hospital control mechanisms. These codes indicated control by one of the following entities: state, county, city, city-county, hospital district or authority, church, other non-government, individual, partnership, or corporation. The PI and an independent researcher categorized these codes into three groups: government, not-for-profit, and for-profit types of hospitals. The group labeled *government* included state, county, city, city-county, and hospital district or authority. The group labeled *not-for-profit* included church operated and other non-government. The group labeled *for-profit* included individual, partnership, and corporation.
2. Assignment of all US states to one of 9 geographic regions. Table 5 provides a list of these regions and the states within each of them.
3. The number of hospital beds. Hospital bed size was divided into four groups. Group 1 included those hospitals with 200 to 299 beds. Group 2 included those with 300 to 399 beds. Group 3 included those with 400 to 499 beds. Group 4 included those with 500 or more beds.
4. The number of full-time equivalent registered nurses (FTE-RN). FTE-RN is a mathematically derived value of hours worked per year based on the number of RNs working in full-time and part-time positions for a hospital. An FTE of 1.0 is

equivalent to 2,080 worked hours per year. In this study, because this number does not include private duty nurses or nurses in administrative positions, the number of FTE-RNs was calculated using the following formula:

Total FTE = (# of Part Time RNs/2) + # of Full Time RNs

5. Council of Teaching Hospitals (COTH) designation. Hospitals with COTH designation are classified as major teaching hospitals. Major teaching hospitals create a synergistic environment in which cutting-edge clinical care is delivered, significant medical advances are made, and the next generation of care providers is trained according to guidelines of the Association of American Medical Colleges (AAMC, 2010). These hospitals accounted for more than 50% of intensive care units in the United States (AAMC, 2010).

Step 3 – Piloting the Survey Tool. The survey tool provided a source of quantitative and qualitative information on current orientation programs labeled as nurse residency programs. The survey tool was piloted by a sample of ten experts on nurse residency programs to determine face and content validity. Prior to distributing the survey tool, an expedited review for ethical considerations was sought from the Institutional Review Board at Vanderbilt University Medical Center so that experts' responses could be included in the final dataset. Feedback about the newly developed survey tool was sought via the use of a validity and feasibility feedback questionnaire (see Appendix C) and any comments provided on the returned survey. The survey tool and feedback questionnaire was sent by mail to the selected participants' work address with a self-addressed stamped return envelope included.

Five surveys were returned. Four validity and feasibility feedback tools were returned. Two experts did not provide demographic information. Three of the responding experts were women. Two had doctoral preparation and one had masters preparation. Time at their organization ranged from 5 years to 40 years and time spent working with NRPs ranged from 6 years to 15 years.

Validity of the Survey Tool. Validity has been described as the level of agreement among experts regarding the overall simplicity of the survey tool, time to complete the tool, and the tools ability to measure identified concepts (Gelinas et al, 2009). Face and content validity of a survey tool has been supported when the average percent of agreement among the experts (described as the Content Validity Index or CVI) was greater than 0.80 or 80% (Gelinas et al, 2009; Polit, Beck, & Owen, 2007; Waltz, Strickland, & Lenz, 1991). Four (100%) experts agreed that the survey tool was simple to use, easy to follow and understand, and useful to describe NRP content (CVI = 1.00). Four experts recorded start times and three recorded stop times. For those reporting both times it took between 15 and 20 minutes to complete the survey tool. Two of these three agreed that the survey tool was concise and quick to complete, as did the expert that did not record a stop time (CVI = 0.75). Experts suggested that clarifying two questions may decrease completion time: 1) Clearly define if BSN degree refers to first or second degree, and 2) Clarify or remove question regarding time allocation. Identified problems were re-defined, corrected, and verified by two independent researchers before the survey was mailed to study participants.

Content validity, that is, the extent to which the survey tool adequately sampled relevant components of nurse residency programs was evaluated using expert opinion because high-quality measurements require content validation (Polit, Beck, & Owen, 2007). The arrangement of responses available to the experts was focused on a rating of the relevance that survey items were an indicator of NRPs (Skumolski, Hartman, & Krahn, 2007). Responses were scaled based on four ordinal points, where 1 = *not at all relevant*, 2 = *a little relevant*, 3 = *moderately relevant*, and 4 =*very much relevant* (Polit, et al., 2007; Waltz, Strickland, & Lenz, 1991). Content validity was analyzed by calculating the CVI for each item (Polit, et al., 2007). Table 5 provides a summary of these values and evaluation of item relevance. The average CVI was 0.84 suggesting evidence of good content validity (Polit, et al., 2007). Three items were rated as fair and were either rewritten or removed from the survey tool. The PI and two additional researchers agreed that the concept of residents' time allocation was important to the aim of the study and was clearer when rewritten to determine the estimated percent of time allocated rather than an exact number of hours per week. UHC/AACN Membership and declined positions were removed from the survey tool. Additionally, experts were asked to provide feedback related to any missing concepts or areas for clarification. Experts identified no program content that was not already included in the survey. Mentorship was redefined to include formal and informal relationships. The average CVI increased to 0.93 after the corrective steps were completed, suggesting that the final survey tool had excellent content validity (Polit et al., 2007).

Table 5. Summary of Content Validity Index (CVI) Results and Evaluation

Survey Item	N	A	CVI*	Evaluation of Relevance**
Hours worked per week	4	2	0.50	Fair
Hours of NRP per week	4	3	0.75	Good
Project requirement	4	4	1.00	Excellent
Resident Degree Status	4	4	1.00	Excellent
Hospital's Magnet Status	4	4	1.00	Excellent
Unit Climate and Culture	4	4	1.00	Excellent
UHC/AACN Membership	4	2	0.50	Fair
Resident Coordinator	4	4	1.00	Excellent
Residency Facilitator	4	4	1.00	Excellent
Number of Residents	4	4	1.00	Excellent
Offered Positions	4	4	1.00	Excellent
Declined Positions	4	2	0.50	Fair
Budgeted FTEs	4	3	0.75	Good
Mentoring	4	3	0.75	Good

Note: N = Number of experts; A = Number of experts in agreement; CVI = Content Validity Index; NRP = Nurse Residency Program; UHC = University HealthSystems Consortium; AACN = American Association of Colleges of Nursing; FTEs = Full-time Equivalents. [*(CVI = A/N); **Based on CVI values: ≥ 0.80 = Excellent; 0.79 – 0.51 = Good; ≤ 0.50 = Fair (Polit et al., 2007)]

Data Collection Process

Institutional subjects. A preliminary descriptive analysis was conducted on data from all targeted hospitals included in the *2010 AHA Guide* that met inclusion criteria. The targeted sample (N = 1,011) had a median bed size of 377.00 (IQR = 307.00 to 508.00) with a range of 250 to 2,249 beds. Reported FTE-RNs had a median value of 604.00 (IQR = 442.00 to 930.00) with a range of 54 to 4,704 FTEs. Continuous data were positively skewed. Table 6 provides a summary of targeted hospitals in terms of AHA control code, region, bed size, and COTH status. Though not provided in the AHA guide, AACN Magnet status was also included.

Table 6. Descriptive Statistics for Hospital Sample (N = 1,011).

Metric	% (n)	Metric	% (n)
AHA Control Code		**Bed Size**	
Government	13.9 (141)	5 (250 – 299)	22.5 (227)
Not-For-Profit	74.8 (756)	6 (300 – 399)	33.1 (335)
For Profit	11.3 (114)	7 (400 – 499)	18.2 (184)
		8 (≥ 500)	26.2 (265)
AHA Regions		**AACN Magnet Status**	
1 (CT/ME/MA/NH/RI/VT)	4.2 (42)	Designated	18.2 (184)
2 (NJ/NY/PA)	16.9 (171)	Not Designated	81.8 (827)
3 (DC/DE/KY/MD/NC/VA/WV)	19.9 (201)		
4 (AL/FL/GA/MS/SC/TN)	15.6 (158)		
5 (IL/IN/MI/OH/WS)	7.3 (74)	**COTH Member Status**	
6 (IA/KS/MN/MO/NE/ND/SD)	7.2 (73)	Yes	25.2 (255)
7 (AR/LA/OK)	10.6 (107)	No	74.8 (756)
8 (AZ/CO/ID/MT/NM/UT/WY)	5.2 (53)		
9 (AK/CA/HA/NV/OR/WA)	13.1 (132)		

Note: AHA = American Hospital Association, AACN = American Association of Colleges of Nursing; COTH = Council of Teaching Hospitals

Survey distribution and collection. The PI mailed a survey packet to the CNO or identified NRP program director at all hospitals (N = 1,011) included in the sample. The survey packet contained a paper copy of the survey tool and instructions for its completion and return, key definitions, informed consent information, PI contact information, and a self-addressed stamped envelope to return the completed survey tool. A total of 118 surveys were returned following the initial mailing. Non-respondents were mailed a second survey packet 5-weeks after the first mailing. A total of 77 surveys were returned from the second mailing. Non-respondents were mailed a third survey packet 4-weeks after the second mailing. A total of 5 surveys were returned from the final mailing; two of these were returned after the deadline and were not included

in the final dataset. The PI entered all data into an excel spreadsheet as the surveys were returned. Twelve weeks after the initial mailing and after all received data were entered into the spreadsheet and verified correct, the dataset was exported for analysis to a statistical software program (IBM SPSS Statistics 19, 2010. Chicago, SPSS, Inc.).

Ensuring data quality. To ensure completeness of the data collected, the PI reviewed each returned survey for percentage of completeness. The most common source of incomplete data was at the item level where one or more survey items were not answered by study participants. All surveys mailed to NRP directors were returned without missing data (N = 15). The PI made one attempt to obtain any missing data by contacting the executive chief nursing officer from hospitals where participants submitted incomplete surveys. All missing data were numerically coded as missing in the final dataset. The PI excluded three cases because those hospitals were still in the first year of their programs.

Quantitative Data Analysis

Statistical Considerations and Data Analysis

Two key statistical considerations for descriptive, cross-sectional designs included the need for a large enough sample size for subgroup analysis and the ability to generalize beyond the sample population (deVaus, 2006; Wood & Ross-Kerr, 2006). An initial descriptive analysis of the data was conducted to determine counts and percentages of studied variables and to determine if the returned sample was

representative of the population surveyed. If data were distribution-free or were not normally distributed, counts and percentages (nominal or ordinal variables) or medians and $25^{th} – 75^{th}$ interquartile ranges (skewed continuous data) were used to describe the distribution of cases (Grove, 2007; Trochim & Donnelly, 2006). All continuous data were skewed. Results of these analyses are provided in Chapter 4.

Another statistical consideration for this study was an examination of any statistically significant differences among reporting programs (UHC, FBM, and "Other") (Munro, 2005). Cross-tabulation and Chi-Square Tests were used for comparing the differences between distributions of nominal and ordinal data (Munro, 2005). The Kruskal-Wallis test was used to compare differences between distributions of interval/ratio data (Munro, 2005). Differences in the estimated time allocated for program related activities (i.e., direct patient care, NRP-related, and professional activities) during three sequential points of time (i.e., first week, midpoint week, and last week) were assessed using repeated measures ANOVA tests to compare the differences in distributions within each program and between the three program model types (Munro, 2005). Associations between organizational facets (i.e., Magnet designation, COTH status, and shared governance status) were assessed using Phi coefficient. Results of these analyses are provided in Chapter 4.

The last statistical consideration for this study was the classification of all nurse residency programs into natural groups based on a selected set of variables identified from the conceptual framework. Cluster analysis methodology was used because the category membership of the collected data was unknown (Anderberg, 1973). As a

means for explorative data analysis, the process of clustering allowed for the genesis of heterogenic groups comprised of homogeneous programs (Bijnen, 1973).

Procedure for cluster analysis. Using IBM SPSS 19 statistical software, data were analyzed using a Log-Likelihood Distance (Two-Step clustering algorithms) Cluster Analysis because the log-likelihood distance measure accommodated both continuous and categorical data [IBM SPSS 19 Help Topics: Log-Likelihood Distance (Two-Step clustering algorithms), SPSS-IBM Co.]. The log-likelihood distance measure is a probability based distance.

Three assumptions underlie log-likelihood cluster analysis: 1) cases and variables are independent of each other, 2) multinomial distributions for categorical variables, and 3) normal distributions for continuous variables. Nine variables were input into the cluster analysis model. Seven were categorical (i.e., control code, bed size, project requirement, career planning, mentor use, shared governance model use, and magnet status). Two were continuous (i.e., program length and number of residents finishing the program).

The procedure, as described in the IBM SPSS-19 Help Topics, is outlined below:

1. Pre-clustering – the pre-cluster step used a sequential clustering approach to scan all data records independently to determine if, based on the distance criterion, the current record should be merged with the previously formed clusters or if a new cluster should be started. Cases were randomly ordered before building the model because the structure may be dependent on the input order of the cases.

2. Clustering – The clustering step used an "agglomerative hierarchical clustering" method defined by the recursive application of mathematical algorithms to determine the distance between clusters. This distance was related to the decrease in log-likelihood as the algorithm fashioned the model clusters into one cluster. The Schwarz Bayesian Information Criterion (SBIC), an auto-clustering process, was used to define the number of clusters to be generated because the SBIC tends to choose fitted models that are more parsimonious (Cavanaugh, 2009).

SBIC has appeal in many modeling problems where priors are hard to set precisely (Anderberg, 1973). The calculation of SBIC was derived from the empirical log-likelihood and did not require the specification of *a priori* classifications (Cavanaugh, 2009). The fitted model favored by SBIC ideally corresponded to the model which is *a posteriori* (i.e., the model which is rendered most plausible by the data at hand) (Cavanaugh, 2009). In Bayesian applications, pairwise comparisons between models are based on the distances between clusters (Anderberg, 1073).

The difference between clusters i and j was equal to the sum of clusters i and j minus the index that represented the combination of clusters i and j. Expression of this difference as a mathematical formula yields: d (i, j) = $\xi_i + \xi_j - \xi_{<i,j>}$

Where $\xi_v = -N_v \left\{ \sum_{k=1}^{K^A} \frac{1}{2} \log(\sigma_k^2 + \sigma_{vk}^2) + \sum_{k=1}^{K^B} E_{vk} \right\}$ and,

$$E_{vk}^{\wedge} = -\sum_{l=1}^{L_k} \frac{N_{vkl}}{N_v} \log \frac{\mathrm{N_{vkl}}}{\mathrm{N_v}}$$

Mathematicians added the σ_k^2 term to solve the problem caused by σ_{vk}^2 = 0, which would have resulted in the natural logarithm being undefined (IBM, SPSS 19, Help-Topics). Anderberg (1973) equated this problem to a cluster only having one case. If σ_k^2 had been disregarded in the expression for ξ_v then "the distance between clusters i and j would have been exactly the decrease in log-likelihood when the two clusters were combined" (IBM, SPSS 19, Help Topics).

Once clusters were derived, differences among the clusters were analyzed using Chi-square for nominal and ordinal data and Kruskal-Wallis for continuous data.

Because of the large number of univariate tests that were performed in this study, for analyses, a critical alpha (α) level of .01 was used as the criteria for determining statistical significance.

Survey Question 21. All participants were asked to list and rank-order five patient related outcomes that they believed may be affected by nurse residency programs. The PI used a content analysis approach for this question because of the need to put "a variety of word patterns into a classification scheme" (Krippendorf, 1980, page 159). This approach is described in more detail in the following section titled "Focus Group Interview". The PI used the following steps in the analysis of Question 21:

1. A coding scheme for patient outcomes was developed, based on quality curriculum standards defined in the *Standards for Accreditation of Post-Baccalaureate Nurse Residency Program* (Commission on Collegiate Nursing Education, 2008) (See Appendix D for Coding Dictionary)

a. The coding scheme included three thematic categorical labels with various sub-categorical labels. The PI added 'Other' as a fourth category during analysis with subcategories created as required from the analysis

b. Categories and Subcategories included:

    i. Leadership – management of patient care delivery, resource management, communication, and conflict management

    ii. Patient Outcomes – management of changing patient condition, patient and family education, pain management, evidence based skin care practices, fall prevention, medication administration, and infection control. Patient satisfaction was added as an eighth sub-category during analysis

    iii. Professional Role – ethical decision making, end-of-life care, cultural competence, stress management, evidence based practice, and professional development. Satisfaction (RN or nurse resident) was added as a seventh sub-category during analysis

    iv. 'Other' - subcategories labeled by the PI included four program related outcomes (i.e., turnover, recruitment, retention, and effect on survey data), health-related economics, organizational outcomes, satisfaction - unspecified, and non-categorized

2. All survey responses were exactly transcribed into a prepared excel spreadsheet
    a. Listed outcomes were entered into separate columns that had been labeled based on respondents' rank-ordering (i.e., Rank 1, Rank 2, Rank 3, Rank 4, Rank 5)
    b. PI transcribed outcomes that were listed but not rank-ordered with the first-listed outcome as Rank 1, the second-listed outcome as Rank 2, and so on through Rank 5
    c. PI transcribed outcomes that included more than one outcome per rank (e.g., decrease med errors/improve infection rates) as listed by the respondent and coded the outcome as "M0", where M represents "mixed" and 0 represents "do not include" in analysis
    d. Skipped and missing outcomes were labeled as "no response provided" and coded as "Z0", where Z represents "zero response" and 0 represents "do not include" in analysis
3. All listed outcomes were coded and analyzed based on category, subcategory, and final code assignment (e.g., A, 1, and A1 respectively)
4. The PI and two independent researchers confirmed the coding assignments
5. The final coded dataset was exported to statistical software for descriptive analysis

Restoring Missing and Incomplete Data

Surveys mailed to NRP directors were returned without missing data. Twenty surveys mailed to CNOs were noted as incomplete because of missing data. The PI made one attempt to collect missing data by contacting the 20 CNOs. Four provided the missing data, twelve did not, and four were not able to be reached. The PI evaluated all remaining missing data for random or systematic patterns. The amount of missing data in each returned survey was small (i.e., less than 6 questions unanswered) and of random pattern. Thus, an available-case analysis was used to handle the missing data (Munro, 2005). Procedures employed to impute missing values were not performed because of the study's descriptive design (Munro, 2005).

One variable, which sought to identify the estimated amount of time nurse residents spent performing selected activities was marked by 13 (13.7%) respondents as "confusing", "not applicable", or "not measured". Thus, for this variable, these cases were excluded from analysis. For cases excluded from the analysis, an analysis was conducted to identify case similarities (Munro, 2005). Results of these analyses are provided in Chapter 4.

FOCUS GROUP INTERVIEW

Setting

For qualitative studies, the concept of setting was more complex than merely deciding where to conduct an interview (Marshall & Rossman, 2006). Although the exact settings were expected to vary, there were setting requirements. These included a

setting that: 1) enhanced group discussion and data collection and 2) were convenient and comfortable for the participants (Morgan, 1998). The chosen setting was the location of local AACN (American Association of Critical Care Nurses) chapter meetings. Conducting the focus groups at the participants' meeting locations provided convenience, comfort, and familiarity for participants (Morgan, 1998). The unknown nature of these spaces presented a challenge for this investigator. For example, two locations lacked adequate wall space for displaying the groups' work and one location lacked writing space for participants to easily write responses on provided index cards. Planning for future focus groups should include a discussion about specific room-related needs.

