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Improving the Nurse Patient Assignment Process on a Medical Surgical Unit

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Author Dedication: It is with much gratitude for the patience and support of my mentor Teresa Serratt and my wife Jeanne McEwan. They have contributed so much to my Doctoral progress.

DNP Scholarly Project

Doctor of Nursing Practice Program

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Abstract

Background: Nurse patient assignments on an adult medical surgical unit at a community hospital are often accomplished with inconsistent processes and rationales. Each charge nurse utilizes individualized processes to determine which patients will be best teamed-up and assigned to the available nurses. There are frequently no acuity measurements system or set criteria by which the number or types of patients can or should be assigned to any given nurse, nor are staff skill or competency considered in the assignment process.

Project Design: A pilot project was conducted on a medical/surgical unit. The project utilized the American Association of Critical Care Nurses (AACN) Synergy Model to guide the assessment of staff competency levels and patient complexity scores. The Synergy Model adapted for use in the medical surgical environment incorporates the analysis of patient complexity and the competency of the nurses' assignment.

Results: Improvement was made in the number of medications given on time, as scheduled. Feedback from staff was positive and they felt that team assignments were more balanced. The Synergy Model also validated the nurse's feelings of often being busier than usual. Expected improvements to staff and patient satisfaction were not realized during the sixteen-week measurement period of the project.

Recommendations and Conclusions: The AACN Synergy Model provides evidence-based structure and processes for charge nurses to incorporate elements of each patient's individual situation to build a patient team that is aligned with each nurse's level of capabilities. The scholarly project demonstrated the positive impact of using evidence-based practice tools, processes, and principles to improve patient care and outcomes.

Keywords: Nurse Patient Assignment, Nurse Staffing, Nurse Assignments, Synergy Model

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Introduction

The inappropriate assignment of patient to a nurse and a nurse to a patient poses a threat to patient safety, health outcomes, workplace satisfaction and nursing processes (Cathro, 2013). Nurse patient assignments are one of the most significant nursing tasks that occurs two to three times daily for each hospitalized patient. This nursing task is the total of activities associated with nurse patient assignment (NPA). Patient care assignments are managed by the shift charge nurses using simple intuition, patterns of convenience and/or historical matching, and with little insight from either patient or oncoming nurse. Reliance on intuition and historical assignments, coupled with the fact that many charge nurses on medical surgical units are often relatively new nurses with less than two years of experience adds to the concerns of their overall clinical judgement in making these critical assignments. With no standardized or evidence-based processes for making patient assignments, or the associated education in these processes, charge nurses are left to make their best clinical decision in each nurse's assignment. This leaves patients at risk of having a nurse that might not have the knowledge, skills or abilities to best care for their needs. Ineffective NPAs can lead to nursing tasks being missed or provided late. This can also result in frustrations for patients and nurses (Cathro, 2013).

Making nurse patient assignments is an important charge nurse responsibility that requires theoretical support, practical guidelines, and a framework to guide the process (Cathro, 2013). The lack of a standardized and evidence-based process for making nurse patient assignments on nursing units has led to less effective patient care as evidenced by a higher than acceptable rate of late medication administration and lower than expected patient satisfaction scores (Cathro, 2013).

Workload has been the common theme in unit reviews of why medications have been delivered late and call-lights not answered in a timely manner (Thomasos, Brathwaite, Cohn, Nerey, Lingren, Williams, 2005). In addition, staff become frustrated over the imbalance in patient assignments which has led to a high turnover on the medical surgical units. The challenge of having no consistent method to make nurse patient assignments from shift to shift impacts the confidence of less experienced charge nurses in making these assignments. This creates a dissatisfaction with the charge nurse role when nurses are running behind and need additional help from the charge nurses for their assigned patients. This has becoming a substantial disruption and failure in the service delivery process. This disruption adversely affects patients, staff, and the entire system of service and prevents providing the quality of care at its full potential.

There are many considerations that fall into the areas of clinical care. Complexity of patient condition, and nurse competency factors each are critical elements in making the best nurse patient assignment possible. The clinical presentation of each patient plays a significant role in the decision of the charge nurse when making the assignment for a nurse. This is complicated by the complexity of each patient and the degree of specific care involved. The component of individual nurse's competency which is often measured in years of experience, training, certifications, and skill acumen is also a deciding factor. These factors all warrant consideration along with patient and family involvement, social and emotional needs, and patient's health literacy. All these elements add to the complex decision-making process. Taking all these dynamics and many others into consideration is essential to the making an effective nurse patient assignment.

A shift with low patient clinical acuity, low task complexity, and high nurse competency proves to be a far easier to make nurse patient assignment decision process. When different nurse or patient elements are present such as a swing of high clinical acuity or task complexity and low nurse competency, then the nurse patient assignment process becomes much more difficult. This increase in the level of difficulty adds to a higher risk for safety, patient and nurse satisfaction. Assessing current best practice and evidence in literature to improve the nurse patient assignment process is fundamental to reducing staff nurse work dissatisfaction, serious safety events, delayed, or missed care and patient dissatisfaction.

The purposes of this study were to evaluate the systematic implementation of an evidence-based model for NPA and to evaluate patient and nurse's satisfaction and timeliness of nursing tasks such as medication administration. The project describes the problem of inconsistent NPA, with associated literature review and relevant details of the proposed implementation and evaluation plan of the DNP project. The project aims to improve nurse patient assignments through the application of evidence-based processes.

Problem Description

The lack of a standardized and evidence-based process for making patient to nurse assignments leads to ineffective patient care. This is evidenced by higher than acceptable late medication administration, lower than expected patient satisfaction scores and staff frustration over imbalance in patient assignments (Thomasos et al., 2005). Safe staffing ratios are a popular discussion point for staff nurses, legislators and workers' associations. A recent joint publication from the Healthcare Financial Management Association (HFMA) (2020) and the American Organization for Nursing Leadership (AONL) states:

> Nurses have a direct impact on quality of care and patient and family satisfaction. It is time to shift the nurse staffing paradigm so that the contributions of nurses to positive patient outcomes are understood, valued and viewed as a priority investment rather than a discretionary expense (p.7).

Safe staffing is impacted by the various need of the patient as well as the abilities and availability of the nurses. This availability has a far greater influence than any set ratio of patients per nurse. The need for proven and creditable tools for making the right nurse patient assignments is critical to the safe care and correct staffing (Carter & Burnette, 2011).

Nurse patient assignments on an adult medical surgical unit at a community hospital are accomplished with inconsistent processes and rationales. There are often no acuity measurement tools or set criteria by which the number or types of patients can or should be assigned to any given nurse. Nor are nursing staff's skill or competency considered in the assignment process. The current process for training new charge nurses lacks any tools or rationale for nurse patient assignment other than their own working experience and clinical judgment. The need for a standardized and evidence-based process for making patient to nurse assignments is sought by nurses and department leadership. Hence, the aim of this project is to apply an evidence-based practice (EBP) model that considers all the factors for nurse patient assignment and relates to general adult medical-surgical units. To address this aim, there is a need to understand patient classification systems, nursing resource allocation, nursing workload and patient care outcomes.

Available Knowledge

Literature Review

The following comprehensive and systematic review of literature resulted in

over 180 articles. These articles were evaluated for strength and quality in addressing the subject problem statement. The research question was as follows: What Evidence-Based Practice (EBP) models, methods or tools for making nurse patient assignment in the Medical-Surgical setting have demonstrated best practice outcomes?

A search was conducted using several databases and search engines including CINAHL, MEDLINE, Google Scholar, Cochrane, Nursing and Allied Health Database, and PubMed using the following key words: nurse to patient assignments, patient assignments on medical-surgical unit, nurse assignments tools, nurse-patient ratio, nurse work assignments, and nurse workload. The search yielded 183 articles, CINAHL was the most generative with 122 articles, while Cochrane was the least productive database generating only three loosely-related publications. After further delineation of articles that were both peer-reviewed scholarly publications and with more recent dates of publication from 2000 to 2019, the search was narrowed to 37 relevant articles. All of these articles addressed various attributes of the nurse patient assignment process, with perceptions from nursing staff and patients and included outcomes attributed to the nurse patient assignment process.

The published literature was further screened for quality and EBP literature that best answered the research question. Articles were included if EBP tools, methods and strategies to improve the nurse patient assignment process were explained. Relevant articles that included patient and staff satisfaction as it relates to overall perceptions were also selected. Articles were excluded if the setting concentrated on areas outside of a hospital or medical-surgical nursing and could not be translated directly to a like care process. The final 18 articles selected included details for the processes of nurse patient assignment and associated principles and outcomes (Sandstrom, Borglin, Nilsson, & Williams, 2011).

Considerable variation existed in types of studies, level of evidence and quality of research. The final articles were critically appraised using the Johns Hopkins appraisal tool. The Johns Hopkins tool allows the reviewer to appraise the value of evidence-based research into hierarchical levels of research quality from randomized control studies to expert opinions and case studies. These levels are further evaluated and categorized into levels of quality with A being high and C being low quality of comparable studies (Dearholt & Dang, 2012). For this project, eight articles represented a level A or high quality while 10 ranked at a level B or good quality (Shaefer, 2012).

The publications that presented with the highest levels of quality were four qualitative studies and two systematic reviews. See Appendix A for the literature review summary table. These studies reflected clear objectives and/or hypotheses. Although most were conducted within a single setting, the overall methods and processes to evaluate results were consistent with high quality studies. Each study had strong recommendations for scientific evidence based on Johns Hopkins value of evidence tool. The multiple levels of conceptual evidence from each of these articles suggested patterns of practice to improve the overall nurse patient assignment process. Each of the 18 publications explained the contextual evidence of underlining activities within the practice environments that contributed to strengths and weaknesses of the assignment steps and practices (Reavy, 2016). Of the literature reviewed, there were both large systematic studies and small opinion reviews.

Impact of Nurse Patient Assignments

The literature demonstrated broad, direct correlation to patient outcomes and staff satisfaction with workload and working conditions related to the nurse patient assignments (Choi & Miller, 2018; Sir, Dundar, Barker-Steege, & Pasupathy, 2015). Two dissertations (Acar, 2010

& Plover 2017) gave examples of comprehensive reviews of current literature over the last ten years and the decision making that goes into the nurse patient assignment process. The authors of each dissertation were associated with established academic organizations and/or reputable health care institutions. The authors experience and backgrounds demonstrated role diversity including: charge nurse, staff nurse, engineering professors and healthcare management engineers. The earlier dissertation suggested the use of a comprehensive acuity tool to make the most analytical evaluation of patients prior to the nurse patient assignment (Acar, 2010).

The fact that the nurse patient assignment process has been studied consistently over several decades was evidence of the significance of the topic. The nurse patient assignment effects both patients in the care of nurses and nurses by the thousands each day across the country. Plover (2017) explored charge nurse perspectives on the process of nurse patient assignments, including what factors charge nurses include in the decisions making and how they consider these factors when allocating patient care. Unfortunately, clear recommendations for a nurse patient assignment model in the medical surgical environment was not made.

Approaches to Nurse Patient Assignments

The literature demonstrated a consistent need over twenty years to improve the nurse patient assignment processes. Both Acar (2010) and Plover (2017) studied various settings to fully understand the processes effecting nurse and patient outcomes related to the nurse patient assignment. These findings led to the implementation of several processes to analyze patient acuity and attempt to match the best nurse assignments to each of the identified patients. Researchers evaluated the use of acuity tools to demonstrate that the nurse assignment has direct impact on the quality of patient care and that high workloads and undesirable schedules are two major reasons for nurses to report job dissatisfaction (Choi & Miller, 2018; Punnakitikashem,

Rosenberger, Buckley-Behan, 2013). The authors outlined solutions of integrated nurse staffing models and optimal nurse to patient assignments to minimize excess workload on nurses. These two high-quality studies used the Synergy Model to address nurse-patient assignments.

Synergy Model

A group of thought leaders supported by the American Association of Critical-Care Nurses (AACN) developed the Synergy Model in the late 1990's. The synergy model (Curley, 1998) laid out a systematic plan to balance patient complexity, determined numerically, with the nurses calculated competency. The model consisted of 16 core concepts: eight patient characteristics and eight nurse competencies. Each of these characteristics and competencies are classified on one of three levels, ranging from minimal complexity to highly complex for patients and competent to expert for nurses (Curley, 1998).

The processes within the synergy model assessed the total complexity score of each patient and determined which patient could be assigned together on the same care team. In the critical care environment this calculation allocated one to three patients for each nurse depending on the total complexity score. Carter & Burnette (2011) adapted the Synergy Model for use in the medical-surgical environment. The adapted medical-surgical Synergy Model allowed for up to six patients to be assigned to a nurse depending on the nurse's competency score. The competency of a nurse according to the synergy model was a 1-3 scale of independent, competent and expert nurse (Carter & Burnette, 2011; Curley, 1998). Combining these factors comprised the framework of the Synergy Model.

Synthesis of the Evidence

The analysis of literature reviews, qualitative studies, systematic reviews, mixed-method and practice studies revealed a body of evidence regarding the practices surrounding nurse

patient assignment. It was demonstrated that the process of nurse patient assignment impacts the patient and nurse sensitive indicators related to workload. Many studies recommend using an acuity system to determine appropriate patient assignments. All acuity systems rely on subjective nurse input to generate patient leveling. A review of each article for evidence of applicable improvement models in nursing work conditions, workload and patient related outcomes concluded significant evidence does exists. These articles demonstrated improvement project development for nurse patient assignments (Cathro, 2013; Choi & Miller, 2018).

Focused on practice guidelines that correlate workload with patient outcomes, two additional articles were included in the collection of articles that demonstrated outcomes related to nurse competency, skill and prioritization of tasks. These articles coordinated with the nursing team function and patient outcomes (Hairr, 2014; Szumlas, 2013). The last two articles were both practice guidelines based in the AACN Synergy Model. Curley's (1995) seminal article was used in the adaptation of the Synergy Model for use in the medical-surgical environment (Carter & Burnette, 2011; Curley, 1998).

The Level A studies included in this review supported the belief that assigning the right nurse to the appropriate patient was possible through a systematic, calculated and organized implementation of models. The eight identified articles covered large and small hospitals, both domestic and foreign settings, large longitudinal studies and systematic practice expert opinion articles. The teams of Punnakitikashem et al. (2013) and Choi and Miller (2018), reinforced that not only do nurse assignments have a direct impact on the quality of patient care, but also that high workloads and undesirable schedules are two major reasons for nurses to report job dissatisfaction. Further, solutions to integrated nurse staffing models and optimal nurse to patient assignments to minimize excess workload on nurses were provided.