Sample and Sampling Plan

Sample description. According to the *2008 National Sample of Registered Nurses* it was estimated that 2,596,599 registered nurses were employed by US hospitals. Of these registered nurses, 328,932 (20.9%) were estimated to spend more than half of their direct patient care time in critical care units. It was not cost effective to include all critical care nurses in this study (Marshall & Rossman, 2007). Therefore, a purposive sampling process was used to recruit critical care nurses for focus group participation (Morgan, 1998; Trochim & Donnelly, 2007).

In the *National Sample Survey of Registered Nurses* (2008), states were divided into nine geographic regions. The purposive sample focused on participants from the East South Central region which included the states of Alabama, Kentucky, Mississippi,

and Tennessee. This region was selected based on the PI's geographic location in relation to AACN meeting sites.

Although 10 groups are the average in focus group studies, a large sample size was not required given the exploratory nature of the aim (Marshall & Rossman, 2006; Rubin & Rubin, 2005). However, transferability of findings is the tradeoff (Marshall & Rossman, 2006). Focus groups were composed of three-to-fourteen participants (Morgan, 1998). The researcher added groups until a point of knowledge saturation was reached (Marshall & Rossman, 2006; Munhall, 2007; Sandelowski, 2001).

Inclusion and exclusion criteria

Both male and female subjects from all age groups and racial or ethnic backgrounds were sought to participate in the study.

Inclusion criteria for selected participants were:

1. AACN Chapter Membership – Rationale: AACN is the professional organization for critical care nurses in the US (Frank, 2005).
2. Active, valid registered nursing license in their state of practice – Rationale: Licensure is an employment requirement for nurses.
3. Two years or more of clinical experience in a critical care setting – Rationale: A majority of registered nurses describe their practice as competent with a minimum of two years of experience.
4. 50% or more of their current work time spent in direct patient care – Rationale: More time spent performing direct patient care enhances the nurses' knowledge of patient outcomes that may be affected by nursing care.

Exclusion criteria for selected participants were:

1. Retired, inactive, or suspended nursing license
2. Less than two years of critical care experience
3. Less than 50% of their current work time spent in direct patient care

Study Procedures

Protection of Human Subjects

Approval was obtained from the Institutional Review Board at Vanderbilt Medical Center. The PI informed participants of the purpose of the research and the structure of the focus group interview, including the use of audio-taping, to ensure their consent was informed. The PI assured participants that their identities would remain confidential. The PI assigned each participant a unique code number and pseudonym that was placed on all data sheets. The PI maintained all code assignments in a code book. The PI reported data as aggregated results and participants were not linked to reported data.

The code book, all audio tapes, and all transcriptions of the focus group interviews were stored in a locked cabinet in the principal investigator's office. The PI transcribed all electronic recordings. This not only assured confidentiality, but also aided the researcher in becoming more familiar with the information shared by participants during the focus group session (Marshall & Rossman, 2006). The PI stored all paper transcriptions in a locked cabinet in the PI's office. The PI stored all computer-based

transcription and demographic information separately on an encrypted thumb-drive. Members of the dissertation committee had access to the transcripts.

Subject Enrollment

Chapter recruitment. All four states in the East South Central region had at least one AACN chapter: Alabama (3 AACN Chapters); Kentucky (5 AACN chapters); Mississippi (1 AACN Chapter); and, Tennessee (5 AACN Chapters). Using electronic mail, the PI contacted the president of one chapter from each state to request their assistance with the study. Information shared in the communication included the number of participants being sought for each focus group, the purpose of the study, inclusion and exclusion criteria, and proposed remuneration for participation. Three chapter presidents agreed to assist with the study, one did not respond. Additional chapters were not contacted because knowledge saturation was achieved with three groups (Marshall & Rossman, 2006; Munhall, 2007; Sandelowski, 2001).

The PI incentivized chapter participation by offering one 60-minute presentation related to his clinical specialty - neuroscience intensive care nursing. From a list of three presentation topics, each worth one contact hour, chapter presidents selected one presentation. Topic choices included advanced neurological assessment techniques, intracranial pressure monitoring and management, and stroke assessment and management. Chapter presidents were encouraged to discuss the topic choice with their members and to select a topic at a later time. Each participating chapter declined the presentation due to agenda-related time constraints.

Subject recruitment. After a date to conduct the study was confirmed with the chapter president, the PI sent each president a flyer by electronic mail for distribution to all chapter members. The flyer described the study and listed the date and time of the focus group. The flyer also contained contact information for the principal investigator. The PI was contacted by twenty-one potential subjects. Each was screened by telephone prior to enrollment in the study to ensure their eligibility to participate. All potential subjects were enrolled in the study. Three additional steps were used to ensure a productive focus group (Morgan, 1998):

1. Participants received a confirmation letter by email regarding group participation
2. Participants were contacted by email two weeks before the actual focus group
3. Follow-up phone calls to group members were made the day before the focus group.

Nineteen subjects attended the focus groups. Two subjects withdrew from the study prior to the follow-up phone call citing scheduling conflicts.

Definition of Measures

Operational definitions related to the focus group procedure are provided in Table 3 (See page 36).

Procedure for Data Collection

To explore and collect experiential narrative material that can be used to develop a meaningful understanding about the influence of nurse residency programs on patient outcomes, basic questions were prepared by the PI in advance of the interview and reviewed by two faculty mentors (Munhall, 2007). Considered in relation to understanding the perspectives of critical care nurses, these primary questions (the focus group interview guide) were open-ended allowing for detailed description of the patient outcomes that may be influenced by nurse residency programs (Krueger, 1998a; Munhall, 2007; Rubin & Rubin, 2005). The PI used the interview guide (see Appendix A) with each subsequent interview, providing a framework for the interview and adding credibility to the research (Munhall, 2007; Rubin & Rubin, 2005).

Focus Group Procedures

The procedure for the focus group included three phases. The first phase was set-up and reception and entailed three separate processes 1) participant selection, 2) participant recruitment, and 3) set-up of physical space and participant reception (Morgan, 1998). The second phase included moderating the focus group using a structured variation of the small group discussion method (Krueger, 1998b; Morgan, 1998; Sample, 1984). The final phase included ending the focus group and debriefing the session (Krueger, 1998b).

Set-up and reception. Participants were recruited and selected as described. The principal investigator (PI) arranged with the AACN Chapter President to arrive at the site for the focus group one-hour before the group was scheduled to meet. Early arrival allowed time to arrange the room to facilitate participation, conversation, and audio recording of the session (Morgan, 1998). The PI greeted participants and asked each to complete a basic demographic summary including age, gender, race, years as a licensed nurse, years as a critical care nurse, years as an AACN chapter member, highest degree attained, specialty certification, type of unit currently worked, and type of facility worked. A sample of the demographic survey is included in Appendix C. The following table provides a summary of the demographic characteristics among all focus group participants.

Table 7. Summary of Focus Group (FG) Participants

	All FG Participants N = 19
	N (%)
Gender	
Female	18 (94.7)
Male	1 (5.3)
Age Range (in years)	
20-30	3 (15.8)
31-40	4 (21.1)
41-50	5 (26.3)
> 51	7 (36.9)
Academic Degree	
Associates Degree in Nursing / Diploma	8 (42.1)
Bachelors of Science Degree in Nursing	8 (42.1)
Masters of Science Degree in Nursing	3 (15.8)
Professional Certifications	
Critical Care Certifications	7 (36.8)
Specialty Certifications	4 (21.1)
No Certifications	8 (42.1)
Facility Type	
Community	7 (36.8)
Public	9 (47.4)
Teaching	3 (15.8)
Unit Type (ICU = Intensive Care Unit)	
Cardiovascular ICU	3 (15.8)
Mixed Medical-Surgical ICU	8 (42.1)
Neuroscience ICU	3 (15.8)
Cardiac Cath Lab	5 (26.3)
Surgical ICU	3 (15.8)
Patient Population	
Adult only	17 (89.5)
Pediatrics only	0
Mixed Adult & Pediatrics	2 (10.5)

Moderating. Using the focus group interview guide (see Appendix A), the principal investigator moderated the group discussion. Krueger (1998b) warned that unstructured focus groups may not meet their objective due to discussion domination or passive group members. Delbecq and VandeVen (1971) described a structured small group discussion technique that provided methods to address Krueger's warnings. This

technique was labeled nominal group technique (NGT). Sample (1984) described the steps for moderating a focus group using the NGT. These steps are fully addressed in Appendix A and in summary, include:

1. Stated an open-ended question
2. Allowed participants to think about answers in "silence" then write their answers on provided cards
3. Using a round robin technique, participants shared their responses and the responses were listed on a flipchart
4. Participants rated the importance of each response, then evaluated and discussed the responses

Ending the Group and Debriefing. The PI thanked the group for their participation at the end of the session. As each participant left they received the principal investigator's business card should they have had questions or concerns after the session. Should a participant have offered additional feedback or information that was relevant to the study, they would have been provided an opportunity to share the information (Krueger, 1998b). The participant would have been asked why they waited to share this information because the answer to this question may have highlighted a need for question revision (Krueger, 1998b).

The PI reflected on the session after the group left the area (Krueger, 1998b). The following 5 questions (Krueger, 1998b) were considered:

1. What were the salient themes of the discussion?
2. Did these differ from expected themes?
3. Did any statements stand out that should be included in the final analysis?

4. Were there any unexpected findings?
5. What should be done differently at the next session?

Qualitative Data Analysis

Qualitative analysis occurred throughout the data collection process. Qualitative analysis included four phases: 1) data collection and organization, 2) coding with categorical theme generation, 3) searching for alternative explanations, and 4) reporting the findings (Marshall & Rossman, 2006; Rubin & Rubin, 2005).

Collecting and organizing the data

Data were collected via audio recordings of each session and from flipchart sheets and field notes that were generated during and after the focus group session. As soon as was possible, the PI transcribed each audio recording verbatim (Bailey, 2008; Marshall & Rossman, 2006). Transcriptions were recorded within one-week of the focus group. This allowed inclusion of contextual cues regarding what was being said (Bailey, 2008). Self-transcription of data encouraged the process of immersion required to fully understand the influence of nurse residency programs on patient-related outcomes (Marshall & Rossman, 2006; Rubin & Rubin, 2005).

Data transcription is an interpretive act rather than purely a technical procedure (Bailey, 2008). The close observation that self-transcription demanded aided the PI during coding and theme development by providing contextual cues for participants'

responses. Codes and themes were based on participant feedback and developed in concert with faculty mentors.

Coding, theme generation, and interpretation

Qualitative response analysis was conducted to identify the outcomes and characteristics of nurse residency programs described within the focus group data. The principal investigator (PI) developed a coding schema based on the research questions and an initial analysis of early focus groups. Coding reflected the general area (primary code) and the specific outcome or attribute the participant described (secondary code). An example of a code assigned to a portion of data may be "technical skill (primary code)/patient safety (secondary code)".

From this analysis, the PI maintained a repetitive process for continued coding refinement and the identification of patterns and themes within the data. Identification of patterns and themes provided conceptualizations that explained relationships between categories (Connelly & Yoder, 2000). Conceptualizations were documented through a process of written notes and analytic memos which outlined and described the decision-making for coding throughout the study. This process allowed for the interpretation of the data to become more and more sophisticated as the analysis continued and this was documented in the memos (Connelly & Yoder, 2000).

Searching for Alternative Explanations

Methodologic rigor was preserved by the maintenance of an audit trail of processes and analytic memos and by periodic mentor-led debriefings. The purpose of the debriefings was to discuss the findings with colleagues who are knowledgeable about the phenomenon of nurse residency programs (Connelly & Yoder, 2000). This process helped to insulate any researcher bias and to explore alternative explanations for findings (Connelly & Yoder, 2000).

Reporting the Findings

As was mentioned above, writing about collected qualitative data was central to, and could not be separated from, the analytic process (Marshall & Rossman, 2006). As a final product of this dissertation, this researcher will submit an article focusing on the qualitative process and results. Sections of the article will follow the qualitative proposal outline.

CHAPTER IV

RESULTS

Chapter 4 presents the analysis results for the returned survey tools and the contribution of focus group members. Results describing nurse residency programs, the first aim of the study, are presented first, guided by the elements included in the conceptual framework. Additional survey analysis findings will be addressed separately. Lastly, results obtained from an analysis of focus group transcripts regarding the patient outcomes critical care nurses believe to be influenced by nurse residency programs (the second aim) are presented in terms of each question.

Survey Data – Aim 1

Descriptive Characteristics of Participating Hospitals

Survey tools were distributed to 1,011 known NRP Directors or Executive Chief Nursing Officers of all U.S. hospitals which met inclusion criteria. Two-hundred and three (20.1%) survey tools were returned during the study period. Three survey tools returned from organizations with NRPs were not included in the final dataset because their first cohort of nurse residents had not completed the program. Two tools were returned after data analysis began and were not included in the final dataset. Therefore,

a total of 198 (19.6%) hospitals were included in the final dataset. The characteristics of the participating hospitals were compared with those of all hospitals included in the Sample. These findings are reported in Table 8.

Table 8. Comparison of Selected Characteristics of the Total Group (N = 1,011) and Respondent Hospitals (N = 198).

	Total Group % (n)	Respondents % (n)	Statistic	p value
AHA Control Code				
Government	14.0 (141)	19.2 (38)	χ^2 = 11.993 (df = 2)	.002
Not-For-Profit	74.7 (753)	75.3 (149)		
For Profit	11.3 (114)	5.5 (11)		
AHA Regions				
1 (CT/ME/MA/NH/RI/VT)	4.2 (42)	3.5 (7)	χ^2 = 12.849 (df = 8)	.117
2 (NJ/NY/PA)	16.8 (169)	14.1 (28)		
3 (DC/DE/KY/MD/NC/VA/WV)	19.9 (201)	15.7 (31)		
4 (AL/FL/GA/MS/SC/TN)	15.7 (158)	21.2 (42)		
5 (IL/IN/MI/OH/WS)	7.3 (74)	10.6 (21)		
6 (IA/KS/MN/MO/NE/ND/SD)	7.2 (73)	8.1 (16)		
7 (AR/LA/OK)	10.5 (106)	9.1 (18)		
8 (AZ/CO/ID/MT/NM/UT/WY)	5.3 (53)	5.6 (11)		
9 (AK/CA/HA/NV/OR/WA)	13.1 (132)	12.1 (24)		
Bed Size				
250 – 299	22.5 (227)	21.7 (43)	χ^2 = 0.109 (df = 3)	.991
300 – 399	33.1 (335)	33.3 (66)		
400 – 499	18.2 (184)	18.2 (36)		
>500	26.2 (265)	26.8 (53)		
AACN Magnet Status				
Designated	18.1 (182)	23.2 (46)	χ^2 = 4.463 (df = 1)	.035
Not Designated	81.9 (826)	76.8 (152)		
COTH Member Status				
Yes	25.2 (255)	28.8 (57)	χ^2 = 1.588 (df = 1)	.208
No	74.8 (756)	71.2 (141)		

Note: AHA = American Hospital Association, AACN = American Association of Colleges of Nursing, COTH = Council of Teaching Hospitals; χ^2 = Chi-square Test of Independence; df = degrees of freedom; α = .01

Differences in hospitals' geographic region, bed size, Council of Teaching Hospital (COTH) status, and AACN Magnet status between the total group and the respondents were not statistically significant (Table 8). There was a statistically significant difference

in type of hospital control between the total group and the respondents. Findings from this study, representing all types and sizes of US hospitals in any geographic region, are generalizable to similar hospitals. However, the number of respondents and statistically significant differences in hospitals' type of control should be considered. For example, less than 20% of the total group returned a survey tool and of those, less than half reported having a nursing residency. Hospitals aligned with the government-controlled group were more largely represented in the respondent group than in the total group. An approximately equal percentage of hospitals in the total group and respondent group were aligned to the not-for-profit group. For-Profit hospitals were underrepresented in the respondent sample.

Types of Nurse Residency Programs

Among the 95 respondents who reported having a residency program (48% of all respondents), 21 (22.1%) used the UHC-model, 51 (53.7%) used a facility-based model (FBM), and 23 (24.2%) used "Other" model types. "Other" model types included Versant models (n = 5), programs with no model (n = 4), and other, unspecified models (n = 14).

Characteristics of Reported Nurse Residency Programs

Results are presented in terms of elements included within the conceptual framework. These elements are presented in Figure 3 (see page 24 for description).

Nurse Resident Degree Status

Seven (7.4%) programs did not provide residents' degree status. These included: 2 UHC-modeled programs, 4 FBM programs, and 1 "Other" program. Seventy-two (75.8%) programs reported at least some residents with an Associate Degree in Nursing (ADN); 84 (88.4%) programs reported at least some residents with a Baccalaureate of Science Degree in Nursing (BSN); and, 13 (13.7%) programs reported at least some residents with initial licensure at the Masters of Science in Nursing (MSN) level. Twelve (12.6%) programs reported only BSN degrees. Hospitals were assigned to one of three categories: 1) BSN only; 2) BSN + MSN; and, 3) Mixed (ADN + BSN ± MSN). Findings of this analysis are reported in Table 9. There was no statistically significant difference among the three program models in terms of degree types ($X^2_{(df = 4)} = 4.115$, $p = .391$).

Table 9. Summary of Hospitals' Degree Types for Each Model Type.

	UHC N (%)	**FBM N (%)**	**"Other" N (%)**
BSN Only	4 (21.1)	5 (10.6)	3 (13.6)
BSN + MSN	2 (10.5)	2 (4.3)	0
Mixed (ADN + BSN ± MSN)	13 (68.4)	40 (85.1)	19 (86.4)
Total	19 (100)	47 (100)	22 (100)

Note: ADN = Associate Degree in Nursing; BSN = Bachelors of Science Degree in Nursing; MSN = Masters of Science in Nursing (initial licensure); UHC = University HealthSystems Consortium; FBM = Facility-Based Model.

Of all resident degrees that were provided by respondents (n = 2,891), 925 (32.0%) were admitted to UHC programs, 1,292 (44.7%) to FBM programs, and 674 (23.3%) to "Other" programs. Respondents reported that 833 (28.8%) nurse residents' degrees were ADNs. Of these, 168 (20.2%) were admitted to UHC programs, 431 (51.7%) were admitted to FBM programs, and 234 (28.1%) were admitted to "Other" programs. A majority of nurse residents' degrees were BSNs (n = 1,948; 67.4%). Accelerated BSN degrees accounted for 136 (7%) of the total number of BSNs. Of the total BSN degrees, 739 (37.9%) were admitted to UHC programs, 771 (39.6%) were admitted to FBM programs, and 438 (22.5%) were admitted to "Other" programs. Initial-licensure MSN degrees accounted for 110 (3.8%) of all degree types. Of the total number of MSN degrees, 18 (16.4%) were admitted to UHC programs, 90 (81.8%) were admitted to FBM programs, and 2 (1.8%) were admitted to "Other" programs. Table 10 provides a descriptive summary of the total number of degrees for each model type. No statistically significant differences were observed in terms of number of residents' degrees among the three model types.