The use of acuity algorithm systems was prominent throughout these dissertations and other literature. However, it was acknowledged that true patient acuity is fluid and subjective to a host of variables**,** resulting in the adoption of so few of these acuity systems permanently. Much of the training time associated with these studies was focused on the training of charge nurses to execute the metrics of acuity systems. They also incorporated geographical attributes of the care environment into the analysis of 'pods' nursing by arranging assignments to specific clusters of rooms. The idea was to decrease the step burden for nurses, which speaks to the number of physical steps associated with a nurse's assignment due to the physical location of patient rooms within the nursing care environment.

Acar (2010) and Plover (2017) also discussed the variations involved in human interactions. Human interaction was evaluated for every member of the healthcare team, including the patient and family members as they all contribute to the work of caring for patients. The background, training, competency, and social circumstances of each nurse defined additional variables to be considered when making patient assignments. Many of these associated human factors were reviewed in the studies and considered in the models reviewed (Acar, 2010; Plover, 2017).

The link to patient outcomes was noted as a primary focus of nurse patient assignment research. A large mixed-method longitudinal study by Duffield, Diers, O'Brien-Pallas, Aisbett, Roche, King, Aisbett (2011) reviewed the care in 80 medical and surgical units in a mixed method study combining longitudinal data over five years. This primary data collection in Australia focused on patient outcomes related to nurse workload. These findings along with those of Szumlas (2013), supported that having fewer nurses, increased workload, and unstable nursing unit environments were linked to negative patient outcomes including falls and

medication errors on medical surgical units. Szumlas (2013) looked at several staffing-related studies to validate the impact of staffing on the overall patient experience.

Curley (1998) was part of a nursing scholarly think tank in the mid 1990's that was considering the effects of a nursing shortage and the overall scheduling and staffing of nurses in the critical care environment. The development and implementation of the Synergy Model proved to demonstrate effective outcomes on staff morale and patient outcomes. Carter and Burnette (2011) adapted the Synergy Model for use on a medical surgical nursing unit. The Synergy Model framed the development of tools to assess nursing competency and patient acuity which yielded data utilized for daily staffing assignments. This data supports a positive outcome as a result of this models' implementation on a unit for study and measurement. The unit where this study was conducted is very similar to the focus unit for the current DNP Project (Curley, 1998; Carter & Burnette, 2011).

The identified studies all suggested further review and wide recommendation for implementation in various settings to validate the tools used and outcomes found. Although the studies were from various settings and over a large span of time, they all demonstrated a consistent effort to improve the overall relationship between assigning patients to individual nurses and the effects on workplace environment and patient outcomes.

Gaps & Limitations

The significant limitations of most of the current publications was the small sample sizes, evaluation of one method or tool for improvement and a single setting where the study was conducted. While small sample size may limit generalizability, it may best support the purposes of this project due to the rural community hospital setting. The significance of facility sizes to this research, could be directly compared to a future DNP project being designed for the

community hospital setting. Some of the data was also collected over a short period of time which limited the evaluation of long-term outcomes. The findings however were not always applied for long-term or consistent organizational changes. The span of time for these publications shows continued need for this topic.

One study from a large foreign facility may be the least comparable and was also studying the effects of an electronic acuity system that is outside the scope this DNP project. The two dissertations on the nurse patient assignment process were very comprehensive. Findings from one of the two dissertations described in this review have since been published and are very instructive about models involved in the assignment process (Acar, 2010). The other dissertation was a recent study and focused on a similar setting and size of organization as the DNP project being designed which makes it current and helpful. This study was relevant, if only as an expert opinion from meta-synthesis (Plover, 2017).

The most significant gap in literature is the lack of a strong recommendation of any one nurse patient assignment tool or model. Most literature identified was focused on the nurse patient assignment process itself, perceptions of staff or patients, and the use of one acuity-based system in the patient assignment process. A comparison of like units using various nurse patient assignment models to determine best practice through evidence-based studies has not been found. That being said, there is support for various models and the processes to be considered in making effective nurse patient assignment. Overall, there was a substantial amount of literature to review. Much of the literature although based from quality research and high-level studies were not transferable to the community hospital or medical surgical unit. The adaptation of the AACN Synergy Model by Carter and Burnette (2013) for use the medical surgical environment demonstrated a solution that met many of the project aims. This project extends the scope of the

literature by conducting a pilot project in a rural community hospital. By using the Synergy Model, this study provides a new perspective on how evidenced-based models for NPA can be implemented in organizations of any size and contribute to the patient and nurse satisfaction.

Theoretical Model

Henderson's Need Theory and the Synergy Model both have a framework to address the patient's care, safety and independence during hospitalization. The emphasis of Henderson's theory is on basic human needs and how nurses can assist in meeting those needs as a potential solution (Henderson, 2015). The ACCN Synergy Model for Patient Care (1998) is a conceptual framework that aligns patient needs with nurse competencies. Originally developed in 1996 as a new framework for AACN's certification programs, the Synergy Model shifted the assessment of nursing skills from the then prevalent body systems/medical model, which did not consistently match actual practice, to a nurse competencies framework.

The Synergy Model has been used in Intensive Care and Medical Surgical Units to assist charge nurses in identifying a patient's stability, predictability and/or complexity with an overall rating of high, medium or low (Carter and Burnette, 2013). In the medical surgical environment, a patient ratio is set at five patients to every nurse. This ratio should be adjusted for overall complexity of patients and the nurse's level of competency. The Synergy Model's purpose is to provide a standardized approach to making nurse patient assignments and has offered an opportunity to meet needed improvements of care (Carter and Burnette, 2013).

The Synergy Model draws from Virginia Henderson's definition of nursing and 14 components of human physiological and safety needs (Appendix B). Henderson (2015) states that the nurse does for others what they would do for themselves if they had the strength, the will, and the knowledge. The nurse also makes the patient independent of himself or herself as

soon as possible. The basis of the AACN Synergy Model is that the physiological and safety needs of patient and family members influence and drive the characteristics or competencies of nurses. Synergy results when the physiological needs and characteristics of a patient, clinical unit or system are matched with a nurse's competencies (Petiprin, 2016).

The needs of patients are evaluated in levels of clinical acuity. Each level has different categories to help the nurse determine the patient's specific needs. The patient-related categories are: resiliency, vulnerability, stability, complexity, resource availability, participation in care, participation in decision-making, and predictability (Carter & Burnette, 2011). These categories make up the patient's complexity of care. The needs of patients are matched to the competencies of assigned nurses.

The attributes of the nurse are reflected in the integration of knowledge, skills, experience, and attitudes needed to meet the patient's needs. Using the Synergy Model, nurses are evaluated by their ranked level of competency. These levels of skill competency are independent, competent and expert. The categories of nursing competency according to the Synergy Model are: clinical judgment, advocacy and moral agency, caring practices, collaboration, systems thinking, response to diversity, facilitation of learning, and clinical inquiry (Petiprin, 2016).

Henderson (2015) theorizes that individuals have basic needs that require nursing care to achieve health and independence. The degree of care required drives the level of nursing care and skills of the nurse assigned to the individual patient. For the individual, Henderson states that the mind and body are inseparable and interrelated, and that each individual is considered for their biological, psychological, sociological and spiritual components.

The process by which charge nurses make patient assignments is an important task that requires theoretical support, practical guidelines, and a framework to guide the process of patient and nurse selection (Cathro, 2013). Matching the many needs of each patient with the abilities of available nurses is key to ensuring safe and effective care. Effective nurse patient assignments also facilitate the support for tasks driven from medical orders and those orders are delivered in a timely and accurate manner.

Henderson's theory along with the Synergy Model was formed as the theoretical framework for the comportment of this project. Working from this perspective, the project was organized around the efforts to address identified problems. The problems of ineffective patient assignments, such as higher than acceptable late medication administration, lower than expected patient and staff satisfaction scores and charge nurse and staff frustration are related in part to patient assignments. By adequately assessing patients' needs as outlined by Henderson's theoretical framework and applying the Synergy Model concepts it is anticipated that improvement in each of the areas of identified problems was demonstrated.

With Henderson's model and the current literature, the aims of the project were identified to focused on the nurse patient assignment process itself, perceptions of staff or patients, and the use of one acuity-based system in the patient assignment process.

Project Aims

The following aims guided this project:

1. Improve the actual match in patient assignment with capable nurses that have the skill and training to best care for the assigned patient.

2. Improve the workload and flow of care for each patient team and assigned nurse therefore enhancing the likelihood that nursing tasks and duties will be performed in a timely and routine manner.

3. Improve patient satisfaction that come with nurse availability, and timelier and consistent care.

4. Increase nurse perception of support by charge nurses and assignments that are felt to be balanced and fair.

The organizational setting of the project is described by the following details of the organization, unit and staff involved. In this context specific and relevant details to the structures process and anticipated organizational characteristic are outlined.

Context

This project was conducted in a 69-bed, county-owned and not-for-profit acute care facility. The hospital consists of outpatient clinic services, an ambulatory surgical center and multiple physician specialty practices. The medical surgical nursing unit has 32 private patient rooms. It is staffed by 52 employees. Thirty-eight of the employees are nurses. Of the 38 nurses, 12 work as designated charge nurses. They have primary supervisory duties for the shift by shift work flow, patient care, and safety. A regular duty of charge nurse is to the process of assigning nurses to patients. This occurs at the beginning of each 12-hour shift, throughout the shift as patients are admitted to the unit and as the needs of other patients on the unit change. There is no established plan, tool or process to help the charge nurses complete these nurse patient assignment duties. Historically, the community hospital has used a nurse-to-patient staffing matrix which is set for every nurse to have four to five patients. This matrix is still in place as the basis of the NPA budget process, but is not always followed in actual daily assignments.

Organizational Culture and Readiness for Change

With the nurse patient assignment process largely focused on the number of patients assigned to each nurse, other clinical and competency considerations have been secondary. Implementation of the Synergy Model is a change in current processes with specific steps that added workload and responsibilities to charge nurses. These steps have been evaluated and develops with unit-based council input. Although a disruptive process, the project has and outcomes support the unit goals to improve patient and nurse satisfaction.

The community hospital has a history of adequate staffing and flexible schedules that has attracted and retained nurses to work for the organization. However, there is increasing competition in the healthcare services area that has led leadership to be concerned about nursing turnover and satisfaction. With the satisfaction of nursing staff in mind, strategies to improve the work experience have increasingly become a priority for the organization. The nurse patient assignment affects both patient care and nurse satisfaction.

Population of Interest

The charge nurses on the medical surgical unit consist of 12 registered nurses (RN). The charge nurses are full-time and part-time employees who work day and night 12-hour shifts. Seventy-two percent are baccalaureate prepared. Theses charge nurses have an average of 5.5 years of experience as RN's. All but one RN charge nurse is female. The least experienced nurses have worked for 2 years with the most years of experienced nurse at 13 years. The care delivery model doesn't call for charge nurses to take patient in order for them to have the time to support frontline nurses with care and shift management responsibilities. The unit serves as a training ground for other specialty nursing units and departments in the hospital. The hospital is

located in a community that serves a large private University, these factors contribute to the low years of experience among both charge nurses and primary care nurses.

The twelve charge nurses represent the most stable staff on the unit with retention rates significantly higher than that the remaining staff nurses. Improving the nurse patient assignment process is a component of the leadership development that is being consistently addressed and invested in for the charge nurse s to improve care, patient satisfaction, and staff engagement.

Local Care Environment

In 2018, the hospital implemented a new electronic health record (EHR). This implementation took considerable attention of all staff and leadership. As a part of the implementation, additional staff members were allocated to many levels of the nursing and information system's personnel. A new EHR implementation, although difficult, was a positive move and gained the attention of other organizations who seek to learn from the hospital's implementation. Following the implementation of the EHR, the staff gained greater confidence to make big changes with less reluctance. The organization was subsequently recognized for their quality measures by group purchasing organizations, in the literature and by accreditation bodies such as Det Norske Veritas (DNV). Multiple staff were invited to present at national seminars demonstrating the organizations commitment to excellence.

Nursing administration implemented a shared governance structure in 2018, hence it was important to seek the input and approval of the medical surgical Unit-Based Council (UBC) in order to ensure buy-in and anticipate potential barriers. The identified need for a standardized approach to NPA on the medical surgical unit is a significant factor. The UBC is engaged and anxious to find success and ways to help their team. The scholarly project aims are aligned with organizational goals to decrease medication errors including late administration and improved

Health Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores associated with nurse communication (CMS, 2020). The project leader/DNP student is also the chief nurse for the organization and has the commitment of the facility and unit leaders.

Needs Assessment/Strengths and Weaknesses

Several factors had potential positive and negative impacts for the project. The positive factors include having an increased involvement with shared governance and engagement of staff in improved care outcomes. Three negative factors are the common aversion to change as well as other competing priorities. Also, the evolving and remaining pandemic was a major factor in the project's outcomes. Several metrics point to the need for improved NPA. A recognized weakness is that not all of these metrics can be specifically impacted by improving the nurse patient assignment process alone, but are directly influenced by the nurse patient assignment. These metrics include patient care indicators such as timeliness of medication administration, responsiveness to call-lights, communication with nurses, nurse turnover, retention rates and overall staff satisfaction. These indicators are all measured regularly, are reviewed for trends and are presently stable but below the national benchmark. Given the current strengths of the organization and readiness for change, the interventions improvement project had a strong prospect for success.