Table 10. Summary of Number of Residents' Degrees among NRP Model Types

	UHC	FBM	"Other"	X^2	df	p-value
Total ADN						
Median	13.00	6.00	8.00	1.855	2	.396
Minimum	1	1	1			
Maximum	29	44	40			
Total BSN						
Median	25.00	10.00	12.00	8.825	2	.012
Minimum	2	2	3			
Maximum	100	95	78			
Total MSN						
Median	3.00	2.00	1.00	3.956	2	.138
Minimum	2	1	1			
Maximum	10	79	1			

Note: ADN = Associate Degree in Nursing; BSN = Bachelors of Science Degree in Nursing; MSN = Masters of Science in Nursing (initial licensure); UHC = University HealthSystems Consortium; FBM = Facility-based Model; NRP = Nurse Residency Program; X^2 = Kruskal-Wallis, Chi-Square; df = degrees of freedom.

Length of Program

Respondents with NRPs (N = 95) were asked to identify the length of their program in terms of weeks. Three (3.2%) hospitals using a facility-based model did not respond. Among those responding, (see Table 11) nearly one-third reported program lengths less than or equal to 12 weeks [i.e., 15 (16.3%) reported program lengths less than or equal to 10 weeks; 12 (13.0%) reported program lengths equal to 12 weeks]. Twenty-five (27.2%) reported program lengths between 14 and 50 weeks. The majority, 37 (40.2%), reported a program length of 52 weeks. Three (3.3%) reported program lengths greater than 52 weeks. Table 11 provides a summary of programs' reported duration for each model type. There were statistically significant differences in program length among the model types ($\chi^2_{(df = 2)} = 18.433$, $p < .001$). Post-hoc analyses revealed that UHC-model programs are longer than FBM program ($z = -4.039$, $p < .001$) and

"Other" programs (z = - 3.850, p < .001). Differences between FBM programs and "Other" programs, in terms of program length, were not statistically significant (z = - .510, p = .610).

Table 11. Summary of Reported Length of Programs (in weeks)

	UHC	FBM	"Other"
N (%)	21 (22.8)	48 (52.2)	23 (25.0)
Range (in weeks)	6 – 56	0.2 - 104	4 - 52
Median	52.00	16.00	18.00
IQR (25^{th} / 75^{th})	52.00 / 52.00	12.00 / 52.00	12.00 / 52.00

Note: UHC = University HealthSystem Consortium; FBM = Facility-Based Model

Residents' Time Allocation during NRP

Eighty-two (86.3%) respondents provided estimates of the percent of time their programs allocated for residents to spend providing direct patient care, participating in NRP-related activities, and attending unstructured professional-related activities. Estimates were provided for the first week (time 1), midpoint week (time 2), and last week (time 3) of respondents' most recent completed program. Table 12 (see page 78) provides a descriptive summary of these activities for All NRPs, UHC, FBM, and "Other" model types.

Direct Patient Care Activities. Among the three reporting program types, the estimated percentage of time allocated to direct patient care activities increased over the course of the program ($F_{(1.56, 122.88)}$ = 79.196, p < .001). Post-hoc analysis revealed that there were statistically significant increases between each time of assessment (p < .001). There was not a statistically significant difference in the patterns of time over

the course of the program among the program types [interaction effect: ($F_{(3.11, 122.88)}$ = 2.597, p = .053)] nor was there a statistically significant main effect of type of program ($F_{(2, 79)}$ = 0.163, p = .850).

NRP-related Activities. Among the three reporting program types, the overall amount of time allocated to NRP-related activities decreased over the course of the program ($F_{(1.63, 128.84)}$ = 10.188, p < .001). Post-hoc analysis revealed that there were statistically significant decreases between the first and third, and second and third, times of assessment (p < .001), but not between the first and second times of assessment (p = .335). There was not a statistically significant difference in the patterns of time over the course of the program among the program types [interaction effect: ($F_{(3.26, 128.84)}$ = .572, p = .649)] nor was there a statistically significant main effect of type of program ($F_{(2, 79)}$ = 1.687, p = .192)

Unstructured Professional Activities. Among the three reporting program types, the overall amount of time allocated to unstructured professional activities decreased over the course of the program ($F_{(1.55, 122.30)}$ = 20.940, p < .001). Post-hoc analysis revealed that there were statistically significant decreases between the first and third, and second and third, times of assessment (p < .001), but not between the first and second times of assessment (p = .014). There was not a statistically significant difference in the patterns of time over the course of the program among the program types [interaction effect: ($F_{(3.10, 122.30)}$ = 1.424, p = .238)] nor was there a statistically significant main effect of type of program ($F_{(2, 79)}$ = .252, p = .778).

Table 12. Summary of the Estimated Allocation of Resident's Time

ACTIVITIES	All NRP Model Types N = 82 (13 Missing)			UHC Model Type N = 16 (5 Missing)			FB Model Type N = 44 (7 Missing)			"Other" Model Types N = 22 (1 Missing)		
	Median	IQR		Median	IQR		Median	IQR		Median	IQR	
		≤25%	≥75%		≤25%	≥75%		≤25%	≥75%		≤25%	≥75%
Direct Patient Care*												
1st Week	17.50	.00	70.00	15.00	.00	75.00	15.00	.00	50.00	22.50	.00	75.00
Midpoint Week	75.00	60.00	90.00	82.50	69.50	90.00	75.00	60.00	83.75	77.50	47.50	87.00
Last Week	90.00	80.00	95.00	86.50	81.25	90.00	90.00	80.00	97.75	87.00	75.00	90.00
NRP-Related**												
1st Week	17.50	5.00	65.50	10.00	5.00	60.50	20.00	0.50	71.25	15.00	10.00	70.00
Midpoint Week	10.00	5.00	20.00	10.00	5.00	15.00	10.00	4.25	20.00	10.00	9.75	32.50
Last Week	5.00	2.00	10.00	7.00	5.00	10.00	5.00	.00	10.00	10.00	5.00	12.50
Professional***												
1st Week	15.00	4.38	46.25	10.00	1.25	48.75	20.00	5.00	57.50	13.00	.75	25.00
Midpoint Week	5.00	.00	20.00	5.00	.25	10.00	5.00	.00	20.00	10.00	13.00	20.00
Last Week	4.00	.00	10.00	5.00	.25	5.00	.50	.00	5.00	5.00	25.00	11.25
Other****												
1st Week	.00	.00	.00	.00	.00	12.50	.00	.00	.00	.00	.00	.00
Midpoint Week	.00	.00	.00	.00	.00	3.75	.00	.00	.00	.00	.00	.00
Last Week	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

Notes: NRP = Nurse Residency Program; UHC = University HealthSystems Consortium; FB = Facility-Based; IQR = Interquartile Range

*Direct patient care activities include activities performed by the nurse during a typical hospital shift

**NRP related activities include attending educational sessions, NRP events, reflective journaling, etc.

***Professional Activities include preparing for NCLEX, reading journal articles and policy guidelines, etc.

****Other activities related to evidence-based practice, policy genesis, educational tool development, patient safety, and service improvement.

Requirements to Complete Projects

Table 13 provides a summary of project completion requirements for the program models. For this analysis, programs reporting project work as "optional" or "not required to complete" were assigned to the category "no project completed" because neither group reported completed projects. Programs reporting project work as "completed before end of NRP" or "completed after NRP" were assigned to the category "projects completed" because they reported completed projects. Thirty-eight (40%) programs reported a completed project with the majority (n = 34, 89.5%) reporting an expectation that the project be completed at or before the end of the program. Whether a project was completed or not was statistically significantly different among the three model types. Post-hoc analysis revealed that UHC model programs had a greater proportion of completed projects as compared to FBM programs ($\chi^2_{(df = 1)}$ = 18.825, p < .001) and "Other" programs ($\chi^2_{(df =1)}$ = 9.537, p = .002). Differences between FBM programs and "Other" programs were not significant ($\chi^2_{(df=1)}$ = .673, p = .412).

Table 13. Summary of Project Completion Status

Project Status	UHC	FBM	"Other"	χ^2	df	p-value
Required Not required	17 (81.0) 4 (19.0)	13 (25.5) 38 (74.5)	8 (34.8) 15 (65.2)	19.409	2	< .001

Note: UHC = University HealthSystems Consortium; FBM = Facility-Based Model; χ^2 = Pearson Chi-Square; df = degrees of freedom

Types of Reported Projects

As shown in Table 14, 100 projects were reported with 47 completed at the unit level, 17 completed at the division level, and 18 completed at the institutional level. Types of projects varied from those with a quality improvement focus (n = 58) to those with a shared governance focus (n = 23). Nineteen projects were categorized as other.

Quality Improvement (QI) projects. There were no statistically significant differences among the three model types regarding completion of a unit-focused QI project ($\chi^2_{(df=2)} = 4.424$, p = .109), division-focused QI project ($\chi^2_{(df=2)} = 8.505$, p = .014) or institution-focused QI project ($\chi^2_{(df=2)} = .825$, p = .662).

Shared Governance (SG) projects. There were no statistically significant differences among the three model types regarding completion of a unit-focused SG project ($\chi^2_{(df=2)} = 3.595$, p = .166), division focused SG project ($\chi^2_{(df=2)} = 1.502$, p = .472), or institution-focused SG project ($\chi^2_{(df=2)} = .767$, p = .682).

Other project types. Projects categorized as other related to evidence-based practice, policy genesis, educational tool development, patient safety, and service improvement. Projects within this category were inconsistently assigned by the respondent to the unit, division, or institutional level. There was no statistically significant difference among the three model types regarding completion of projects labeled as other ($\chi^2_{(df=2)} = 2.980$, p = .225).

Table 14. Summary of the Total Number of Completed Projects

Model Types	QI Project N (%)			SG Project N (%)			Other Projects	Total
	Unit	Div	Inst	Unit	Div	Inst		
UHC	17 (33.3)	9 (17.6)	6 (11.8)	8 (15.7)	2 (3.9)	3 (5.9)	6 (11.8)	51 (100)
FBM	9 (29.0)	3 (9.7)	5 (16.1)	5 (16.1)	2 (6.5)	1 (3.2)	6 (19.4)	31 (100)
"Other"	7 (38.9)	0	2 (11.1)	1 (5.6)	0	1 (5.6)	7 (38.9)	18 (100)
ALL	33 (33.0)	12 (12.0)	13 (13.0)	14 (14.0)	4 (4.0)	5 (5.0)	19 (19.0)	100 (100)

Note: QI = Quality Improvement; SG = Shared Governance; UHC = University HealthSystem Consortium; FBM = Facility-Based Model; Div = Division level; Inst = Institutional level.

Organizational Facets

Table 15 provides a summary of organizational facets (i.e., Magnet designation status, COTH status, and Shared Governance model use) per model type.

Table 15. Summary of Organizational Facets by Residency Model Type

	UHC N (%)	**FBM** N (%)	**"Other"** N (%)
Magnet Designation (N = 95)			
Yes	14 (66.7)	15 (29.4)	6 (26.1)
No	7 (33.3)	36 (70.6)	17 (73.9)
COTH Designation (N = 95)			
Yes	16 (76.2)	17 (33.3)	3 (13.0)
No	5 (23.8)	34 (66.7)	20 (87.0)
Shared Governance Model (N = 94)			
Yes	19 (95.0)	42 (82.4)	20 (87.0)
No	1 (5.0)	9 (17.6)	3 (13.0)

Note: UHC = University HealthSystems Consortium, FBM = Facility-based Model; COTH = Council of Teaching Hospitals

Magnet Status

Thirty-five (36.8%) hospitals with nursing residencies reported having attained designation as an AACN Magnet Hospital. There was a statistically significant difference in Magnet designation status among the three model types ($\chi^2_{(df = 2)} = 10.381$, $p = .006$). Post-hoc analysis revealed that a greater proportion of UHC model programs were designated Magnet as compared to FBM programs ($\chi^2_{(df = 1)} = 8.583$, $p = .003$) and "Other" programs ($\chi^2_{(df = 1)} = 7.291$, $p = .007$). There was no statistically significant difference between FBM programs and "Other" programs in terms of Magnet designation ($\chi^2_{(df = 1)} = .086$, $p = .769$).

COTH Status

Thirty-six (37.9%) respondents with NRPs also had Council of Teaching Hospital (COTH) designation. There was a statistically significant difference in terms of COTH designation status among the three program models ($\chi^2_{(df = 2)} = 19.573$, $p < .001$). Post-hoc analysis revealed that a greater proportion of UHC model programs had COTH status as compared to FBM programs ($\chi^2_{(df = 1)} = 11.005$, $p = .001$) and "Other" programs ($\chi^2_{(df = 1)} = 17.841$, $p < .001$). There was no statistically significant difference between of FBM and "Other" programs in terms of COTH designation ($\chi^2_{(df = 1)} = 3.309$, $p = .069$).

Shared Governance Status

Eighty-one (86.2%) nursing residencies reported the presence of a shared governance (SG) model. There was not a statistically significant difference in the presence of a SG model among the three program models ($\chi^2_{(df = 2)} = 1.944$, $p = .378$).

Association of organizational facets. Among all programs, Magnet designation status was statistically significantly associated with both COTH status ($\Phi = .356$, $p < .001$) and presence of a shared governance model ($\Phi = .268$, $p = .009$). COTH status and shared governance were not significantly associated ($\Phi = .054$, $p = .603$). Within UHC programs, Magnet designation status was statistically significantly associated with COTH status ($\Phi = .645$, $p = .002$) but not with the presence of a shared governance model ($\Phi = .254$, $p = .281$). Within the "Other" model types, there were no significant associations noted [Magnet with COTH status: ($\Phi = .503$, $p = .014$), Magnet with shared governance status: ($\Phi = .178$, $p = .417$)]. Within the FBM programs, the pattern of associations were the opposite of those found within the other two program types and neither of the associations were statistically significant [Magnet with COTH status: ($\Phi = .031$, $p = .829$), Magnet and shared governance status: ($\Phi = .285$, $p = .043$)].

Labor Inputs

Mentors

Table 16 provides a summary of mentorships among the three program model types. Nearly two-thirds of all respondents reported not using mentors in their

programs. In fact, 31 (33.0%) reported that mentor concepts were only discussed and that mentors were neither assigned nor chosen and 26 (27.7%) reported that mentors were not a part of their programs. Twenty-two (23.4%) reported that mentors were assigned, and 15 (16.0%) reported that mentors were chosen by the nurse resident. There was no statistically significant difference in use of mentors among all program model types ($\chi^2_{(df = 6)} = 15.010$, $p = .020$).

Table 16 also describes the number of mentees per mentor among the three model types. The mentee/mentor ratio (MNT/MTR Ratio) was calculated by dividing the number of mentees by the number of mentors for respondents reporting that mentors were either assigned or chosen. UHC programs reported a higher ratio than FBM or "Other" program models. There was no statistically significant difference in mentee/mentor ratios among the three program types ($\chi^2_{(df = 2)} = 4.690$, $p = .096$).

Table 16. Summary of Mentorships per Residency Model Type

	UHC (N = 21)	FBM (N = 51)	"Other" (N = 22)	Total (N = 94)
Mentor Selection [N (%)]				
Assigned	1 (4.8)	16 (31.4)	5 (22.7)	22 (23.4)
Resident Chose	1 (4.8)	7 (13.7)	7 (31.8)	15 (16.0)
Discussed Only	9 (42.9)	17 (33.3)	5 (22.7)	31 (33.0)
Not Part of Program	10 (47.6)	11 (21.6)	5 (22.7)	26 (27.7)
#Mentees / #Mentors	208/17	1401/469	628/198	3221/684
MNT/MTR Ratio	12.2	2.98	3.17	4.71
Range	2 – 72.50	0.50 – 28.00	0.75 – 12.38	0.50 – 72.50
Median	7.41	1.23	1.00	1.20
Interquartile Range				
25th Percentile	2.04	1.00	1.20	1.00
75th Percentile	57.84	3.65	3.20	4.00

Note: UHC = University HealthSystem Consortium; FB = Facility-Based; MNT = Mentee, MTR = Mentor

Program Coordinator (PC)

PC numbers and academic preparation. One-hundred, thirty-one PCs were reported. Ten (10.6%) reported no PCs. Sixty-nine (73.4%) reported one PC. Eight (8.4%) reported 2 PCs, and 7 (7.5%) reported 3 or more PCs.

Four (3.1%) PCs held an ADN degree and were described in FBM and "Other" model types. UHC-models reported no PCs that held ADN degrees. Inferential statistics were not performed due to the sample size and distribution of PCs that held ADNs.

Forty-six (35.1%) PCs held a BSN degree and were described among all model types. UHC-model programs reported 4 (8.7%) PCs, FBM programs reported 40 (87.0%) PCs and "Other" model types reported 2 (4.3%). There were no statistically significant differences among the three model types in terms of PCs having baccalaureate level preparation ($\chi^2_{(df = 2)} = 2.092$, $p = .351$).

Eighty-one (61.8%) PCs held an MSN degree and were described among all model types. UHC-model programs reported 23 (28.4%) PCs, FBM programs reported 36 (44.4%) PCs and "Other" model types reported 22 (27.2%). There were no statistically significant differences among the three model types in terms of PCs having master's level preparation ($\chi^2_{(df = 2)} = 1.055$, $p = .590$).

PC Activities. Table 17 provides a summary of PC activities among three residency model types. There were no statistically significant differences among the three model types regarding the assignment of activities to program coordinators.