Methods

A pilot project was conducted on a medical/surgical unit in an acute care hospital located in the mountain west region of the United States. In this pilot project, a convenience sample of nurses were educated on the Synergy Model based on the Logic Model approach. A logic model was organized and visual display for project overview of the relationships to the resources required to implement a project, the activities involved for project planning, and the changes or

desired outcomes to be achieved (W.K. Kellogg Foundation, 2004). Prior to this education and at the end of the study period, they were asked to complete the Nursing Workforce Satisfaction Questionnaire survey indicating level of satisfaction and patient outcomes. The Nursing Workplace Satisfaction Questionnaire (NWSQ) is and the data collection tool corresponding to Outcome 3. The NWSQ (Appendix M) is a 17-item questionnaire and consisted of rated statements with a 5-point Likert scale (fully agree, agree, partly agree/disagree, disagree, definitely disagree). Additionally, data specific to timeliness of medication administration and patient engagement of care was collected using publicly reported HCAPS scores and established mechanisms that are already in place within the organization and reinforced by measurement tools designed to verify the process and tools of the standardized assignment process (Appendix T). The pilot project utilized the Synergy Model to guide the assessment of staff competency levels and patient complexity scores. Specific interventions were presented in the two project phases of planning and implementation. The Synergy Model incorporates the analysis of patient complexity and the competency of the nurses assigned to each patient. The body of evidence and Synergy Model are being further developed and designed into a DNP project (Appendix T). The central idea of the model is that a patient's needs drive the nurse competencies required for patient care. When nurse competencies stem from patient needs, and the characteristics of the nurse and patient match, synergy occurs.

The Synergy Model along with other findings from the literature identify tools that are duplicable for the uses in the primary populations for practice in the medical-surgical nursing environment. The Synergy Model, for implementation in the medical surgical setting, requires staff involvement in setting criteria to determine which patient conditions and complexity are categorized as high, medium or low. The activity of setting these criteria was accomplished

through the shared governance structure with input of the medical-surgical Unit-Based Council (UBC). As the project is further developed, both theoretical underpinnings and evaluative processes were shaped through nurse patient assignment tools.

Given the nature of the mixed medical and surgical patients on the nursing unit at the community hospital and the number of novice nurses, the Synergy Model allowed for a more specific measurement of patient complexity and the workload that is appropriate for each nurse and group of patients. A pilot project was implemented to assess the use of the Synergy Model on nurse satisfaction and patient outcomes. All nursing staff, charge nurses and primary care nurses, who work on the medical surgical unit attended the training sessions. Primary care nurses include both registered nurses and licensed practical nurses. All nurses that attend the Synergy Model training were given an opportunity to voluntarily participate in the pre- and post-training electronic evaluations, each were voluntary and anonymous. Working alongside the charge nurses, the project leader established the criteria of each level of patient complexity. The nurse competency levels were determined by unit leadership to identify the number of patients at each level is appropriate for the nurse to be assigned based on clinical competency. Improved timeliness of care may result in greater staff work satisfaction and patient satisfaction. These outcomes were measured with established mechanisms that are already in place within the organization and reinforced by measurement tools designed to verify the process and tools of the standardized assignment process (Appendix T). The project design and timeline were established using the Kellogg Logic Model (2004). The Kellogg Logic Model (2004) was used to organize the resources and strategies to meet desired outcome measures of the project's framework. (W.K. Kellogg Foundation, 2004).

Interventions

Planning/Pre-implementation Phase

The planning phase commenced in the summer and fall of 2019 with the identification of problems associated with nurse patient assignments on the medical surgical unit being reviewed. The lack of standardized or evidence-based processes for making patient assignments was evidenced by staff dissatisfaction and delays in patient care. A literature review was conducted and findings from the literature suggested that the adaptation of the AACN Synergy Model could address the identified problems and meet the needs of the community hospital and specifically, the medical surgical unit. The Synergy Model and necessary associated processes and tools were discussed with the UBC and unit leadership in late 2019 and continued into early 2020. Three Synergy Model tools that would be necessary for project implementation included the patient scoring guidelines tool (Appendix M), staff competency leveling guide (Appendix N) and nurse patient assignment grid (Appendix O).

The next step in the planning phase was to begin creating these development tools with the assistance of unit staff and leaders. This was done in UBC meetings and in meetings with the unit leadership. The scoring tool (Appendix N) and assignment grid (Appendix O) were used to rate whether a patient is scored as high, medium or low complexity. Each rating was also be given a weighted score. These scores were totaled for all patients assigned to a team of patient's that are assigned to an individual nurse. The UBC identified the attributes of typical medical surgical patients that contribute to their individual complexity. These factors were categorized as medical, social, and emotional as well as contributing family and caregiver factors that differentiate patient needs and therefore complexity. These factors were assessed and ratings calculated at the beginning of each shift in order to assign a balanced patient assignment according to the abilities of each nurse. This was completed again at a midpoint in the shift to

assess workload changes and then again at the conclusion of the shift for next shift planning (Carter & Burnette, 2011).

The Staff Competency Leveling Guide (appendix O) was developed by the unit leadership as part of the project planning phase to evaluate and document the level of competence of each nurse. Each nurse was evaluated as either independent, competent or expert based on their level of experience and skill development using a skills survey and performance feedback assessment. The determination of competence level was then be used to align the number of and complexity of patients to be assigned to each nurse. This leveling was set during the planning phase of the project and then were reevaluated at least quarterly as nurses advance in levels of competency. Based on this competency level, a maximum patient assignment is up to five patients to one nurse (Carter & Burnette, 2011).

The patient assignment grid is a Synergy Model tool that combines the patient rating and nurse competence leveling for each shift to build the appropriate assignment per individual nurse. The grid served as the tracking tool for each nurse patient assignment. The grid was include the patient complexity rating and the calculated score that is aligned with the nurse's competency and capability for most effective workload (Carter & Burnette, 2011).

Institutional Review Board (IRB) approval was also sought during the planning phase. This began with acquiring a memorandum of understanding with the project organization. Meeting with the hospital Chief Executive Officer to gain approval for the various activities, reports, cost and timing of the project was discussed and approved. There were a couple of timing concerns and the scheduled timeframe coincided with the organization annual accreditation survey and the budget processes. These can be times of heightened levels of workload and stress for leaders and staff. The CEO encouraged the project lead to minimize the

interference with other required activities that would require staff to spend extra time engaged in project activities. To meet this request, the time to coordinate tool development and trainings have been planned to occur during regularly scheduled meetings. The IRB application was completed and outlined the recruitment process and included the staff training, pre- and post-training education, pre- and post-staff satisfaction surveys with consent and other detailed processes for gathering secondary data. Many of the tools to be used were also included with the IRB expedited application. IRB approval was granted in April of 2020. (Appendix J).

The Synergy Model forms and policies developed during the planning phase make up the tools used for both training and implementation. Prior to implementation, staff nurses were trained via a PowerPoint presentation, instructing them on the use of each tool and steps of identifying the various processes to coordinating the nurse patient assignment. (Appendix S). A pre- and post-evaluation accompanied the training. Each charge nurse, as a part of the UBC, received separate education on the Synergy Model by the project lead. During the training, the tools/forms, processes and policies were explained in detail. Training of the charge nurses was conducted separate from staff nurses as they have worked directly with the project lead throughout the project development. Additionally, the charge nurses reinforced to staff nurses the training provided by project lead during their regularly held pod huddles. The major components of the project are represented in the project plan found in Appendix Q.

Implementation Phase

Implementation began in early June 2020. The staff nurses calculated the complexity of patients and report these scores during end of shift report. Each shift, the staff nurses used the patient scoring tool (Appendix M) to rate each patient, identifying the patient's complexity level. The charge nurses then utilized these scores to compile the staff competency leveling guide

(Appendix M) and nurse patient assignment grid (Appendix N) to make nurse patient assignments. Charge nurses used the staff competency leveling guide (Appendix O) to match staff with appropriate patients in coordination with staff nurses. These processes were completed according to policy each shift on the medical surgical unit.

Compliance with utilizing the tools and nurse patient assignment processes was monitored and audited daily by the charge nurse and unit manager. Additionally, audits were reviewed at regular intervals throughout the implementation phase of the project by the project lead. The expected outcomes as a result of the use of these interventions are more balanced and manageable patient assignments, greater role satisfaction for nurses, improved HCAHPS patient satisfaction scores, and a reduction in delayed medication administration. Details of each of these outcomes and the associated target audience, activities and resources are outlined in detail within the Kellogg Logic Model (2004). Logic models are often referred to as project plans or road maps for the organization's projects or objectives. Logic models assist to demonstrate how the project was going to work, and what the project did to achieve the desired results making a logic model beneficial in a several of ways. The logic model also identifies the resources, both people and material that are required to support all of the project outcomes. These resources include the time for development, training and analysis of each step throughout the project.

Post-Implementation Phase

By developing a logic model, the projects assumptions were explicit; allowing stakeholders to challenge and examine the resources, and outcomes. This exchange allowed for shared understanding and expectations of the project among staff and other stakeholders. This assisted in identifying the necessary data to collect, measure, and monitor for improvement. The logic model provided a format to inform stakeholders of the problem the project focuses on, how

the project addressed the identified problems, and what measurement were in place to evaluate the success of the project. A well-designed logic model answered the questions often required by funders and supporters (W.K. Kellogg Foundation, 2004).

Logic Model

The Logic Model (Appendix C) for this scholarly project identified six short-term outcomes that are associated with training on the Synergy Model. These six outcomes are:

1. Nursing patient assignment grids are completed by charge nurses on 75% of shifts at the 4-week, 8-week and 12-week post-implementation assessment.
2. Following staff introduction to the Synergy Model during staff meeting in spring of 2020, 90% of the RN Staff indicated increased understanding of the NPA process in pre- and post-education surveys.
3. Nurses' workplace satisfaction will be measured using the Nursing Workplace Satisfaction Questionnaire (NWSQ).
4. A percentage of patient responses to being provided with "discharge information in a manner in which they were able understand" is an essential measurement of patient satisfaction within HCAPHS scores.
5. A reduction of medication administration delays related to lack of staff availability/staff time issues as per medication audit reports.
6. Dissemination of project findings are shared internally via hospital publication, social media, and council presentations within three months from project completion.

The first of these short-term outcomes is that the NPA tools will be completed by the charge nurse on 75% of all shifts at the 4-week, 8-week and 12-week timeframe post-implementation. The measurement of completed NPA tools will be reviewed weekly and audited

post-implementation on weeks 4, 8 and 12. The audits will demonstrate a process outcome to the compliance and utilization of the tools and assignment grid for the assignment processes of Synergy Model. The second short-term goal will identify staff understanding of the Synergy Model and the assignment process following a formal training provided by the project leader. As a part of the post education survey, participants will also provide feedback on the presentation of the education content (Appendix C).

The third outcome will be a measurement of nurse's satisfaction using the NWSQ completed pre-implementation of the Synergy Model improvement project and then again at three months post implementation. This outcome will measure the workload satisfaction of the staff nurses that may have been impacted by using the Synergy Model processes for assigning patients (Appendix C).

In the fourth outcome discharge education will be analyzed for improvement when provided at the right time and in a way that is not rushed (Reddick & Holland, 2015). The outcome states that 65% of patients will report understanding discharge education as evidenced by HCAHPS scores three months following Scholarly Project implementation (Appendix C).

The fifth outcome will be to see a reduction of medication administration delays related to lack of staff availability/staff time issues as per medication audit reports. Using pharmacy systems for tracking medication administration, the rates for timely administration will be reviewed throughout the implementation and post-implementation timeframes. These rates will be reviewed by the project leader to evaluate the expected changes of greater than 50% improvement in the initial short-term measurement period.

The last short-term outcome listed within the logic model will be associated with the activities that would involve the internal sharing and dissemination of the project findings. It

states that the dissemination of project findings will be shared internally via hospital publication, social media, and council presentations within three months from project completion (Appendix C).

Six additional intermediate and long-term outcomes will be measured over the course of several months to years after project implementation and are outside the timeframe of this project. These outcomes will have more meaningful impact on staff and patient perceptions of quality care and work environment. They will each be tightly aligned to the short-term outcomes but require both a higher rate of success and time to meet that goal. They will demonstrate greater enculturation and full dissemination of the project successes and findings.

Correlation of Interventions with the Theoretical Model

Within the 14 components of Henderson's Human Need Theory, each addresses the physiological and safety needs of patients. These needs are the primary focus of nursing personnel. In the Synergy Model these components are evaluated to enable a clearer understanding of the patients' needs. Patient needs combined with medical condition, diagnoses, treatment plan, and other care determinates make up the patient complexity. The interventions described previously are designed to consider each of the patients' needs in providing organized and coordinated care. Henderson saw the role of the nurse as complimentary and working with the patient to assist in their individual needs. The Synergy Model is likewise focused on the individual uniqueness's and complexities of people. Addressing these needs by matching the patient to a nurse with the competency and abilities to meet those needs is paramount to processes of nursing (Henderson, 2015).

Project Timeline

The project timeline for this DNP Scholarly Project began with the problem and population identification. The timeline (Appendix D) identifies various steps for planning, implementation, analysis and dissemination of findings. As with all projects, the planning rarely goes as intended. However, the better planned the more likely that the implementation will be followed and expected outcomes are met.

The planning phase of the project began in the spring of 2019, when the problem and populations were identified. Further planning included using the framework of the Kellogg Logic Model to strategize around population outcomes and project expectations (W.K. Kellogg Foundation, 2004). During the planning phase of the project, the opportunity to present the concepts of the project to the organization occurred at three levels. First to the senior leaders within administration which consists of the Chief Executive Officer, Chief Financial Officer and Chief Medical Officer. The next level being to the unit leaders, who consist of the Director of Inpatient Services, Medical Surgical Unit Manager and Medical Surgical Unit Educator. The final group was the UBC. All three of these groups were highly supportive and anxious to see the project develop and enjoy the potential outcomes.

In the Spring of 2020 a project committee was established to include representatives at the University and the project leader. Working closely with the committee and faculty mentor further planning and timelines are development for the project. A project budget was developed as a part of the project preparations.

Organizational efforts began in early 2020 as the Synergy Model tools were adapted to the unit needs and completed with the UBC and unit leadership as described above. Implementation occurred over four months from May through August of 2020. Measurement of

the implementation process was tracked daily and analysis of the performance, including expected outcomes, was ongoing throughout the implementation period.

Final analysis of the project outcomes were conducted and reported to various stakeholders via presentations and in a written final report in spring of 2021. The project was also be reported to unit nursing leadership and facility leaders at the organizational level as well as externally, as opportunities present. These occurred in written publication through ScholarWorks, Poster Presentations, and the submission of podium presentations at regional and national conferences.

Measures and Analysis

As described previously the scholarly project included six short term outcome measures. These outcomes were measured utilizing primary and secondary data. Each of the tools that were used for this project were chosen after careful review. Each of the outcome measures are described in the following paragraph (Appendix F). All six evaluation processes require specific tools for data collection. The secondary data was collected via established organizational or third-party instruments. The primary data are education evaluations and survey questions developed by the project team to measure specific knowledge before and after the education session and staff perception of the model's impact on assigning nurse patient teams. The staff perception of workload is assessed using the NWSQ (Appendix M).