Table 17. Summary of Program Coordinator Role among Three Program Types

ACTIVITY	UHC N (%)	FBM N (%)	"Other" N (%)	χ^2 (df=2)	p-value
Interviewing					
Expected of All	4 (21.1)	18 (41.9)	9 (45.0)	8.756	.013
As Assigned	0	7 (16.3)	0		
Not Expected	15 (78.9)	18 (41.9)	11 (55.0)		
Scheduling					
Expected of All	5 (26.3)	19 (43.2)	6 (30.0)	5.535	.063
As Assigned	0	4 (9.1)	5 (25.0)		
Not Expected	14 (73.7)	21 (47.7)	9 (45.0)		
Teaching Classes					
Expected of All	15 (78.9)	31 (68.9)	17 (85.0)	2.032	.362
As Assigned	3 (15.8)	13 (28.9)	3 (15.0)		
Not Expected	1 (5.3)	1 (2.2)	0		
Simulation Training					
Expected of All	11 (57.9)	22 (48.9)	12 (60.0)	1.941	.379
As Assigned	3 (15.8)	13 (28.9)	6 (30.0)		
Not Expected	5 (26.3)	10 (22.2)	2 (10.0)		
Small Group Work					
Expected of All	16 (84.2)	33 (73.3)	17 (85.0)	2.070	.355
As Assigned	2 (10.5)	11 (24.4)	3 (15.0)		
Not Expected	1 (5.3)	1 (2.2)	0		
Administrative					
Expected of All	8 (42.1)	22 (51.2)	16 (84.2)	1.948	.378
As Assigned	3 (15.8)	10 (23.3)	1 (5.3)		
Not Expected	8 (42.1)	11 (25.6)	2 (10.5)		
Resident Evaluations					
Expected of All	7 (36.8)	21 (48.8)	7 (35.0)	6.412	.041
As Assigned	2 (10.5)	13 (30.2)	5 (25.0)		
Not Expected	10 (52.6)	9 (20.9)	8 (40.0)		
Resident Placement					
Expected of All	4 (21.1)	14 (31.1)	8 (42.1)	5.534	.063
As Assigned	1 (5.3)	9 (20.0)	4 (21.1)		
Not Expected	14 (73.7)	22 (48.9)	7 (36.8)		
Mentoring					
Expected of All	12 (63.2)	26 (57.8)	11 (61.1)	7.087	.029
As Assigned	1 (5.3)	13 (28.9)	2 (11.1)		
Not Expected	6 (31.6)	6 (13.3)	5 (27.8)		
Supervising Projects					
Expected of All	15 (78.9)	14 (32.6)	11 (55.0)	1.799	.407
As Assigned	3 (15.8)	12 (27.9)	3 (15.0)		
Not Expected	1 (5.3)	17 (39.5)	6 (30.0)		

Note: UHC = University HealthSystems Consortium; FBM = Facility Based Model; χ^2 = Kruskal-Wallis Chi-Square, df = degrees of freedom

Resident Facilitator (RF)

RF Numbers and Academic Degree. Thirty-four (36.2%) participants reported zero RFs. Ten (10.6%) reported at least 1 RF. Seven (7.4%) reported at least 2 RFs and 43 (45.7%) reported at least 3 or more RFs. In all, 429 RFs were reported. Of these, 125 (29.1%) were from UHC-model programs, 187 (43.6) were from FBM programs, and 117 (27.3%) were from "Other" programs. A statistically significant difference in number of resident facilitators was observed among the three program model types ($\chi^2_{(df = 2)}$ = 9.993, p = .007). Post-hoc analysis revealed a greater proportion of RFs at UHC-model programs as compared to FBM programs (z = -3.061, p = .002). "Other" programs did not statistically significantly differ with UHC-model programs (z = -.714, p = .475) or FBM programs (z = -1.878, p = .060).

Table 18 provides a summary of RF academic degree status for each program model. Fifty-nine respondents reported 385 RF degrees. Thirty-three (8.5%) RFs held an ADN degree. One-hundred, forty-five (37.7%) held a BSN degree, and 207 (53.8%) held a MSN degree. There were no statistically significant differences among the three model types in terms of RF degree status.

RF Activities. Table 19 provides a summary of RF activities among the three model types. There were no statistically significant differences among the three model types in terms of RF activities.

Table 18. Summary of Resident Facilitator Academic Degree Status.

	UHC	FBM	"Other"	χ^2 (*df=2*)	p-value
RF Degree Status					
ADN	11 (33.3)	16 (48.5)	6 (18.2)	.338	.845
BSN	28 (19.3)	67 (46.2)	50 (34.5)	2.622	.270
MSN	91 (44.0)	68 (32.9)	48 (23.2)	4.562	.102

Note: RF = Resident Facilitator, UHC = University HealthSystems Consortium, FBM = Facility-Based Model; ADN = Associate Degree in Nursing; BSN = Baccalaureate Degree in Nursing; MSN = Masters of Science Degree in Nursing, X^2 = Kruskal-Wallis, Chi-Square; df = degrees of freedom

Table 19. Summary of Resident Facilitator Activities among Three Program Types

ACTIVITY	UHC N (%)	FBM N (%)	*"Other" N (%)*	χ^2 *(df=2)*	*p-value*
Teaching Formal Classes					
Expected of All	4 (25.0)	19 (73.1)	7 (46.7)	8.213	.016
As Assigned	10 (62.5)	5 (19.2)	8 (53.3)		
Not Expected	2 (12.5)	2 (7.7)	0		
Simulation Training					
Expected of All	1 (5.9)	10 (37.0)	5 (33.3)	4.497	.106
As Assigned	10 (58.8)	10 (37.0)	8 (53.3)		
Not Expected	6 (35.3)	7 (25.9)	2 (13.3)		
Small Group Work					
Expected of All	10 (58.8)	14 (50.0)	6 (40.0)	.603	.740
As Assigned	5 (29.4)	10 (35.7)	8 (53.3)		
Not Expected	2 (11.8)	4 (14.3)	1 (6.7)		
Administrative (Assist PC)					
Expected of All	0	9 (33.3)	4 (26.7)	7.316	.026
As Assigned	4 (26.7)	8 (29.6)	5 (33.3)		
Not Expected	11 (73.3)	10 (37.0)	6 (40.0)		
Resident Evaluations					
Expected of All	2 (13.3)	10 (38.5)	4 (26.7)	3.434	.180
As Assigned	2 (13.3)	4 (15.4)	4 (26.7)		
Not Expected	11 (73.3)	12 (46.2)	7 (46.7)		
Resident Placement					
Expected of All	1 (7.1)	7 (28.0)	2 (14.3)	3.195	.202
As Assigned	1 (7.1)	3 (12.0)	4 (28.6)		
Not Expected	12 (85.7)	15 (60.0)	8 (57.1)		
Mentoring					
Expected of All	7 (43.8)	16 (59.3)	2 (14.3)	3.435	.179
As Assigned	6 (37.5)	3 (11.1)	8 (57.1)		
Not Expected	3 (18.8)	8 (29.6)	4 (28.6)		
Supervising Projects					
Expected of All	8 (50.0)	7 (25.9)	1 (7.1)	6.582	.037
As Assigned	5 (31.3)	7 (25.9)	6 (42.9)		
Not Expected	3 (18.8)	13 (48.1)	7 (50.0)		

Note: UHC = University HealthSystems Consortium; FBM = Facility Based Model; χ^2 = Kruskal-Wallis, Chi-Square, df = degrees of freedom

NRP Attributes

Career Planning. Participants were asked to select which item best described the creation of an individual, formal career plan among residents in their last completed cohort. Ninety-three (97.9%) respondents reported on career planning within their programs. Of these, 47 (50.5%) reported that career planning was not part of their nurse residency program, while 24 (25.8%) required a career plan, and 22 (23.7%) reported that a career plan was optional. There was no statistically significant difference among the three model types regarding career planning. Table 20 provides a summary of career planning requirements among the three model types.

Table 20. Summary of Career Planning Requirements among Three Model Types

	UHC N (%)	FBM N (%)	"Other" N (%)	χ^2	df	p-value
Career Planning						
Required	9 (42.9)	11 (22.0)	4 (18.2)	8.482	2	.014
Optional	7 (33.3)	12 (24.0)	3 (13.6)			
Not Part of Program	5 (23.8)	27 (54.0)	15 (68.2)			

Note: UHC = University HealthSystems Consortium; FBM = Facility-based Model; X^2 = Kruskal-Wallis, Chi-Square; df = degrees of freedom.

Outcomes

Measured by Programs

Participants with NRPs were asked to indicate whether or not their organizations measured four human-resource related outcomes. These included: 1) residents' confidence, 2) residents' competence, 3) recruitment effects, and 4) retention outcomes. Table 21 provides a summary of these outcomes by NRP model type.

Table 21. Descriptive Summary of Four Outcomes Measured by NRPs

Outcome Measured	UHC N (%)	FBM N (%)	"Other" N (%)	All N (%)
Confidence (N = 92)	20 (100)	28 (57.1)	16 (69.6)	64 (69.6)
Competence (N = 93)	16 (80.8)	39 (78.0)	19 (82.6)	74 (79.6)
Recruitment (N = 91)	13 (65.0)	30 (61.2)	12 (54.5)	55 (60.4)
Retention (N = 93)	19 (95.0)	48 (96.0)	23 (100)	90 (96.8)

Note: UHC = University HealthSystem Consortium; FBM = Facility-Based Model

Confidence. There was a statistically significant difference among all model types in terms of whether resident confidence was measured at the end of the program ($\chi^2_{(df = 2)} = 12.321$, $p = .002$). Post-hoc analysis revealed that a greater proportion of UHC-model programs reported measuring confidence as compared to FBM programs ($\chi^2_{(df = 1)} = 12.321$, $p < .001$) and "Other" programs ($\chi^2_{(df = 1)} = 7.271$, $p = .007$). FBM and "Other" programs did not statistically significantly differ ($\chi^2_{(df = 1)} = 1.016$, $p = .313$).

Competence. Among those programs with a NRP, 74 (79.6%) measured residents' competence as a program outcome. There was not a statistically significant difference in the measurement of residents' competence among all program model types ($\chi^2_{(df = 2)} = .209$, $p = .901$).

Recruitment. Among those programs with a NRP, 55 (60.4%) measured recruitment as a program outcome. There was not a statistically significant difference in the measurement of recruitment as a program outcome among all model types ($\chi^2_{(df = 2)} = .506$, $p = .776$).

Retention. Among those programs with a NRP, 90 (96.8%) measured residents' retention as a program outcome. There was not a statistically significant difference in measurement of retention among all model types ($\chi^2_{(df = 2)} = 1.064$, $p = .587$).

Outcomes Possibly Affected by Nurse Residency Programs (Survey Question 21)

All study participants were asked to list any five patient-related outcomes that they thought may be affected by NRPs and then to rank order the list from 1 (most likely to be affected) to 5 (least likely to be affected).

Outcome categories. The PI coded and assigned 990 outcomes from hospitals with and without NRPs to one of the six following outcome categories:

1) Leadership (n = 184, 22.2%)
2) Patient Outcomes (n = 410, 49.5%)
3) Professional Development (n = 103, 12.4%)
4) Other (n = 132, 15.9%)
5) More than 1 Outcome per Rank (n = 5, 0.5%)
6) Outcome not Listed (n = 156, 15.8%)

This process was verified by an independent researcher. Four-hundred, seventy-five (48%) outcomes were from hospitals with NRPs (n = 95), and 515 (52%) outcomes were from hospitals without NRPs (n = 103). A total of 156 (15.8%) opportunities to identify an outcome were coded as "outcome not listed" because respondents either did not list any outcome or did not provide five outcomes. More specifically, at least 6 (6.3%) respondents from hospitals with NRPs skipped this question entirely, while

others in this group listed less than five outcomes. At least 16 (15.5%) respondents from hospitals without NRPs skipped this question entirely, while others in this group listed less than five outcomes. A total of five respondents listed more than one outcome per ranking. Four (0.8%) of these were from hospitals with NRPs and 1 (0.2%) was from a hospital without an NRP. These outcomes were coded "More than 1 Outcome per rank" and were excluded from the analysis. Therefore, 829 ranked outcomes from categories 1 -4 were analyzed. A summary of response rates for each ranking, in terms of NRP status and whether or not an outcome was listed is provided in Table 22.

Table 22. Summary of Response Rates Regarding Number of Listed and Ranked Patient-Related Outcomes between Respondents With and Without Nursing Residencies.

NRP Status	Outcome	Rank 1 N (%)	Rank 2 N (%)	Rank 3 N (%)	Rank 4 N (%)	Rank 5 N (%)	Total N (%)
NRP	Listed	89 (93.7)	89 (93.7)	85 (89.5)	79 (83.2)	73 (76.8)	415 (87.4)
	Not Listed	6 (6.3)	6 (6.3)	10 (10.5)	16 (16.8)	22 (23.2)	60 (12.6)
	Total	95 (100)	95 (100)	95 (100)	95 (100)	95 (100)	475 (100)
No NRP	Listed	87 (84.5)	86 (83.5)	85 (82.5)	85 (82.2)	77 (74.8)	420 (81.6)
	Not Listed	16 (15.5)	17 (16.5)	18 (17.5)	18 (17.5)	27 (26.2)	96 (18.6)
	Total	103 (100)	103 (100)	103 (100)	103 (100)	103 (100)	515 (100)

Note: NRP = Nurse Residency Program

Table 23 provides a summary of response rates for four outcome categories (i.e., leadership, patient outcomes, professional role, and other) in terms of hospitals with and without NRPs. Those with NRPs are further subdivided by program model type. There was a statistically significant difference between those hospitals with and without

NRPs ($\chi^2_{(df = 3)} = 36.824$, $p < .001$). Post-hoc analysis revealed that this difference was due to a greater proportion of leadership and professional role outcomes for hospitals with NRPs and a greater proportion of other outcomes for hospitals without NRPs. There was not a statistically significant difference in the proportion of outcomes categorized as patient outcomes between those with NRPs and those without NRPs. There was no statistically significant difference among the three program model types in terms of outcome categories ($\chi^2_{(df = 6)} = 6.026$, $p = .420$).

Table 23. Summary of Outcome Classification Groups for Hospitals With and Without NRPs

	Has NRP N (%)				Does Not Have NRP N (%)
	UHC	FBM	"Other"	All	
Leadership	23 (26.7)	49 (21.9)	33 (32.7)	105 (25.5)	79 (18.9)
Patient Outcome	44 (51.2)	111 (49.6)	40 (39.6)	195 (47.4)	215 (51.4)
Professional Role	12 (14.0)	40 (17.9)	18 (17.8)	70 (17.0)	33 (7.9)
Other	7 (8.1)	24 (10.7)	10 (9.9)	41 (10.0)	91 (21.8)

Outcome subcategories. The PI subdivided each outcome category using definitions in the *Standards for Accreditation of Post-Baccalaureate Nurse Residency Programs* (CCNE, 2008). The PI coded and assigned 829 outcomes to 29 subcategories. This process was verified by an independent researcher. Table 24 (see page 95) summarizes the distribution of rankings for each subcategory.

The top 5 subcategories among Rank 1 (most likely to be affected by NRPs) included:

1) Management of patient care delivery (23.4%)
2) Patient satisfaction (13.7%)
3) Manage changing patient condition (12.6%)
4) Medication administration (9.7%)
5) Evidence based practice (6.3%)

Management of patient care delivery was the only subcategory included in the top 5 among all ranking levels. In addition to Rank 1, it was the most frequently reported subcategory for Ranks 2, 4, and 5. As well as the third most frequently reported subcategory for Rank 3.

Table 25 (see page 96) provides a summary of the outcome subcategories in terms of hospitals with and without NRPs and the three program model types. There were statistically significant differences among sub-categorized responses between programs with and without nursing residencies ($\chi^2_{(df = 28)} = 95.556$, $p < .001$). Post-hoc analysis revealed that hospitals with NRPs had a greater proportion of responses related to management of patient care delivery, resource management, pain management, and cultural competence and a lesser proportion of responses related to patient/family education as compared to hospitals without NRPs. There were no statistically significant differences among the three program model types ($\chi^2_{(df = 52)} = 48.988$, $p = .593$).

Table 24. Summary of Outcome Categories and Subcategories by Rank

Categories Subcategories	**Rank 1** **N (%)**	**Rank 2** **N (%)**	**Rank 3** **N (%)**	**Rank 4** **N (%)**	**Rank 5** **N (%)**
Leadership					
Management of patient care delivery	41 (23.4)	18 (10.3)	14 (8.3)	21 (13.0)	25 (16.9)
Resource management	2 (1.1)	3 (1.7)	4 (2.4)	4 (2.5)	8 (5.4)
Communication	5 (2.9)	13 (7.4)	9 (5.3)	9 (5.6)	6 (4.1)
Conflict management	0	0	0	1 (0.6)	1 (0.7)
Patient Outcomes					
Used theme as outcome	3 (1.7)	0	2 (1.2)	1 (0.6)	2 (1.4)
Manage changing patient condition	22 (12.6)	16 (9.1)	20 (11.8)	7 (4.3)	8 (5.4)
Patient and family education	2 (1.1)	6 (3.4)	12 (7.1)	8 (4.9)	6 (4.1)
Pain management	2 (1.1)	4 (2.3)	2 (1.2)	3 (1.9)	1 (0.7)
Evidence-based skin care practices	4 (2.3)	8 (4.6)	10 (5.9)	15 (9.3)	6 (4.1)
Fall prevention	6 (3.4)	10 (5.7)	7 (4.1)	6 (3.7)	15 (10.1)
Medication administration	17 (9.7)	16 (9.1)	8 (4.7)	9 (5.6)	7 (4.7)
Infection control	5 (2.9)	15 (8.6)	17 (10.1)	16 (9.9)	12 (8.1)
Patient satisfaction	24 (13.7)	13 (7.4)	11 (6.5)	16 (9.9)	10 (6.8)
Professional Development					
Ethical decision making	0	1 (0.6)	0	0	1 (0.7)
End-of-life care	0	0	1 (0.6)	0	0
Cultural competence	2 (1.1)	1 (0.6)	4 (2.4)	3 (1.9)	1 (0.7)
Stress management	0	0	0	0	2 (1.4)
Evidence based practice	11 (6.3)	11 (6.3)	13 (7.7)	3 (1.9)	8 (5.4)
Professional development	6 (3.4)	7 (4.0)	7 (4.1)	7 (4.3)	4 (2.7)
Resident satisfaction	3 (1.7)	4 (2.3)	4 (2.3)	4 (2.7)	1 (0.7)
Other					
Program outcome - turnover	2 (1.1)	0	1 (0.6)	0	0
Health-related economics	1 (0.6)	0	0	0	1 (0.7)
Program outcome – recruitment	4 (2.3)	0	2 (1.2)	4 (2.5)	1 (0.7)
Program outcome – retention	4 (2.3)	9 (5.1)	4 (2.4)	2 (1.2)	4 (2.7)
Program outcome – improved survey data	3 (1.7)	1 (0.6)	0	1 (0.6)	1 (0.7)
Satisfaction – unspecified	4 (2.3)	8 (4.6)	10 (5.9)	8 (4.9)	7 (4.7)
Organization-focused outcomes	1 (0.6)	8 (4.6)	6 (3.6)	9 (5.6)	6 (4.1)
Other – non-categorized	0	3 (1.7)	4 (2.4)	7 (4.3)	4 (2.7)
Unable to define	1 (0.6)	0	1 (0.6)	0	0
Column Totals	175 (100)	175 (100)	169 (100)	162 (100)	148 (100)

Table 25. Summary of Subcategorized Outcome Types between Hospitals with and without NRPS and among Program Model Types

	Has NRP N (%)				Does Not Have NRP N (%)
	UHC	FBM	"Other"	All	
Leadership					
Management of patient care delivery	17 (19.8)	33 (14.7)	21 (20.8)	71 (17.3)	48 (11.5)
Resource management	3 (3.5)	9 (4.0)	2 (2.0)	14 (3.4)	7 (1.7)
Communication	3 (3.5)	6 (2.7)	10 (9.9)	19 (4.6)	23 (5.5)
Conflict management	0	1 (0.4)	0	1 (0.2)	1 (0.2)
Patient Outcomes					
Used theme as outcome	1 (1.2)	1 (0.4)	0	2 (0.5)	6 (1.4)
Manage changing patient condition	7 (8.1)	18 (8.0)	10 (9.9)	35 (8.5)	38 (9.1)
Patient and family education	4 (4.7)	7 (3.1)	1 (1.0)	12 (2.9)	22 (5.3)
Pain management	4 (4.7)	5 (2.2)	1 (1.0)	10 (2.4)	2 (0.5)
Evidence-based skin care practices	5 (5.8)	14 (6.3)	4 (4.0)	23 (5.6)	20 (4.8)
Fall prevention	6 (7.0)	11 (4.9)	3 (3.0)	20 (4.9)	24 (5.7)
Medication administration	4 (4.7)	20 (8.9)	4 (4.0)	28 (6.8)	29 (6.9)
Infection control	7 (8.1)	17 (7.6)	11 (10.9)	35 (8.5)	30 (7.2)
Patient satisfaction	6 (7.0)	18 (8.0)	6 (5.9)	30 (7.3)	44 (10.5)
Professional Development					
Ethical decision making	1 (1.2)	1 (0.4)	0	2 (0.5)	0
End-of-life care	0	1 (0.4)	0	1 (0.2)	0
Cultural competence	2 (2.3)	4 (1.8)	3 (3.0)	9 (2.2)	2 (0.5)
Stress management	0	0	0	0	2 (0.5)
Evidence based practice	7 (8.1)	17 (7.6)	5 (5.0)	29 (7.1)	17 (4.1)
Professional development	1 (1.2)	14 (6.3)	8 (7.9)	23 (5.6)	8 (1.9)
Resident satisfaction	1 (1.2)	3 (1.3)	2 (2.0)	6 (1.5)	4 (1.0)
Other					
Program outcome - turnover	1 (1.2)	1 (0.4)	0	2 (0.5)	1 (0.2)
Health-related economics	0	2 (0.9)	0	2 (0.5)	0
Program outcome – recruitment	0	3 (1.3)	0	3 (0.7)	8 (1.9)
Program outcome – retention	1 (1.2)	7 (3.1)	2 (2.0)	10 (2.4)	13 (3.1)
Program outcome – improved survey data	1 (1.2)	3 (1.3)	1 (1.0)	5 (1.2)	1 (0.2)
Satisfaction – unspecified	2 (2.3)	4 (1.8)	1 (1.0)	7 (1.7)	30 (7.2)
Organization-focused outcomes	0	0	0	0	8 (1.9)
Other – non-categorized	2 (2.3)	2 (0.9)	6 (5.9)	10 (2.4)	30 (7.2)
Unable to define	0	2 0.9)	0	2 (0.5)	0

Note: NRP = Nurse Residency Program; UHC = University HealthSystems Consortium; FBM = Facility Based Model

Cluster Analysis

All returned surveys with NRPs were included in the two-step cluster analysis. Twelve (12.6%) surveys were excluded from the analysis because these cases had missing values. Thus, 83 (87.4%) surveys were included in the final analysis.

Three distinct groups were identified. The first group was comprised of 27 (32.5%) programs. The second and third groups were each comprised of 28 (33.7%) programs. Tables 26 and 27 (see page 98) provide the labeled attributes of categorical and continuous variables which were used in the analyses, as well as the distribution of these attributes by cluster.

Description of Clustered Groups

Group 1. All hospitals identified in Group 1 had AACN Magnet designation. A majority had 400 or more beds, and most were not-for-profit organizations. Programs at these organizations typically lasted 12 months and enrolled the highest volume of nurse residents. If mentors were used they were assigned to the nurse resident. These programs may or may not have had project completion requirements and most did not require the completion of an individual, formalized career plan.

Table 26. Summary of Categorical Variables Comprising Group Clusters

Program Attribute	Group 1	Group 2	Group 3	χ^2	df	p-value
Magnet Status						
Yes	27 (100)	0	4 (14.3)	68.348	2	< .001
No	0	28 (100)	24 (85.7)			
Shared Governance Model						
Yes	27 (100)	23 (82.1)	23 (82.1)	5.482	2	.065
No	0	5 (17.9)	5 (17.9)			
Mentorships						
Yes	6 (22.2)	9 (32.1)	20 (71.4)	15.389	2	<.001
No	21 (77.8)	19 (67.9)	8 (28.6)			
Career Plan						
Required	6 (22.2)	2 (7.1)	14 (50.0)	16.752	2	< .001
Optional	8 (29.6)	5 (17.9)	7 (25.0)			
Not Required	13 (48.1)	21 (75.0)	7 (25.0)			
Project Completion						
Required by NRP end	12 (44.4)	1 (3.6)	19 (67.9)	32.873	4	< .001
Required, okay after NRP end	1 (3.7)	0	3 (10.7)			
Not Required	14 (51.9)	27 (96.4)	6 (21.4)			
Control Code						
Government	3 (11.1)	1 (3.6)	8 (28.6)	13.984	4	.007
Not for Profit	24 (88.9)	22 (78.6)	19 (67.9)			
For Profit	0	5 (17.9)	1 (3.6)			
Bed Size						
250 – 299	0	3 (10.7)	11 (39.3)			
300 – 399	7 (25.9)	14 (50.0)	7 (25.0)	24.303	6	< .001
400 – 499	6 (22.2)	6 (21.4)	2 (7.1)			
$\geq$ 500	14 (51.9)	5 (17.9)	8 (28.6)			

Note: NRP = Nurse Residency Program; χ^2 = Chi-square; df = degrees of freedom

Table 27. Summary of Continuous Variables Comprising Group Clusters

Program Attribute	Group 1	Group 2	Group 3	χ^2	df	p-value
Length of NRP						
Number	27	28	28	10.844	2	.004
Median	52.00	13.00	30.50			
Minimum/Maximum	10 / 56	0 / 52	6 / 104			
Number Finishing NRP						
Number	27	28	28	13.278	2	.001
Median	30.00	17.00	15.50			
Minimum/Maximum	8 / 110	4 / 117	5 /65			

Note: NRP = Nurse Residency Program; χ^2 = Kruskal-Wallis, Chi-square, df = degrees of freedom

Group 2. Hospitals identified in Group 2 were not Magnet designated. A majority had less than 400 beds, and most were not-for-profit with a lesser mix of for-profit.

Programs at these organizations typically lasted 3 months and enrolled a moderate volume of nurse residents. Mentoring was mostly discussed. Most of these programs had no project or career plan requirements.

Group 3. Some hospitals identified in Group 3 had AACN Magnet designation, but most did not. The majority had less than 300 beds and was mostly not-for-profit with a lesser mix of government. Programs at these organizations typically lasted 6 months and enrolled the lowest volume of nurse residents. More often than not, these programs required both a project and a career plan to be completed at or before the program's end.

Analyses of Conceptual Framework Variables in Terms of Group Clusters

Categorical Variables

Categorical variables included: a) mentorships, b) program model type, c) programs' academic degree characteristics, d) RN full time equivalents (RN-FTE), and program coordinator and resident facilitator activities. Table 28 provides a summary of these variables. Among the three groups, there were no statistically significant differences in programs' model type or academic degree characteristics, or in PC and RF activities. There was a statistically significant difference in mentor use among the three clustered groups. Post-hoc analysis revealed a greater proportion of mentors were used among clustered group 3 as compared to clustered group 1 ($z = -3.621$, $p < .001$) and clustered group 2 ($z = -2.915$, $p = .004$). There was not statistically significant difference

between cluster groups 1 and 2 in terms of mentor use (z = -.818, p = .413). There was a statistically significant difference among the three groups in terms of RN-FTE. Post-hoc analysis revealed a greater proportion of RN-FTEs in clustered groups 1 as compared to cluster group 2 (z = - 4.427, p < .001) and clustered group 3 (z = -4.505, p <.001). There was no statistically significant difference between clustered groups 2 and 3 in terms of RN-FTE (z = -.310, p = .757).

Table 28. Summary of Categorical Variables in Terms of Group Clusters

Categorical Variables	Group 1 N (%)	Group 2 N (%)	Group 3 N (%)	Total (%)	χ^2	df	p-value
Mentorships							
Yes	6 (22.2)	9 (32.1)	20 (71.4)	35 (42.2)	15.389*	2	< .001
No	21 (77.8)	19 (67.9)	8 (28.6)	48 (57.8)			
NRP Model Type (N = 83)							
UHC	10 (37.0)	2 (7.1)	6 (21.4)	18 (21.7)	3.572**	2	.168
FBM	12 (44.4)	20 (71.4)	14 (50.0)	46 (55.4)			
"Other"	5 (18.5)	6 (21.4)	8 (28.6)	19 (22.9)			
Program (Degree Type)							
BSN only	7 (25.9)	1 (3.8)	4 (16.0)	12 (15.4)	5.463**	2	.065
BSN + MSN	2 (7.4)	1 (3.8)	1 (4.0)	4 (5.1)			
Mixed (ADN + BSN + MSN)	18 (66.7)	24 (92.3)	20 (80.0)	62 (79.5)			
RN – FTE							
≤ 528	0	9 (32.1)	12 (42.9)	21 (25.3)	26.432**	2	< .001
529 – 716	4 (14.8)	11 (39.3)	6 (21.4)	21 (25.3)			
717 – 1175	9 (33.3)	5 (17.9)	8 (28.6)	22 (26.5)			
> 1175	14 (51.9)	3 (10.7)	2 (7.1)	19 (22.9)			

Note: NRP = Nurse Residency Program; UHC/AACN = University HealthSystem Consortium; RN-FTE = Registered Nurse – Full Time Equivalents; *χ^2 = Pearson, Chi-square; **χ^2 = Kruskal-Wallis, Chi-square; df = degrees of freedom

A summary of program coordinator (PC) activities is provided in Table 29. A summary of resident facilitator (RF) activities is provided in Table 30. There were no statistically significant differences in PC or RF activities among the three clustered groups.

Table 29. Summary of Program Coordinator Activities in Terms of Group Clusters

PC Activity	N	Group 1 N (%)	Group 2 N (%)	Group 3 N (%)	χ^2 (df = 2)	p-value
Interviewing (N = 71)						
Not expected	36	14 (38.9)	13 (36.1)	9 (25.0)	2.560	.278
Required	29	7 (24.1)	10 (34.5)	12 (41.4)		
As assigned	6	1 (16.7)	3 (50.0)	2 (33.3)		
Scheduling (N = 72)						
Not expected	35	9 (25.7)	15 (42.9)	11 (31.4)	1.320	.517
Required	29	11 (37.9)	8 (27.6)	10 (34.5)		
As assigned	8	3 (37.5)	3 (37.5)	2 (25.0)		
Teaching, classroom (N = 73)						
Not expected	2	1 (50.0)	1 (50.0)	0	1.272	.530
Required	54	17 (31.5)	17 (31.5)	20 (37.0)		
As assigned	17	6 (35.3)	8 (11.0)	3 (17.6)		
Teaching, simulation (N = 73)						
Not expected	13	5 (38.5)	3 (23.1)	5 (38.5)	1.605	.448
Required	40	11 (27.5)	15 (37.5)	14 (35.0)		
As assigned	20	8 (40.0)	8 (40.0)	4 (20.0)		
Teaching, small group (N =73)						
Not expected	2	0	1 (50.0)	1 (50.0)	1.410	.494
Required	56	19 (33.9)	18 (32.1)	19 (33.9)		
As assigned	15	5 (33.3)	7 (46.7)	3 (20.0)		
Administrative (N = 70)						
Not expected	18	6 (33.3)	7 (38.9)	5 (27.8)	.527	.768
Required	40	11 (27.5)	15 (37.5)	14 (35.0)		
As assigned	12	6 (50.0)	4 (33.3)	2 (16.7)		
Evaluating residents (N = 71)						
Not expected	18	8 (44.4)	5 (27.8)	5 (27.8)	1.383	.501
Required	33	10 (33.3)	11 (33.3)	12 (36.4)		
As assigned	20	5 (27.8)	9 (45.0)	5 (25.0)		
Mentoring (N = 71)						
Not expected	14	5 (35.7)	6 (42.9)	3 (21.4)	.929	.628
Required	42	16 (38.1)	13 (31.0)	13 (31.0)		
As assigned	15	3 (20.0)	7 (46.7)	5 (33.3)		
Supervising Projects (N = 71)						
Not expected	20	5 (25.0)	12 (60.0)	3 (15.0)	4.427	.109
Required	34	10 (29.4)	8 (23.5)	16 (47.1)		
As assigned	17	8 (47.1)	5 (29.4)	4 (23.5)		

Note: PC = Program Coordinator; χ^2 = Kruskal-Wallis, Chi-square; df = degrees of freedom;

Table 30. Summary of Resident Facilitator Activities in Terms of Group Clusters

RF Activity	N	Group 1 N (%)	Group 2 N (%)	Group 3 N (%)	χ^2 (df = 2)	p-value
Teaching, classroom (N = 52)					2.027	.363
Not expected	26	9 (34.6)	9 (34.6)	8 (30.8)		
Required	22	12 (54.5)	3 (13.6)	7 (31.8)		
As assigned	4	1 (25.0)	1 (25.0)	2 (50.0)		
Teaching, simulation (N = 53)					3.253	.197
Not expected	15	3 (20.0)	5 (33.3)	7 (46.7)		
Required	25	12 (48.0)	4 (16.0)	9 (36.0)		
As assigned	13	6 (46.2)	5 (38.5)	2 (15.4)		
Leading seminars (N =54)					.902	.637
Not expected	29	10 (34.5)	8 (27.6)	11 (37.9)		
Required	19	10 (52.6)	3 (15.8)	6 (31.6)		
As assigned	6	2 (33.3)	3 (50.0)	1 (16.7)		
Administrative (N = 52)					6.121	.047
Not expected	12	1 (8.3)	5 (41.7)	6 (50.0)		
Required	15	6 (40.0)	5 (33.3)	4 (26.7)		
As assigned	25	13 (52.0)	4 (16.0)	8 (32.0)		
Evaluating residents (N = 51)					1.675	.433
Not expected	13	3 (23.1)	4 (30.8)	6 (46.2)		
Required	9	4 (44.4)	2 (22.2)	3 (33.3)		
As assigned	29	13 (44.8)	8 (27.6)	8 (27.6)		
Mentoring (N = 51)					4.021	.134
Not expected	23	6 (26.1)	8 (34.8)	9 (39.1)		
Required	14	7 (50.0)	2 (14.3)	5 (35.7)		
As assigned	14	8 (57.1)	4 (28.6)	2 (14.3)		
Supervising Projects (N = 52)					1.170	.557
Not expected	15	6 (40.0)	3 (20.0)	6 (40.0)		
Required	16	6 (37.5)	4 (25.0)	6 (37.5)		
As assigned	21	10 (47.6)	6 (28.6)	5 (23.8)		

Note: RF = Resident Facilitator; χ^2 = Kruskal-Wallis, Chi-square; df = degrees of freedom

Focus Group Data – Aim 2

Participant Description

Table 7 (see page 65) provides a summary of the characteristics of the 19 focus group participants. The group was predominantly female (94.7%) and Caucasian (100%). Their work experience included a median of 15.00 years of licensure as a registered nurse (Minimum/Maximum = 3 years/39 years], a median of 12.00 years practicing in a

critical care setting (Minimum/Maximum = 3 years/30 years), and a median of 4.00 years (Minimum/Maximum = 1 year/25 years) membership in an AACN chapter.

Focus Group Findings

Question 1

The first question was "what specific patient outcomes do you believe are affected by nursing care in critical care units?" Participants provided 68 patient outcomes. Forty-two outcomes were provided by focus group 1 (FG1), 15 by FG2, and 11 by FG3. Duplicate and similar outcomes were combined by the group. Participants then assigned all outcomes to twelve categories that were identified, labeled and defined by the group. Using the CCNE (2008) *Standards for Accreditation of Post-Baccalaureate Nurse Residency Programs* as a thematic guide, the PI assigned these categories to one of twenty-nine elemental themes derived from the list of curricular key elements. This content analysis revealed 6 response themes. Table 31 provides a summary of participants' responses.

Table 31. Summary of Patient Outcome Themes

Response Theme	**All Groups N (%)**
Management of Patient Care Delivery	1 (1.5)
Manage Changing Patient Condition	35 (51.5)
Patient and Family Education	11 (16.2)
Evidence-based Skin Care Practices	7 (10.3)
Infection Control	8 (11.8)
Patient Satisfaction	6 (8.8)

Note: N = number of responses given by focus group participants. Percentages do not equal 100% due to rounding.

Theme 1 - Management of patient care delivery. This theme was listed under the leadership element rather than the patient outcome element as described by CCNE. The outcome was improvement in continuity of care. The outcome was not further defined by the group and was ranked lowest among all outcomes provided. The remaining themes were listed under the patient outcome element.

Theme 2 – Manage changing patient condition. The majority of listed patient outcomes were assigned to the theme "Manage Changing Patient Condition". This theme included physiologic outcomes (i.e., bowel function, euvolemia, and patient stability), injury prevention (i.e., pressure ulcers, falls), morbidity, and mortality. A complete list of patient outcomes is provided in Table 32.

Table 32. List of Patient Outcomes affected by Nursing Care in Critical Care Units, as identified by Focus Group Members.

Specific Clinical Conditions	Generalized Clinical Conditions	Other
➢ Bowel function ➢ Core measures (pneumonia, UTI, sepsis, SCIP, heart failure) ➢ Euvolemia ➢ Infection rates (CLABSI, UTI) ➢ Pneumonia ➢ Pressure ulcers ➢ Skin breakdown ➢ Wound prevention	➢ Falls ➢ Morbidity and Mortality ➢ No new injuries ➢ Patient stability ➢ Psychological outcomes (not specified) ➢ Survival	➢ Advancing to next level of care ➢ Continuity of care ➢ Coping (patient/family) ➢ Length of stay ➢ Medication errors ➢ Patient compliance ➢ Patient education ➢ Patient knowledge base ➢ Patient satisfaction ➢ Readmission to hospital ➢ Recovery ➢ Rehabilitation

Notes: UTI = Urinary tract infection; SCIP = Surgical Care Improvement Project; CLABSI = Central line associated blood stream infection.

One participant described how she formulated her list of outcomes:

> I don't think there are any outcomes that are not affected by the nurse. When I think about the outcomes I measure I fall back to the ones that they make us measure...length of stay, their survival to discharge, their core measures...pneumonia, UTI, sepsis, SCIP, and heart failure.

Outcomes within this theme were consistently ranked by participants as being most likely to be influenced by nursing residencies. Yet, participants had difficulty ranking outcomes because of their attempt to prioritize one outcome as more important than another. A conversation between two nurses highlights the observed difficulty with ranking outcomes:

> RN1: I think they are all extremely important. I don't think I can rank one above the other.
>
> RN2: I'm having trouble with that too. I mean obviously survival is important.
>
> RN1: I think it depends on the way you want to look at it. Cause obviously if you look at it like a Maslow's thing the physiologic and probably the professional issues grouped in with med errors, falls, and PUPS would be more important and I could have more of an acute effect on those than on the psychological things.

Theme 3 – Patient and family education. This theme centers on the ability to assess patients/families learning needs and readiness to learn, and to evaluate the effectiveness of teaching efforts. Participants ranked outcome categories associated

with this theme as being less likely to be influenced by nursing residencies. Participants' comments centered on the amount of time they have to devote to meeting the educational needs of patients and the effects education has on the patient's health literacy and rates of readmission to the hospital. The following two quotes are representative of participants' comments:

> Amount of time we are allowed to spend with them with like education for meds or discharge. That kinda falls into that [patient education]. Yeah, so they don't get readmitted because we didn't provide them with correct information at their discharge on their drugs.

> Well, if we're providing them with good education maybe they'll follow their drug plan better, may not get readmitted.