Outcome 1: NPA tools are completed by charge nurses on 75% of shifts at 4-week, 8-week and 12-week post implementation assessment. An audit tool developed with members of the UBC is used to evaluate the completeness of NPA tools completed by charge nurses during each shift (Appendix P). Each of the six areas of the grid are evaluated and scored for percentage

of grid completeness. A comparison of the audit data is reviewed during audits at weeks four, eight, twelve and displayed with graphical trending.

Outcome 2: Following a series of staff training of the Synergy Model during staff or pod meetings in mid-May to early June of 2020, 90% of the RN Staff indicated an increased understanding of the NPA Process in post-education surveys. A pre- and post-survey using a four point "Disagree" to "Agree" method of response was used to compare staff knowledge of the Synergy Model, tools and associated policies/procedures at the beginning and conclusion staff training sessions. The comparison of aggregate mean scores for each survey item using the pre-post-assessment data following the training sessions were compared to pre-training survey to demonstrate improvement. As a part of the post-education survey, participants also provided feedback on the presentation of the education content by answering the following questions: The training was helpful to me to understanding the process for making nurse patient assignments.

Outcome 3: Nurses report greater satisfaction in their role as measured in pre-implementation and at three months following project implementation. Using the NWSQ; nurses will be assessed during pre-implementation Synergy Model NPA training and then again at three months post-implementation. Pre-implementation data will be gathered during Synergy NPA training. Nurses will voluntarily participate in completing the NWSQ. Post-data will be collected at three months post-project implementation and reviewed to determine changes in nurse's overall satisfaction according to NSWQ. Data will be shown in narrative and percent of change by question and comparative of responses (AACN, 2019).

Outcome 4: Patients reported a better understanding of medication and discharge education as evidenced by HCAPHS scores three month following SP implementation. HCAHPS surveys are provided monthly as secondary data that are sent to the organization for review. The

domains with primary foci that are aligned with staffs' ability to spend more time on individual patient care include nurse communication and, specifically, communication about medications and discharge information. The use of established Press Ganey Associates Inc. data for patient's that are discharged to home from the medical surgical unit (Press Ganey, 2019). The data are reviewed with a primary focus on the domains that are aligned with staff ability to spend more time involved in individual patient care. Those domain data being specific to nurse communication, communication about medications, and discharge information. Qualitative and quantitative data are provided in aggregate top box scores and narrative responses. These monthly domain data will be correlated and reviewed for changes in overall patient satisfaction in the primary focus domains.

Outcome 5: A reduction of medication administration delays will be reviewed as related to lack of staff availability/staff time issues as per medication audit reports. Pharmacy audit reports which indicate on-time and late medication administrations will be used to identify variance in medication administration. These reports can be as specific as by unit, nurse, patient and medication. However, the project will be using no staff or patient identifiable data. The percent of medications that were given both on-time and late per medication administration schedule will be reported. Nurses will make notations in the Omnicell medication documentation process as to why the dose was late. These reasons will show on pharmacy audit report and be excluded if mediation or patient were unavailable. Pharmacy audit reports provide descriptive statistics for determining nominal count and percentages of medication that were given on-time or late. Using these percentages, the project team can determine the impact of changes in the rates of timely medication administration. Using this data as collected monthly throughout the project timeframe, the percentage of late mediation will be compared in bar graphs.

Outcome 6: Dissemination of project findings are shared internally via hospital publication, social media, and council presentations within three months from project completion. External dissemination of the findings will also be measured. These measurements of outcome will be evidenced by completion of each the following four strategies. Podium presentation, written publications, poster presentation, and social media posts. Outcomes data will be shared in equal percentage in the four dissemination strategies, 25% completion for each of the four strategies. Quantitative data in the form of percentage of completed dissemination of project results will be calculated and reported as a part of final project presentation.

The procedures for each of the six sources of measurement outcomes data was conducted differently given their source and purpose. The secondary data was collected according to organizational standards and practices. The process by which the data was analyzed and reported back to the team will be determined by the project leader. For the primary evaluation data, each are being gathered from staff involved in the project. Data was collected using a consistent method to allow for comparable evaluation. Primary data was collected specifically for the purpose of measuring the knowledge gained during the staff training on the Synergy Model and its purpose, process, tools and desired outcomes. The procedure for collection was a paper and pencil evaluation of participant's learning (Appendix K) immediately following the training course. Evaluations were gathered and results entered into spreadsheet for data analysis.

Primary data is outcome data assessing staff's perception of how the implementation of the Synergy Model has impacted the level of workload. Summative data was collected via electronic survey tool (Appendix L) where data were categorized along three levels of evaluation. These levels indicate whether the results of using the Synergy Model for nurse patient assignments has made team assignments more manageable, about the same or less

manageable. Although data collection processes for each project evaluation process are different, the overall processes are broadly focused on standard collection methods intended to gather consistent measures for analysis and determination of project outcomes. This is intended to link the model structure with processes and outcomes as a result of the project's focus at the identified problem of no standardized process for making nurse patient assignments (Hickey & Brosnan, 2017).

The validation of collection procedures in the compilation of secondary data is verified through third party collection and reporting of data. Secondary data is collected and sent to the organization from Press Ganey Associates Inc. an independent company whose mission it is "to support health care providers in understanding and improving the entire patient experience" (Press Ganey, 2019). Secondary data is also collected within the organization's Cerner EHR and incorporated into the pharmacy's automatic dispensing system that has reporting ability to track medication administration times as compared with scheduled times. This comparison reporting shows trended data to analyze timeliness of patient medication administration, an area where the project outcome is anticipated to demonstrate improvement.

For primary data, the validation of data collection is focused at knowledge attainment from educational sessions using survey methods. The Nursing Workplace Satisfaction Questionnaire (NWSQ) (Appendix L), was used through voluntary participation of nurses. Data are quantitative and qualitative in nature; the data are also subjective to the participants' involvement and engagement in the project development and training sessions. Stakeholder involvement with the data collection tools occurred in both UBC and Unit Leadership meetings. The project leader only had access to blinded data. Attention was made to ensure that each concept of interest was measured according to tool specifications. The outcomes were reflective

of the interests of stakeholders using reliable survey tools and feedback methods to measure staff and patient-focused improvements.

There are several areas that required additional attention to detail in the processes of data collection and analysis. These areas these areas include the timing of and procedure of data collection during the training, implementation, and post-implementation phases of the project. Due to several modes and mechanisms of process and outcome evaluation, the timing of collection and analysis could affect the overall implementation. There are also many dependent variables that could influence any part of the project. The timing of the project also overlaps the organization's timing for an accreditation survey cycle. This regulatory survey could take priority over the project training and implementation schedule.

Ethical Considerations

The principles of beneficence are active in respect to this project in protecting all participants from harm, loss of confidentiality and autonomy through the option to not participate. The intent of the project is to benefit participants; both patients and nursing staff. This includes appropriate planning to ensure patient assignment steps and tools are fully executed. Although the primary focus of the scholarly project is patient care and the associated tasks for which the assigned nurse carries out for each patient, there are a few ethical implications of the project itself. These are summarized below.