Theme 4 – Evidence-based skin care practices. This theme centers on the nurse's ability to evaluate and execute best practices for maintaining skin integrity. Pressure ulcer prevention and wound prevention were the most frequently cited examples assigned to this theme. Reference to this theme was made during each focus group. Outcomes associated with reduced skin breakdown were ranked as being moderately likely to be influenced by nursing residencies.

Theme 5 – Infection control. This theme centers on the nurse's ability to understand principles of vector and disease transmission and to understand and employ techniques to reduce or eliminate contamination threats. Responses of multiple participants from each group were specific for types of hospital-acquired infections (i.e., CLABSI, UTI, Pneumonia) but did not include infectious diseases (i.e., Tuberculosis,

Hepatitis, AIDS). The groups ranked infection control as the second most likely outcome type to be influenced by nursing residencies.

Theme 6 – Patient satisfaction. This theme was not listed in the CCNE (2008) Standards and was added by the researcher. This theme centers on the nurse's ability to enhance patient satisfaction with nursing care or with the hospital experience. Groups ranked patient satisfaction as being moderately influenced by nursing residencies. One nurse described the influence of nursing care on satisfaction in this way:

> I see the interaction of the nurse with the patient influencing how traumatic an incident is or how traumatic it's not. I think that many [interactions] have an outcome that you don't see. Maybe it increases survival, decreases complications, increases satisfaction.

Question 2

The second question was, "how, if at all, do you think nurse residency programs influence those outcomes?" Participants provided 65 responses. Fifty responses were provided by FG1, 10 by FG2, and 5 by FG3. Duplicate and similar outcomes were combined by each group and then assigned to categories that were labeled and defined by the group. Seven separate categories were generated. Content analysis revealed 4 themes: 1) Enhanced critical thinking; 2) Enhanced skill set; 3) Enhanced provision of care and, 4) Negative influences. Table 33 provides a summary of the groups' response categories listed by theme.

Table 33. Summary of Focus Group Response-Categories Listed by Theme of How NRPs Influence Patient Outcomes

Response Theme	Groups Total N = 65 N (%)
Theme 1: Enhanced Critical Thinking	
Critical thinking about whole picture	10 (15.4)
Increased knowledge	23 (35.4)
Encourages autonomy	1 (1.5)
Theme 1 Total (34 responses, 52.3%)	
Theme 2: Enhanced Skill Set	
Increased confidence and competence	11 (16.9)
Organization of plan of care	3 (4.6)
Theme 2 Total (14 responses, 21.5%)	
Theme 3: Improved Retention	
Retention / Decreased turnover	13 (20.0)
Theme 3 Total (13 responses, 20.0%)	
Theme 4: Negative Influences	
Preceptor fatigue / Staffing patterns	4 (6.2)
Theme 4 Total (4 responses, 6.2%)	

Note: FG = Focus Group; N = number of responses given by FG participants

Theme 1 – Enhanced critical thinking. Comments assigned to the theme "Enhanced critical thinking" related to development of critical thinking, increased knowledge, and autonomy among nurse residents. Although a majority of examples were presented as single answers in a list format, one group described the residency program as having a group-learning effect which then helped develop critical thinking.

One nurse described group-learning this way:

> I think it [a nurse residency program] would hopefully prevent multiple errors, so if one nurse made a mistake they can talk about it and then other nurses will know about that mistake also.

Time spent in classroom activities was listed as the key reason for increasing knowledge among nurse residents. One nurse wrote:

> I would say by the [amount of] time they spend in class they understand the core measures and they know what they are supposed to do with those. That's probably their top selling point because those are the folks that are running the program and they are very much involved in the core measures.

Theme 2 – Enhanced skill set. Responses assigned to the theme "Enhanced skill set" related to psychomotor skill improvements that were observed in the residents' performance of nursing duties. A majority of nurses related this improved ability to residents' feelings of confidence and competence. One nurse suggested:

> It [residency programs] makes graduate nurses feel confident faster and in theory, more competent. But I think it's a feeling. I don't know that it is really translatable.

Another nurse described an interaction between confidence and competence among new nurses in terms of safety and error prevention, stating:

> …if I feel more confident and competent, I'm probably also gonna feel like I can talk to the doctor on a certain level and question things if I

think they're wrong. Whereas if I don't feel that way, I'm probably going to just go along with whatever it is, even if it's the wrong order.

Theme 3 – Improved retention. Comments assigned to the theme "Improved retention" were related an effect of work environment on retention. The word retention was listed ten times. Three comments suggested an influence of work environment on nurse retention:

> Retention...because they'll stay in their workplace longer, maybe, if they didn't have that terrible experience that made them want to transfer to another unit...or another hospital...or out of nursing in general.

> That means if you have a nurse residency program that allows you to have less anxiety you're not likely...well...I guess it goes with turnover really. You stick around.

> I think if I'm happy where I'm working then I'm more likely to be thinking about what I'm working on...So, you are probably more likely to focus on work while you're there and stay long enough to truly become competent in what you do.

Theme 4 – Negative influences. Not all responses of how NRPs influence patient outcomes were positive. Comments assigned to the theme "Negative influences" included a description of preceptor fatigue, staffing issues, and training disparities. Four comments summarize this theme:

If I've oriented for six months in a row now, and it's a different person every two weeks, I may eventually start slacking or watching what they do and following up on their activities, so...just from the lack of oversight you could lead to a negative outcome because you have new grad nurses making decisions that they shouldn't be.

Well, I don't see the residency program being effective if they don't maintain adequate staffing levels after the programs are complete. Because whether they know what the right thing to do is, that may be more than they have time to do.

I think it's a good idea until they [nurse residents] get to the floor and the other nurses tell them, 'Oh, we don't do it that way. It's not going to work anyway.' 'What, that issue? Oh, they just told you that, it's easier to do it this way.' Then all that time was just wasted.

Well, just from experience here, if we've been forced to hire someone that nobody likes: they may get the standard orientation and may not get what they want. And they certainly don't typically get the support of the staff that would allow someone to advance as a nurse in their competency.

Question 3

The third question was, "what specific program characteristics of nurse residency programs may influence patient outcomes in critical care units?" Sixty-four comments were provided. Fifty comments were provided by FG1, 8 by FG2, and 6 by FG3. The

groups labeled and coded these comments into 16 response categories. A content analysis revealed three themes: 1) Program design, 2) Experiential learning, and 3) Preceptor traits. Table 34 provides a summary of response categories arranged by theme.

Table 34. Summary of Residency Program Characteristics That May Influence Patient Outcomes in Critical Care Units Arranged by Theme.

	Groups Total N (%)
Theme 1: Program Design	
Right mix of didactics and bedside care	7 (10.9)
Organized, structured program	8 (12.5)
Mix of administrators/experienced staff as leaders	2 (3.1)
Length of program	6 (9.4)
Access to quality mentors	5 (7.8)
Theme 1 Total (28 responses, 43.8%)	
Theme 2: Experiential Learning	
Exposure to experiences	4 (6.3)
Exposure to support services	1 (1.6)
Opportunity to perform hands-on skills	4 (6.3)
Opportunity for success building	5 (7.8)
Theme 2 Total (14 responses, 21.9%)	
Theme 3: Preceptor Traits	
Willingness to precept	5 (7.8)
Matched to preceptor by personality type	2 (3.1)
Continuity of preceptors	1 (1.6)
Communication / provides good feedback	8 (12.5)
Encouraging / Uplifting	2 (3.1)
Develops a relationship of mutual trust	4 (6.3)
Theme 3 Total (22 responses, 34.4%)	

Note: FG = Focus Group; N = number of responses from all FG participants. Values do not total 100% due to rounding.

Question 4

The final question gave critical care nurses an opportunity to share anything else that they would like regarding nurse residency programs and patient outcomes.

Fourteen comments were provided. These outcomes were aligned with three themes: 1) Outcome related comments, 2) Program enhancement, and 3) New program recommendations.

Theme 1 –Comments about outcomes. Outcome related comments included the example suggesting that better outcomes are related to a nurse's experience. One nurse stated, "...if you develop a strong core of staff members you will have good patient outcomes. If you don't, your patient outcomes are going to be terrible. It's a direct impact." This statement supports the findings of a recent systematic review on the connection between patient outcomes and nurse staffing. Kane, Shamliyan, Mueller, Duval, and Witt (2007) concluded that a strong core of nurses with evidence-based knowledge connects nurse staffing to patient outcomes.

Theme 2 – Suggestions for current program enhancement. Comments assigned to the theme "Suggestions for current program enhancement" were listed and not further discussed or defined by the groups. Examples of suggestions included: 1) incorporate with undergraduate training, 2) add positive physician involvement, 3) combine [skill-building sessions] with theory days, and 4) for leaders to be realistic with the amount of information that is provided and expected to be learned.

Theme 3 – New program suggestions. Several comments related to suggestions for new program models. One nurse would like to "see a one-year, a real residency program because, uhm, I mean three months is better than a poke in the eye, but it's not enough." Another nurse felt cheated because there was not a nurse residency for all

critical care nurses. As she states “I wish there was one available for nurses who didn’t get to go through a residency program, and I feel like I got jipped.”

CHAPTER V

DISCUSSION

In this chapter, a discussion of Aim 1 of the study will be presented first. Interpretation of results describing patient outcomes critical care nurses believed may be influenced by nurse residency programs, the second aim of the study, will follow. Research limitations, implications for new nurse graduates, nurse educators and nursing leaders, and recommendations for further research are included for each aim.

Aim 1 – The Components of U.S. Nurse Residency Programs

Number of NRPs

According to the AHA only 1,011 hospitals are larger than 250 beds (the size at which hospitals are likely to run NRPs). Respondents in this study represented 20% (n = 198) of hospitals in the total group. Nearly half of the responding hospitals (n = 95) were reported to operate a nurse residency program (NRP), employing 3,221 nurse residents. Based on these results, estimations using a linear extrapolation approach suggested that if every one of those hospitals listed by the AHA opened a NRP that an additional 16,446 nurse residents could be accepted each year. Calculations, based on data provided by the National Council of State Boards of Nursing, yielded an average of 140,000 US-educated, new graduate licensees per year over the last three years. This

number limits enrollment opportunities for these nurses. Development of additional residency programs among these hospitals will be required if all new registered nurses are to participate in a nursing residency as recommended in the *2010 IOM Report* (National Academy of Science, 2012). Another option to expand capacity to meet the IOM recommendation is for smaller hospitals to start NRPs, although this is a problematic solution given the resources necessary to implement these programs and the fact that 50% of US hospitals have less than 100 beds (AHA Guide, 2010). Before funds are allocated for program expansion additional research is needed to determine which, if any, program attributes or model types have the greatest impact on human resource and patient outcomes.

Model Types

Three model types were noted in this study: 1) University HealthSystem Consortium (UHC) which accounted for 22.1% of reporting NRPs; 2) Facility Based Models (FBM) which accounted for 53.7%; and, 3) "Other" model types which accounted for 24.2%. Analyses of the model types identified significant differences among and within programs. Cluster analysis identified a lack of treatment fidelity among program types.

Program Differences

Significant differences among and within program types included academic degree characteristics, length of program, allocation of residents' time, career planning

services, project requirements, and mentoring. Findings are discussed in terms of the conceptual framework (See Figure 3, page 23).

Employment Terms

Academic degree characteristics

A majority of the nursing literature related to NRPs has focused on the post-baccalaureate nurse resident (Altier & Krsek, 2006, Anderson, et al., 2009; Blegen, et al., 2001; Casey, et al., 2004; CCNE, 2008; Fink, et al., 2008; Goode & Williams, 2004; Goode, Lynn, et al., 2009; Pine & Tart, 2007; Williams, Goode, et al., 2007). Some program models, designed solely for the baccalaureate-prepared nurse resident, have restrictive admittance criteria for associate-prepared nurse residents (Casey, et al., 2004; Williams, Goode, et al., 2007). Interestingly, nearly 12% of reporting programs in this study did not include baccalaureate (BSN) prepared nurse residents. These programs admitted ADN-prepared and/or initial licensure MSNs. In fact, more than three-quarters of respondents reported the inclusion of nurse residents with Associate Degrees in Nursing (ADN). These findings, though not statistically significant based on a critical alpha of .01, were nearing statistical significance ($p = .012$) and suggest that the needs of ADN-prepared nurse residents be considered during program development and evaluation. Program developers may consider Thomson's findings describing the variability between post-ADN and post-BSN residents' needs during the first year of practice. Thomson (2011) described the need for separate, but concurrent, programs for BSN- and ADN-

graduates. The author suggested that more emphasis on "technical" competency during the first six months for BSN-residents and more emphasis on critical thinking scenarios and professional development for ADN-residents may enhance residents' satisfaction, and ultimately, their retention.

Length of Program

Orientation programs typically geared for new graduate nurses can last from a few weeks to a few months depending on unit type, patient acuity, and nurses' experience. Transitional programs, such as nursing residencies, have aimed to extend this time to include various content topics, skill-related practice sessions, and professionalism-enhancing exercises. Although the debate continues as to the appropriate length of time for these programs, designers of the AACN/UHC model recommended one year. Results from this study show statistically significant differences among and within the model types in terms of length of program ($p < .001$). Programs using a UHC-model were significantly longer than FBM and "Other" model types and all model types had some programs that lasted one-year.

Allocation of Residents' Time

The common blueprint for entry-into-practice orientation programs typically begins with less direct patient care and more hospital-based information. Findings from this study supports that less time was being allocated to direct patient care during the first week of the residency as compared to the midpoint or the last week regardless of

model type or length of program (See Table 9). Direct patient care includes all nursing activities performed during a typical shift in a hospital. More time was allocated to NRP-related activities during this time span. NRP-related activities included attending NRP workshops or educational sessions, reflective journaling, completing questionnaires, and project work. Conversely, more time was allocated to direct patient care by the last week of the residency with less time devoted to NRP-related activities. That these findings were found to be statistically significant ($p < .001$) may be expected considering the first week of the program is most likely devoted to human resource and general orientation activities. This difference underscores the variability among residency programs (Ruth, 2009) and may be due to inconsistencies in the implementation of program models. Further studies exploring the design and implementation of nursing residencies are recommended.

Future researchers should consider altering the timing categories (e.g., first week, midpoint week, and last week) in regards to when specific program activities are assessed. It is recommended to restructure time allocation markers to those that occur during orientation activities and those that occur after orientation activities. This change may provide richer detail about the timing of direct-patient care and NRP-related activities that are not specific to human resources or general orientation information.

A total of 13 (13.7%) respondents with residencies identified the question as confusing and did not provide an answer. Alternatively, one should also consider the phrasing of the question itself. These 13 programs did not significantly differ from the programs that provided a response in terms of hospital characteristics. Additional

research designed with more robust methodologies is required to better understand the allocation of nurse residents' time.

Project Completion Requirements

Projects have been described as an effective way to engage the nurse resident in evidence-based practice (Lynn, 2011). The Commission on Collegiate Nursing Education (CCNE, 2008) included the development of an evidence-based project as a standard requirement for nurse residency program accreditation. This standard reinforces the viewpoint that nurse residents should be encouraged to complete an evidence-based project within their first year of practice. In this study, 100 projects were reported to have been completed among 38 (40%) responding programs. There was a statistically significant difference among the three program model types in terms of whether a project was or was not completed ($p < .001$), UHC model types reporting a greater proportion of completed projects than FBM or "Other" model types. Although there were no statistically significant differences among the model types in terms of whether the project was of a quality improvement (QI) or shared governance (SG) type; differences among the models in terms of division-focused QI projects neared statistical significance ($p = .014$), with UHC model types completing more division-focused QI projects than FBM or "Other" model types. Future researchers should clearly define the variable "focus area" because various terms are used to describe the organizational divisions among hospitals.

Cepero (2011) noted that direct care nurses may not be prepared to conduct evidence-based projects due to a lack of interest in research, experience with scholarly writing and lack of professional support systems. Lynn (2011) described the tone of nurse residents' responses about evidence-based project requirements as mixed; the majority being more negative and echoing the challenges noted by Cepero. This disparity between residency leaders' and nurse residents' attitudes toward EBP projects should be further explored to determine which, if any, aspects of project assignments are most effective for engaging the nurse resident to integrate evidence into their practice. Additionally, future research is needed to identify what support systems and which didactic content needs to be provided to help the residents be successful.

Sixty percent of the NRPs did not require completion of a project. The resources required for project completion are complex and resource intensive, as described in Chapter 4. Providing new nurses with a coach or mentor who is focused on the processes for exploring practice-based outcomes may transform nursing practice and engage new nurses to explore practice-focused questions (Cepero, 2011). One option to consider is that of pairing new nurses with experienced nurses conducting ongoing quality improvement projects, evidence-based projects, or research. However, before embarking on attempts to ensure individual projects for every nurse resident, the impact of such project requirements need to be established. Over 140,000 nurses are newly licensed each year. If all are required to complete residency programs that include a project, one must ask if the cost/benefit ratio is robust.

Organizational Facets

Magnet Status

A Magnet-designated facility is one that provides excellent patient care, involves nurses in decision-making processes, and reports a high level of job satisfaction among nurses (American Nurses Credentialing Center, 2012). Significant differences between hospitals with and without Magnet-designation were observed ($p = .001$) relative to the residency programs, with UHC representing a larger proportion of Magnet designated hospitals than FBM and "Other". In fact, hospitals with Magnet designation were three times more likely to have nurse residency programs than those without Magnet designation. Readers are cautioned to interpret this as a value statement. Findings from this study are empirical and do not suggest that Magnet designated organizations place greater value on nursing residencies than non-Magnet designated organizations. It may imply that Magnet designated organizations have greater resources to support residencies, but additional studies to explore this relationship are needed. This suggests that future NRP outcome studies be risk adjusted for Magnet designation. Risk adjustment may control for some of the effect of organizational culture on outcomes of interest (Kane, 2006).

COTH Status

Members of the Council of Teaching Hospitals (COTH) include major teaching hospitals and health systems (including Veteran's Affairs hospitals). Membership is

limited to those facilities directly affiliated with a medical school and who sponsor at least four active medical residency programs (Association of American Medical Colleges, 2012). Significantly, a majority of nurse residency programs (37.9%) were at hospitals with COTH designation ($p = .007$), with UHC modeled programs representing a larger proportion than FBM or "Other" model types. In fact, hospitals with COTH designation were nearly two-times more likely to have a nurse residency program than those without COTH designation. The higher incidence of NRPs among COTH designated organizations may present a unique opportunity for hospital administrators and funders of care. Opportunities to blend early medical and nursing residency components may have a positive impact on program cost, resource allocation, enhancing the efficiency of the healthcare team, and enhancing nurse residents' satisfaction during transition from a student role to a professional role.

Shared Governance Status

Shared governance represents an organizational structure and professional practice model in which all nurses have a voice in shaping the standards of nursing practice and quality of care within their practice environments. Two benefits of this model are empowered nurses and fostered collaboration among providers of care and have been described as program-related outcomes for some nurse residency programs (Beyea, et al., 2001; Fink, et al., 2008; Goode & Williams, 2004). In this study, more than three-quarters (86.2%) of hospitals with a shared governance model also had a nurse residency program ($p < .001$). In fact, hospitals with a shared governance model were

nearly 4.5-times more likely to have a residency program than those hospitals without a shared governance model. This observation was not unexpected. As Foster (2005) noted, "there are as many shared governance models as institutions that practice shared governance". This supports that, as a variable of interest, shared governance should be risk adjusted in future outcome studies exploring the effect of nursing residencies on patient outcomes (Kane, 2006).

Correlation of organizational facets. Subsequent to the analysis, correlations of organizational facets among and within the three program types were examined. These facets represent aspects of an organization's culture. Weak to moderate correlations between Magnet designation, COTH status, and presence of a shared governance model suggests that a level of homogeneity within this variable may exist. In fact, findings from this study demonstrated that Magnet designation and COTH status tended to coincide with each other within UHC and "Other" programs, but not with FBM programs. Future research should be designed to address issues of collinearity secondary to correlation of these variables. This may require the selection of only one variable or the combination of variables within the organizational facets concept (Tabachnick & Fidell, 2007).

Labor Inputs

Mentors

Valdez (2008) described mentoring as a facilitator of success among new nurses transitioning from student nurse to professional nurse. The author proposed that

mentorships require careful pairings and should provide social support, nurturing, and clinical guidance. Fink, et al (2008) described mentoring as a key theme supporting nurse residents' integration into the clinical environment. Persaud (2008) described a 7% increase in retention rates after the implementation of a new graduate mentoring program for perioperative nurses. These studies illustrate the importance of mentoring to team building and retention. Mentoring has been described as a catalyst for successful role transition and career advancement among various residency program models, including nursing residencies (Eigsti, 2009; Fink, et al., 2008; Halfer, et al., 2008; Hayes & Scott, 2007; Krugman, et al., 2006; Morgenthaler, 2008; Persaud, 2008; Santucci, 2004; Spector & Li, 2007; Valdez, 2008). Given the previous findings, one might speculate that mentor use among nurse residency programs would be higher than the 40% noted in this study. While the sample size of this study prevented determining statistical significance in terms of mentor selection, it appears that UHC-modeled programs are less likely than FBM and "Other" programs to assign or have the resident chose a mentor. It is possible that programs varied in their definition or need for mentors if nurse residents were assigned to consistent preceptors. Future studies should attempt to determine what effect the use of a consistent preceptor has on the need for mentorships within NRPs.

The low incidence of mentor use was unexpected. Plausible reasons include availability and willingness of nurses to serve as mentors, disinterest among nurse residents to select a mentor, program design and cost. As recommended in the *2010 IOM Report* (National Academy of Sciences, 2012), additional funding and support could

be beneficial should cost be determined as a contributing factor in the low usage of mentors.

Program Coordinators

In this study, nearly 90% of respondents reported the use of at least one program coordinator position to assist the program director with the NRPs. The definition of program coordinator (PC) is based on the definition of residency coordinator provided by CCNE (2008); i.e., the person who is accountable for the coordination of most NRP activities, such as content planning, selecting guest speakers and implementing, managing, and evaluating the program. Although not statistically significant based on a critical alpha of .01 (the criteria in this study), the most commonly reported activities expected of all PCs regardless of program model type included teaching (i.e., small group work, classroom instruction, and simulations), mentoring, project supervision, and administrative duties (see Table 17, page 86).

Resident Facilitators

In this study, nearly two-thirds of respondents reported at least 1 resident facilitator (RF) position. Nearly half of the respondents reported at least 3 or more RF positions. A resident facilitator is the person who assists the program coordinators during residency sessions. There were statistically significant differences among the three model types with UHC-modeled programs reporting a greater proportion of RFs than FBM programs ($p < .001$). In terms of teaching formal classes, there were a higher

percentage of UHC-modeled programs than FBM programs that may assign this task to their resident facilitators. Considering the RFs role to support the program coordinator, this finding is not unexpected because the most common assignment of the program coordinator is teaching.

Summary of General Findings

There are a limited number of role-transition programs identified as nursing residencies. Various model types existed with UHC-modeled programs consistently appearing different than FBM and "Other" model types. Among and within these three model types, lengths of programs were variable and program components were inconsistently implemented. A small number of programs were restricted to only BSN-prepared nurses, though a majority of programs admitted ADN- and entry-level MSN-prepared nurses. A majority of NRPs did not require a completed project. NRPs were more likely to be used at organizations with Magnet designation and COTH status.

Limitations

There are multiple limitations related to this study. The exact number of nurse residency programs within the United States is unknown and statistics related to transition programs labeled as nursing residencies are limited. The low response rate in this study limits generalizability of the findings. Until a consistent definition of nursing residency is provided a reliable sampling frame is elusive.

Other limitations included the use of open-ended survey items to collect data regarding estimated time allotted to specific program activities. This made it difficult to report mean response values. Responses may have been influenced by the respondents' length of exposure to residencies or desire to provide a response expected of a professional colleague. Respondents' interpretation of survey questions may have potentially affected the quality of survey responses. Researcher bias is a potential limitation and relates to the influence of the PIs personal experiences and attitudes about nursing residencies during tool design (Trochim & Donnelly, 2007). To limit researcher bias, survey questions were reviewed by two independent researchers and the tool was validated by a panel of experts.

Implications

Relevance to new graduate nurses

New nurse graduates should understand that the content and structure of all nursing residencies are not created or implemented equally. This study underscores that there is great variability among nurse residency programs. When making a decision about which, if any, NRP to select, the new nurse should give consideration to the number of residents entering and completing the program, the ratio of mentors to residents, project requirements, and opportunities for career planning.

Relevance to hospital-based nurse educators

Findings from this study suggest that a large majority of nursing residencies admit newly licensed nurses with varied academic preparation. Hospital-based nurse educators should consider the resident's academic preparation when planning a nursing residency. Nurse educators should also consider the effects that content placement may have on successful role transition.

Relevance to nursing leaders

Nurse leaders should consider that findings from this study demonstrated minimal consistency across programs. Additionally, model names (UHC, facility-based, "Other") were not significantly related with cluster assignment. This suggests that model name (e.g., UHC) may be less significant than type of content or level of support provided; however, additional research is needed.

Relevance to healthcare policy

Although there is professional impetus to expand NRPs (IOM, 2008), potential constraints may impede successful program expansion. NRPs require large amounts of organizational and human resources. To date, only 784 US hospitals have greater than 300 beds, a size at which NRPs are most likely to be supported. Alternatives for provided transitional support from the role of nursing student to professional nurse should be considered.

Additionally, there is little treatment fidelity (Kane, 2006) among programs and program types. This limits the ability to validly detect the impact of "residency". It also remains unclear which NRP components have the greatest impact.

Future Research

Future research should be aimed at determining what, if any, direct effects NRPs have on patient-related outcomes. Human resource outcomes are also important (e.g., less RN turnover is cost effective). Additionally, investigation with more robust methodology should be pursued among those programs identified as nursing residencies. Questions should focus on comparing differences in program implementation and the relationship of those differences to program and patient outcomes.

Aim 2 - Patient Outcomes Affected by Nursing Care in Critical Care Units

The second aim of this study was to determine which, if any, patient outcomes critical care nurses believed may be influenced by nursing residencies. Findings of this study are consistent with outcome measures previously described (Atherly, 2006; Maciejewski, 2006). The content analysis of the comments collected from 19 experienced ICU nurses provides examples of condition-specific and experiential

outcome measures (Atherly, 2006). Maciejewski (2006) aligned traditional outcome measures with experiential outcome measures.

Atherly (2006) defined condition-specific outcome measures as clinical (including signs, symptoms, and tests) and experiential (impact of disease on the patient). Participants described outcomes related to management of changing patient condition, evidence-based skin care practices, infection control, and patient/family education as those that the critical care nurse has influence over. These outcomes aligned with condition-specific and traditional outcome types. Clinical outcome examples included recognition of changes in vital signs or patient assessment as a response to a treatment or intervention. Experiential outcome examples included development of hospital-acquired pressure ulcers or infections. Maciejewski (2006) defined traditional measures as mortality and morbidity. Morbidity and mortality were assigned to both experiential and traditional categories. It is not surprising that what nurses' described in this study as outcomes they have an impact on is exactly what has been reported as nurse-sensitive outcomes in previous studies (Alexander, 2007; Kurtzman & Buerhaus, 2008; Needleman, Kurtzman, & Kizer, 2007; No Author, 2008).

Limitations

The study is limited by participants' frame of reference regarding the influence of nursing's role on outcomes, prior exposure to nurse residents, unequal group size, and an unclear definition of nurse residency program. Critical care nurses described

patient-related outcomes that nurses may influence, presuming that at the end of a nursing residency the resident is also going to have that influence. This does not take into account any differences in residents' experiences or skill level. While participants from only one group reported prior exposure to nursing residents, the amount of exposure each nurse had was not identified. Thus, interpreting the findings from the focus groups is limited by an unknown exposure effect that could influence their opinions. One of the groups had 14 participants. The other two groups consisted of only 3 participants each. Although knowledge saturation was attained, transferability of the findings is limited by the number of focus groups and limited geographic range. Participants did not question what a nursing residency was until question two was introduced leading the PI to question the validity of their responses to question one.

Methods Suggestions

Those who attempt to do focus groups in the future need to recognize the limits of nurses' ability to identify with the experiences of a nurse resident as they may have not participated in a residency program or because their program was vastly different than other residencies. Future focus groups should be homogeneous in terms of participants' experience of working with nurse residents (Creswell, 2007). At least 10 focus groups with geographic variability should be conducted (Marshall & Rossman, 2006) and groups should be limited to between 3 to 5 participants (Kruegar, 1998b).

These suggestions will focus, reduce, simplify, and facilitate the group process and aid with transferability of the findings.

Post-interview personal reflections revealed that the use of additional prompts during follow-up questioning may be beneficial to future researchers. These prompts should include follow-up questions seeking clarification of the implied meaning of participants' statements. This will facilitate data coding and interpretation (Creswell, 2007).

New Questions/Directions

Future studies using focus groups to identify nurse-sensitive outcomes should continue with the current four questions provided in the Focus Group Interview Guide because it provides a systematic approach for determining patient outcomes that are nurse and/or resident sensitive. Additional US geographic regions should be added to strengthen transferability of the findings. Researchers should include more homogeneous groups with consistent experience with nurse residents and a minimum of two years of practice experience. This will allow for enough exposure for nurses to speak to what they are seeing in their areas. Those that have had experience with nurse residents would potentially allow for deeper insights into outcomes affected by nurse residents. Future researchers should limit early work to general ICUs rather than specific population-based ICUs.

Future Research

For future studies, the use of a survey-based, rating system may help tease out specific nurse-sensitive outcomes that may be affected by nursing residencies. Using a Delphi approach, nurse-sensitive outcomes that have been identified in health services literature could be studied in terms of list sufficiency, importance, and presence of outcomes not yet described. For example, are there more discrete types of patient outcomes that are influenced by residencies in addition to the usual suspects? Additionally, an observational study designed to identify differences in patient outcomes for resident and non-resident registered nurses is recommended.

Conclusion

This study is the first to describe specific attributes of U.S. nurse residency programs and identify patient outcomes that may be affected by them. Findings from this study support the following conclusions:

1. Small hospitals are not likely to support nursing residencies.
2. Despite CCNE standard for BSN-only programs, 86.4% of nursing residencies admitted ADNs.
3. Program types, length, and nurse resident career building experiences vary.
4. Program outcome measures were exclusively human resource related and included confidence, competence, retention, and recruitment.

5. Cluster analysis results demonstrate minimal consistency across programs.
6. Model Names (UHC, FBM, “Other”) are not related significantly with cluster assignment.
7. Patient outcomes are reflective of earlier work describing nurse-sensitive outcomes.

The extent of differences within and across program types indicates a lack of treatment fidelity needed to detect objectively the impact of NRPs on patient outcomes. The expansion of NRPs may be limited by the number of hospitals of a size to support such programs, as well as resource allocation and utilization. Efforts to identify patient outcomes likely to be influenced by NRP participants should be expanded beyond critical care.

APPENDIX A

FOCUS GROUP CONSIDERATIONS

Research Aim: Identify patient outcomes believed by practicing critical care nurses to be influenced by nurse residency programs.

Research Questions: (Estimated time is 15 minutes for each research question)

1. What specific patient outcomes do you believe are affected by nursing care in critical care units?
2. How, if at all, do you think NRPs influence these outcomes?
3. What specific program characteristics of NRPs do you believe may influence patient outcomes in critical care units?

Follow-up Question: (Estimated time is 6 minutes for the follow-up question)

4. Is there anything else you would like to share with me related to nurse residency programs and patient outcomes?

Considerations:

Strengths:

- Immediate follow-up and clarification are possible
- Data yielded quicker in greater quantity
- Focus groups produce a wider variety of information
- Socially oriented
- In program design and evaluation, focus groups are useful

Weaknesses:

- Involves personal interaction and cooperation among participants and interviewer (moderator)
- Poorly prepared interviewer (moderator)
- Power dynamics among participants
- Interviewer (moderator) has less control over a group interview with possible loss of time
- Data are difficult to analyze because context is essential
- Groups can be hard to assemble
- Logistical problems

Needs:

- Demonstrate through the conceptual framework that the purpose of this part of the study is to describe the participant's perspectives on patient outcomes and influence of NRPs on those outcomes

Script and Procedures for Focus Groups

1 – Introduction

Hello everyone. My name is James Barnett. I am a doctoral candidate in the PhD program at Vanderbilt School of Nursing.

Welcome to this focus group. This is a focus group I am conducting with nurses at this facility. I will be audio recording this session in order to identify areas for personal improvement.

I invited you to participate because of your current role in critical care nursing. I know that I can learn a lot from you about this topic.

I will serve as moderator for this focus group. I have some knowledge of this topic because of my previous experience as a critical care nurse, but I may be unfamiliar with certain details. So, please indulge me if I ask you to define a term or explain an answer with greater detail.

Now, I'll take a couple of minutes to introduce some discussion ground rules and to address the subject of confidentiality. Then we will go around the table and have you introduce yourself and describe your role at your facility, what unit you work in, your educational background, and how long you have been licensed.

2 – Confidentiality

Because of the potentially sensitive nature of the topic – particularly discussion of poor outcomes or mistakes that may have occurred in the process of caring for a critical care patient – I want to stress the confidential nature of our conversation.

I assure you that your name will not be connected with information I collect today. I plan to characterize your comments simply in terms of your professional background (degree, time since licensure).

Please do not talk about what is said during this meeting after you leave.

During the discussion group, try to avoid calling to a person by name. In the event that you do use someone's name, I will delete the reference from the transcript.

To protect patients and staff, do not discuss or reveal any details of a particular event that could violate their privacy and confidentiality.

For the sake of maintaining confidentiality, only two of my instructors will have access to the audiotape.

I am also audio-taping the proceedings so that I can produce a transcript. Only members of my dissertation committee will have access to the transcript. I will review the transcript to ensure that the notes taken during this session is complete. Until such time that the committee has completed their review of this process, notes and recordings from these sessions will be kept in a locked area. Thereafter all tapes will be destroyed.

The transcript will not be released in its entirety to the public. However, I may use excerpts from the transcript to support required writing assignments or for other related use. In such cases, the excerpted material will not carry individual names or any identifying information about the institution or participants.

3 – Ground Rules and Logistics

I have assembled a small number of you today so that everyone will have ample opportunity to speak up and contribute to the discussions. I ask that only one person speak at a time, and be allowed to finish his/her point before someone else speaks. I do not want to miss any of your comments.

To hear from everyone, I may call on you or use other methods such as going around the table and asking each of you to speak. I will be using flipcharts and notes to gather information from you today.

From time to time, I may interrupt the conversation to move it along to the next topic. I'll do this when I think we have adequately covered a particular topic and to ensure that we finish within the allotted time period.

You may withdraw from this session at any time. Feel free to step out of the session if you need to use the restroom.

To minimize interruptions, I request that you turn off your pagers and cellular phones, unless it is absolutely critical that you leave them on.

At times, I will direct questions to specific individuals in order to ensure full participation and help us collect a variety of opinions.

Our session is scheduled to last one hour. We will not take breaks during this time. Do you have any questions about the ground rules and logistics for this session?

4 – Introductions of Participants

[Go around the room and have each person briefly introduce themselves, their background, and where they work.]

5 – NGT Questions and Procedures

There are four questions I am interested in discussing with you in order to obtain your views on which patient outcomes may be influenced by nurse residency programs.

To address the first question, I will use a procedure designed to help us quickly develop lists of all possible answers. First, I will read the question and then ask each of you to simply think about your answer(s) silently. You should then use the provided index cards to write your answers in short phrases. We will share answers one at a time and after all of the ideas are listed and clarified, discuss them together.

BEGIN TRANSCRIPTION HERE – Researcher asks the first question

The first question is being asked because I want to be sure to understand your opinion about patient outcomes. Our first question is:

"What specific patient outcomes do you believe are affected by nursing care in critical care units?"

<The remainder of the NGT procedure will then be applied: Listing answers on a flip-chart through a round robin technique without evaluative judgments, seeking clarification about any items that are confusing, rating of importance of each aspect and general discussion of which aspects are interrelated and how>

We will use the same procedure for the second question. We will now shift our focus from patient outcomes to influences of Nurse Residency Programs. The second question is:

"How, if at all, do you think Nurse Residency Programs influence these outcomes?"

<The remainder of the NGT procedure will then be applied: Listing answers on a flip-chart through a round robin technique without evaluative judgments, seeking clarification about any items that are confusing, rating of importance of each aspect and general discussion of which aspects are interrelated and how>

As mentioned at the beginning of this session, I am interested in the influence of nurse residency programs on patient outcomes. An integral piece of nurse residency programs are the nurse residents. Our third question is:

"Other than patient characteristics, what aspects do you believe influence patient outcomes in critical care units?"

<The remainder of the NGT procedure will then be applied: Listing answers on a flip-chart through a round robin technique without evaluative judgments, seeking clarification about any items that are confusing, rating of importance of each aspect and general discussion of which aspects are interrelated and how>

The final question is provided so that you can express other ideas. The final question is:

"Is there anything else you would like to share with me related to nurse residency programs and patient outcomes?"

Thank you for participating in this focus group. I would like to reiterate that your responses will remain confidential and any written information will be de-identified and the recordings will be destroyed after the transcript has been written and course faculty have reviewed the tape. If you have questions or concerns after you leave, you may call my office or email me. My business card will be handed out as you leave.

Appendix A (continued)

Focus Group Participant Demographic Summary

1. In years, how long have you been
   a. A Registered Nurse? _____ Years
   b. A Critical Care Nurse? _____ Years
   c. An AACN Chapter Member? _____ Year(s)

2. What is the highest nursing degree you have attained? (Circle one choice)
   a. Associate Degree in Nursing
   b. Baccalaureate Degree in Nursing
   c. Master's Degree in Nursing
   d. Doctoral Degree in Nursing

3. Please list all specialty certifications that you have attained (e.g., CCRN):

   _____

4. In what type of facility do you work?
   a. Community hospital
   b. Public hospital
   c. Teaching hospital

5. In what type of critical care unit do you currently work?

_____

6. Is your hospital certified by AACN as a Magnet facility?

   Yes No

7. Have you worked in a nurse residency program?

   Yes No

8. Have you worked with a nurse resident?

   Yes No

9. What is your gender? Male Female

10. What is your age range?

___ 20 – 30 years old

___ 31 – 40 years old

___ 41 – 50 years old

___ 51 – 60 years old

___ 61 – 70 years old

___ 71 years or older

11. What is your race/ethnicity?
(Check all that apply)

___ American Indian or Alaskan Native

___ Asian

___ Black or African American

___ Native Hawaiian or Other Pacific Islander

___ White

___ Hispanic or Latino

___ Not Hispanic or Latino

APPENDIX B

NURSE RESIDENCY PROGRAM SURVEY

1. Do you currently provide a nurse residency program for new nurse graduates at your facility?

    a. Yes
    b. No (SKIP TO QUESTION 21)

2. Which nurse residency program model is used at your facility? (Choose as many as apply)
    a. University HealthSystem Consortium/American Association of Colleges of Nursing
    b. Versant
    c. Valor
    d. State Based Program
    e. Facility Based Program
    f. Other (Specify): _____
    g. None of the above

3. In WEEKS, how long was your nurse residency program for your last cohort?

    _____ Weeks

4. How many nurse residents ENTERED and FINSIHED the last completed program cohort?

    A. Number that entered: _____

    B. Number that finished: _____

    C. What are the reasons residents did not finish the nurse residency program? _____
    _____
    _____

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

5. During the FIRST WEEK, MIDPOINT WEEK, and LAST WEEK of the nurse residency program, what AVERAGE percent of time do you estimate your nurse residents spent performing the following activities? (If none, write in "0")

Activities	Average Percent of Time		
	FIRST WEEK	**MIDPOINT WEEK**	**LAST WEEK**
Direct patient care activities (e.g., nursing activities that relate to a typical direct patient care shift in your facility)			
Unstructured professional activities (e.g., reading journals, NCLEX-RN preparation, reviewing organizational policies)			
NRP related activities (e.g., attending NRP sessions, inservices, reflective journaling, completing questionnaires, project work)			
Other activities (please list)			
Total	**100 %**	**100%**	**100%**

6. How many nurse residents who completed your last program cohort had the following nursing degrees as their highest degree?

Highest Degree	Total Number
Associate or Diploma in Nursing	
Traditional Baccalaureate in Nursing (BSN)	
Accelerated Second Degree BSN	
MSN Initial Licensure	

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

7. Which of the following four choices best describes any project completion requirements for your last completed program cohort? (Projects may include Quality Improvement/ Quality Assurance projects, Shared Governance projects, or other types of projects) (**CIRCLE ONLY ONE CHOICE**)

   a. A project was required to be completed before residency completion

   b. A project was required but could be completed after the residency ended

   c. A project was optional

   d. The residency program has no project components (SKIP TO QUESTION 9)

8. Of the nurse residents in your last completed program cohort indicate with "X" what types of projects were undertaken? (Select ALL that apply)

Types of Projects	Unit Level	Division Level	Institution Level
Quality Improvement (QI) (such as Pressure Ulcer, VAP, CLABSI, UTI, Restraint, or Fall projects)			
Shared Governance (such as nurse resident satisfaction, confidence, competence – not including UHC/AACN Tools)			
Other project types (please specify)			
No project(s) were undertaken			

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

9. Which of the following best describes the creation of an individual formal career plan in your last program cohort? It was:

   a. Required

   b. Optional

   c. Not part of this program

10. Of the total number of budgeted FTEs, how many are allocated to the following positions?

Position	**Number of Budgeted FTEs**
Residency Program Director	
Program Coordinator(s)	
Residency Facilitator(s)	
Secretary / Program Assistant(s)	
Preceptor(s)	
Mentor(s)	
Other (specify)	
TOTAL NUMBER OF BUDGETED FTES	

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

The following questions relate to specific roles within your nurse residency program.

11. A program coordinator is the person who is accountable for the coordination of activities related to the nurse residency program. How many program coordinators worked with your last program cohort? (If none, write "0").
Number = _____ (IF "0", SKIP TO QUESTION 14)

12. Which of the three categories best describes program coordinator activities during the last program cohort?

	Required of all program coordinators	As assigned, varies by coordinator	Not a program coordinator expectation
Interviewing nurse residents			
Setting nurse resident work schedules			
Teaching formal classes			
Running simulation and/or return demonstrations			
Leading seminars or small group discussions			
Assisting program leader with administrative duties			
Evaluating nurse residents' performance			
Assisting with unit matching process			
Serving as a mentor			
Supervising projects			
Other activities (Please specify)			

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

13. Using the degrees listed below indicate the number of program coordinators whose highest degree in nursing was:

Degree Type	Program Coordinator Number
Associate Degree in Nursing	
Baccalaureate Degree in Nursing	
Master's or Doctoral Degree in Nursing	

14. A resident facilitator is the person who assists program coordinators by leading group discussions during residency sessions. How many resident facilitators participated during your last program cohort?

Number of facilitators = _____ (IF "0", SKIP TO QUESTION 18)

15. On average, how many nurse residents are assigned to each resident facilitator?

Number of residents per facilitator = _____

16. Using the degrees listed below; indicate the number of resident facilitators whose highest degree was:

Degree Type	Resident Facilitator Number
Associate Degree in Nursing	
Baccalaureate Degree in Nursing	
Master's or Doctoral Degree in Nursing	

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

17. Which of the following three categories best describes resident facilitator activities during the last cohort? (**PLACE AN "X" IN THE CORRESPONDING BOX**)

	Required of all facilitators	As assigned, varies by facilitator	Not a resident facilitator expectation
Teaching formal classes			
Running simulation and/or return demonstrations			
Leading seminars or small group discussions			
Assisting program leader / coordinator with administrative duties			
Formally evaluating nurse residents			
Assisting with unit matching process			
Serving as a mentor			
Supervising projects			
Other (please specify)			

18. Which one of the following best describes the use of mentors during your last program cohort? (**CIRCLE ONLY ONE CHOICE**)
    a. A mentor was assigned by the residency coordinator / leader
    b. A mentor was chosen by the nurse resident from a selection of mentors
    c. Mentoring concepts were discussed during the program but mentors were not assigned or selected
    d. Mentors were not part of this program (If "d", SKIP TO QUESTION 20)

19. How many mentors worked with your last program cohort?

    Number of mentors = _____

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

The following questions relate to outcomes of your nurse residency program.

20. Which residency program outcomes were measured with your last program cohort?

Outcome	Measured	Not Measured
Nurse residents' confidence		
Nurse residents' competence		
Recruitment of nurse graduates		
Retention of nurse graduates		
Other Outcomes (please specify)		

21. List five patient-related outcomes you think may be affected by nurse residency programs. Then rank order the list from 1 (most likely to be affected) to 5 (least likely to be affected).

	Patient Related Outcome	Rank
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

SURVEY CONTINUES ON NEXT PAGE.

Appendix B (continued)

The following questions relate to your facility.

22. Indicate if the following institutional aspects were present during your last residency cohort:

Institutional Aspect	Yes	No
Shared nursing governance model		
Climate / Culture tool administered to nurse residents If yes, list tools		

23. Is your institution Magnet Certified by American Nurses Credentialing Center?

a. Yes

b. Seeking within next two years

c. Not actively seeking

24. What is your position in the facility?

a. Chief Nursing Office/Executive or Director of Nursing

b. Director of NRP

c. Program coordinator

d. Other (please specify): _____

END OF SURVEY. PLEASE SEE NEXT PAGE.

Appendix B (continued)

Thank you for your time! Your participation is greatly appreciated. If you would like a summary of the findings, please complete the contact information below or include your business card in the return envelope. This information will not be kept with the study results.

Name _____

Facility _____

Address

_____

Address 2 _____

City/Town _____

State _____

Zip/Postal Code

_____

Email address _____

Phone Number

_____

APPENDIX C

VALIDITY AND FEASIBILITY QUESTIONNAIRE

1. What time did you start the survey? _____ am pm
2. What time did you stop the survey? _____ am pm

3. Using the Likert scale provided, rate your level of agreement with the following statements.

Statement	Totally Disagree 1	Disagree 2	Agree 3	Totally Agree 4
The tool is simple to use.				
The tool is concise.				
The tool is quick to complete.				
The tool is easy to follow.				
The tool is clear and easy to understand.				
The tool is useful to describe the content of nurse residency programs.				

4. Using the Likert scale provided, rate the relevance of the indicator as a component of nurse residency programs.

Indicator	Not at all 1	A little 2	Moderately 3	Very Much 4
Hours worked per week				
Hours of residency per week				
Project requirement				
Degree requirement				
Magnet status				
Unit climate and culture				
UHC/AACN membership				
Residency coordinator				
Residency facilitator				
Number of residents				
Offered positions				
Declined positions				
Budgeted FTEs				
Mentoring				

5. Describe any problems you had with the survey. (For example, if you skipped a question, describe why. If you did not understand a question, describe why.)

6. Select your highest degree.
    a. Associate Degree
    b. Baccalaureate Degree
    c. Master's Degree
    d. Doctoral Degree

7. How many years have you…?
    a. Worked at your current organization _____ Years
    b. Been involved with nurse residency programs _____ Years

8. What is your gender? Male Female

9. Are there any missing key concepts that should be included in the survey?

10. Do you have any other feedback regarding the survey?

APPENDIX D

CODING DICTIONARY

A. Coding Scheme

Category	Subcategory	Code
Leadership	Management of patient condition	A1
	Resource management	A2
	Communication	A3
	Conflict management	A4
Patient Outcomes	Management of change in patient condition	B1
	Patient / family education	B2
	Pain management	B3
	Evidence based skin care practices	B4
	Fall prevention	B5
	Medication administration	B6
	Infection control	B7
	Patient satisfaction	B8
Professional Role	Ethical decision making	C1
	End-of-Life Care	C2
	Cultural competence	C3
	Stress management	C4
	Evidence based practice	C5
	Professional development	C6
	RN/resident satisfaction	C7
Other	Program outcome – turnover	D1
	Health-related economics	D2
	Program outcome – recruitment	D3
	Program outcome – retention	D4
	Program outcome – improved survey data	D5
	Satisfaction, unspecified	D6
	Other, non-categorized	D7
	Organizational outcomes	D8
	Meaning not understood	D9
Mixed	None	M0
Missing	None	Z0

APPENDIX D (Continued)

B. Category and Subcategory Definitions

Leadership includes responses related to care prioritization, delegation and supervision, patient and family advocacy, compassionate care, role modeling, outcome evaluation, use of evidence to analyze care, exercising critical thinking, and the planning, implementation, and coordination of care while considering patient, family, or significant others

Subcategory	Definition	Examples May Relate To:
Management of patient condition	Describes the required skills needed to manage care delivery, including appropriate care planning, organization, prioritization, and delegation (CCNE, 2008)	▪ Monitoring patient condition ▪ Developing an individualized holistic plan of care ▪ Delegating and supervising unlicensed care providers ▪ Managing assignments based on patient acuity, workload, resources, and anticipated needs ▪ Evaluating organizational and patient care delivery needs ▪ Identifying changing patient needs ▪ Referring appropriately to other health care providers in complex situations ▪ Examining quality and patient safety ▪ Developing action plans for quality improvement
Resource management	Describes time management, organization of care delivery, and decision making (CCNE, 2008)	▪ Evidence of time management skills ▪ Competently using documentation systems ▪ Identifying factors affecting patient throughput and connecting them to patient and organizational outcomes ▪ Using resources appropriately ▪ Evaluating effectiveness of team roles ▪ Setting priorities within context of health care team
Communication	Describes the effective transmission of information about the patients plan of care or changing condition (CCNE, 2008)	▪ Communicating effectively with patients, families, and all health care team members using available resources ▪ Collaborating with health care team members ▪ Concisely articulating changes in patient condition ▪ Using standardized approach for communicating transfer of care ▪ Describing factors that create a culture of safety ▪ Describing factors that create a 'just' culture
Conflict management	Describes the resolution process for differences of opinions between health care team members or between patients, families, and health care team members (CCNE, 2008)	▪ Detecting signs of tension or escalation ▪ Developing successful de-escalation strategies ▪ Using of appropriate resources for conflict management ▪ Ensuring safety of all during threatening situations

APPENDIX D (Continued)

Patient Outcomes includes responses related to those patient reactions either directly or indirectly attributed to nursing care

Subcategory	Definition	Example May Relate To:
Management of change in patient condition	Describes skills applied to standards of care, policies, and procedures for patient assessment and reassessment, including responses to changes in patient condition or alterations in the plan of care (CCNE, 2008)	▪ Reviewing critical functions ▪ Performing accurate assessment and reassessment ▪ Recognizing change in patient condition and describes role during intervention ▪ Demonstrating critical thinking ▪ Describing role of nurse ▪ Understanding chain of command
Patient / family education	Describes quality instruction that is specific to identified needs, presented in preferred learning style, including health promotion and disease prevention and management (CCNE, 2008)	▪ Describing hospital process for patient education across the continuum ▪ Assessing readiness to learn ▪ Evaluating existing educational materials
Pain management	Describes basic knowledge of professional and regulatory requirements for optimal pain management (CCNE, 2008)	▪ Considering differences in pain management concepts among various patient populations ▪ Overcoming barriers to effective pain management ▪ Relating principles of pain assessment and treatments including pharmacologic and non-pharmacologic measures ▪ Following policies and procedures for managing pain
Evidence based skin care practices	Describes the ability to evaluate and implement best practices for maintaining skin integrity (CCNE, 2008)	▪ Discussing hospital's policy and procedures for skin care practices ▪ Assessing for skin breakdown with standardized scale ▪ Describing wound care principles ▪ Implementing and/or evaluating interventions to prevent and treat skin breakdown
Fall prevention	Describes the ability to evaluate and implement best practices for preventing falls (CCNE, 2008)	▪ Discussing hospital's policy and procedures for fall prevention practices ▪ Assessing for fall risk with standardized scale ▪ Implementing and/or evaluating interventions to prevent and treat skin breakdown
Medication administration	Describes the ability to safely and correctly administer medications, to identify and correct factors contributing to medication errors, or active participation in medication-safety focused quality improvement projects (CCNE, 2008)	▪ Demonstrating knowledge of routinely administered medications ▪ Interpreting orders correctly ▪ Calculating accurate dosages ▪ Administering medication correctly ▪ Evaluating medication effectiveness ▪ Identifying and correcting errors

APPENDIX D (Continued)

Patient Outcomes (Continued)

Subcategory	Definition	Example May Relate To:
Infection control	Describes the knowledge of evidence-based infection control principles in the prevention and alleviation of infectious diseases (CCNE, 2008)	▪ Understanding of and compliance with infection control policy ▪ Evaluating and/or decreasing nosocomial infection rates or hospital acquired infections ▪ Describing compliance barriers ▪ Complying with hand-washing initiatives ▪ Using personal protective equipment appropriately
Patient satisfaction	Describes the patients reaction to key aspects of their service experience (Smith, et al., 2006)	▪ Patient reports satisfaction ▪ Satisfaction survey scores ▪ Participation in quality improvement initiatives focused on improving patients level of satisfaction

Professional Role includes responses related to skills, continued training and education, and practice of nurses; reflects ethics and values of the nursing profession and a commitment to life-long learning

Subcategory	Definition	Example May Relate To:
Ethical decision making	Describes the development of a professional and ethical framework that can be used to resolve ethical problems encountered in clinical practice (CCNE, 2008)	▪ Ethical principles or ethical models for nursing practice ▪ Institutional policies and procedures regarding reporting, analysis, implementation, or evaluation of ethical problems ▪ Advocate for high-quality, safe patient care
End-of-Life Care	Describes the integration of foundational awareness and professional role advancement during the care of the dying patient and their family (CCNE, 2008)	▪ Identification of patient's and family's beliefs and perceptions regarding end-of-life care ▪ Description of nurse's role within palliative and hospice care situations ▪ Ethics-related discussions ▪ Knowledge and use of evidence to manage pain and discomfort at the end of life ▪ Description of signs/symptoms of imminent death ▪ Counseling or educational strategies related to end-of-life care
Cultural competence	Describes the recognition of diversity-related issues, transcultural nursing care, and sensitivity to diversity in peers and patients/families (CCNE, 2008)	▪ Identification of diversity in self, patients/families, or peers ▪ Awareness of similarities and differences in values and beliefs of different cultures ▪ Use of language assistance services to achieve mutual understanding

APPENDIX D (Continued)

Professional Role (Continued)

Subcategory	Definition	Example May Relate To:
Stress management	Describes the strategies, and their implementation, used to manage personal and professional stressors resulting from a new job, role, or work environment when situational stress occurs during interactions with a variety of different people (CCNE, 2008)	▪ Identification of stressors ▪ Discussion of compassion fatigue ▪ Identification or implementation of stress management techniques ▪ Assessment of situation stress ▪ Discussion or application of self-care techniques
Evidence based practice	Describes application of EBP concepts and identification of the importance of EBP to safe, quality patient care delivery (CCNE, 2008)	▪ Identification of EBP concepts ▪ Application of EBP when caring for specific patient populations or settings ▪ Revision of standards, guidelines, policies, & procedures ▪ Critical appraisal of research study ▪ EBP Projects
Professional development	Describes the development of a personal plan for professional development (CCNE, 2008)	▪ Evidence of career planning, mentorship, and life-long learning ▪ Participation in professional organization ▪ Advancement to competent nurse
RN/resident satisfaction	Describes the nurse's or nurse resident's reaction to key aspects of their employment experience	▪ Reference to nurse or nurse resident satisfaction ▪ Identification of employee satisfaction scores

Other includes responses related to program outcomes, health care economics, organizational outcomes, and non-categorized or not understood

Subcategory	Definition	Example May Relate To:
Turnover	Describes the amount (or percent) of nurses that leave the unit, the hospital, the profession	▪ References to nurse turnover
Health-Related Economics	Categorization of response related to health care economy or hospital finance	▪ Expenditures or deficits ▪ Health care cuts ▪ Cost of care ▪ Cost of medications and treatments
Recruitment	Describes the ability of hospital to attract and hire new nursing talent	▪ Hiring processes ▪ On-boarding

Other (Continued)

Retention	Describes the amount (or percent) of nurses that remain at the unit, hospital, or in the profession.	▪ Reference to nurse retention ▪ Reference to career nurse
Improved survey data	Categorization of responses related to results from surveys (e.g.: Press-Ganey, HCAPS, etc)	
Satisfaction, unspecified	Categorization of responses related to satisfaction which are non-specific as to who's satisfaction	
Other, non-categorized	Sub-categorization of responses that do not fit in any other subcategory	▪ Nurse burnout ▪ Restraint Use ▪ Compliance
Organizational outcomes	Describes those responses that are not directly attributed to nursing care but that impact patient safety and quality care	▪ Error rates ▪ Readmission rates ▪ Morbidity and mortality ▪ Post-discharge follow-up ▪ Nurse engagement
Meaning not understood	Describes those responses that are unclear	

Mixed includes those responses where two or more dissimilar outcomes were provided (e.g.: decreased falls, better documentation) or when the response fit to more than one code. There are no subcategories for this code

Missing includes skipped or incomplete responses. There are no subcategories for this code

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