Protection of Participants

Patient consent for participation was not be obtained as they are not participants in the patient assignment process. Patient care is anticipated to benefit from using standardized assessments tools and leveling of nurses assigned to each patient. No patient rights are diminished nor is individual patient confidential information to be used in the measurement

aspects of the project. Survey data to evaluate patient's satisfaction with care are associated with organizational data already collected through Press Ganey Associates, Inc, an independent company (Press Ganey, 2019). No patient identification is ever reported to the organization through this survey process (Hall & Roussel, 2014). The participating nurses were all consented as a part of evaluation. The survey data were also protected through means of not collecting demographic data as part of the educational evaluations or workplace surveys All staffing related tools that have staff names were de-identified and recorded by unit leadership prior to providing forms to the project leader. Further efforts to eliminate any risk of beach in staff confidentiality or coercion are being addressed by having organizational data and staff surveys sent and collected by education department and a data analyst.

Conflict of Interest/Biases

As the project leader is also the chief nursing officer associated with the organization there are recognized bias that could affect the project outcomes. These biases are areas such as giving the people and processes the benefit of doubt when not truly following the processes as outlined. There is a bias of wanting the project and people to succeed rather than allowing failures to happen throughout the project. Mechanisms were also implemented to avoid these biases by having unit leadership work with the project leader to coordinate and analyze measurement data. There are known biases that were considered as the project was implemented within an organization which all staff participants are employed. The desire for outcomes to be positive and reported as such need to be evaluated with actual quantified results. Biases were addressed in the tool development process, during staff training and in the analysis of reported results by blinding the process or involvement of the project lead. The threat to the quality of the project are addressed below (Moran, Burson, & Conrad, 2017).

There were no known or anticipated internal or external conflicts of interests related to this project. No participants in the project had ties to activities outside the organization that could inappropriately influence his or her judgment to support the outcomes of the project for either favorable or unfavorable outcomes. There were no associated risks to any participants, outside risks associated with hospital-based care and employment which participants are already being exposed to regardless of project implementation.

Threats to Quality

In the primary data collection process there is a greater opportunity for bias to be present. In efforts to avoid both evaluator and participant bias, a consistent coded response process of blinded data from identified individual responses were as followed. This process included the staffing assignment forms being collected by unit leaders and staff identifiers being coded to eliminate any bias for participant identity. A similar process was used for gathering of responses via secured evaluation, survey participation and review of data were conducted by project lead and unit leadership. A secured network drive with limited access was used. These controls were further deployed in the analysis of findings as the UBC acts as project team to evaluate the findings. There were elements that could lead to detours, derailments, or even failures.

Primary concerns were the competing priorities of organizational foci. The implementation period coincides with other accreditation survey cycles. This alone is not a major concern but often involves immediate attention for any conditional findings that require 30 to 45-day resolution of findings. A change in unit leadership is not expected but could pose a challenge with the support of the UBC and project leads if to occur. No change in leadership occurs. There are costs to the organization associated with the s**c**holarly project that could come under strict controls as the end of the organizations fiscal year which ends in September. Project costs

decreased due to virtual and on-line training. Due to COVID-19 the annual DNV Audit was conducted virtually in late July and did not impact the projects progress. We saw no change in unit leadership and very minor changes to the UBC membership. With conducting much of the project training on-line this reduced the anticipated training costs.

IRB Application and Determination

This project was reviewed by Boise State University IRB. The IRB Application included detailed explanations to protect the rights of project participants. A method for recruiting participants by the project leader through email and cover letter introductions were in place. The process to consent participants and code any identifiable data was addressed. A letter of determination that the project did not meet the requirements for human subject's research was obtained prior to implementation (Appendix J).

Results

Six outcomes were identified for this project (Appendix F) and are presented in this section with brief summary for each.

Outcome 1 stated that all NPA tools were completed by charge nurses on 75% of shifts at the 4-week, 8-week and 12-week post implementation assessment. An audit of all elements of the daily assignment grids for each of the audit periods were: 4-week 87% complete, 8-week 74% complete and 12-week 89% complete (Appendix X). These percentages reflected a high level of completion and compliance for all elements found in the assignment grid (Appendix P).

Outcome 2 demonstrated that following a series of staff nurse introductions to the Synergy Model during on-line training in spring of 2020, 90% of the RN Staff reported an increased understanding of the NPA Process. Synergy Model training evaluations were

completed in late May and early June of 2020 by 33 of the 38 eligible nurses assigned and greater than 90% of RN's expressed increased understanding of the Synergy Model.

Specific to Outcome 3, a total of 38 NWSQ were distributed pre-implementation, with 23 returned reflecting a 54.7% response rate the follow up survey was completed by 20 of the 38 nurses (47% response rate). Data revealed improvement in only one question: "I able to learn on the job." The pre-implementation score was 69% agreement with an improved "agree" to 85% in post-implementation survey. However, every other question had a decrease in positive responses and specifically, the two questions revolving around "having enough time to discuss problems with peers" and "having time to deliver good care" were markedly lower (Appendix U).

To compare patient's reported understanding of medication and discharge education as defined in outcome 4, HCAPHS scores over a five-months prior to implementation and a three-month period following implementation were analyzed. Two specific questions about education for new medications and discussion of needs at discharge were most relevant. Baseline measures from January, February, and March 2020 demonstrated an agreement rate from patients who reported understanding of discharge education at 79% for the three-month average. The post implementation monthly rates for discharge education showed the following values by month:71% for June, 82%for July, and 82% for August. The HCAPHS question related to education for new medication had a baseline score of 82% during the three months preceding the project implementation. Scores for post implementation are as follows: June 100%, July 57%, August 73% for an average of 77%. The 85% pre-implementation response rate as compared to a 77% post-implementation response rate. These results did not demonstrate improvement in either HCAPH scores metric.

Outcome 5 states there will be a reduction of medication administration delays related to lack of staff availability/staff time issues; as per medication audit reports reviewed monthly for five months preceding and three months following implementation. These percentages were calculated against number of patient days for monthly measurement period to get a true rate of late medications. The baseline data showed that 12.3% of the medications were given late over the pre-implementation period. When these percentages are adjusted for number of patient days for those months the rate is 4.75. Post implementation data showed an average of 8.1% of medications were given late and when adjusted for patient days there was a rate of 3.09. This is a demonstrable improvement in timeliness of medication administration (Appendix W).

Outcome 6 will follow completion of the project by seeking opportunities to disseminate the finding and outcomes both internally and externally to stakeholders and targeted audiences.

All anticipated project outcomes are reflected in both the outcomes table (Appendix F) and the following analysis for each outcome. The outcomes demonstrate that the Synergy Model, as implemented on the medical surgical unit, has potential to improved care as seen in outcome 5, for medication administration timeliness.

Outcomes Analysis

Synergy Model tools were audited at weeks 4, 8, and 12 to measure completed use of each the Synergy Model components using the assignment grid (Appendix P) as the data collection tool (Outcome 1). Follow-up education was completed with specific charge nurses following the week eight audit to retrain for missing forms and data. Significant improvement was realized in the week 12 audit period. Discussions from charge nurses during the post project review in UBC meetings revealed that the tools were easy to use and helped to make better, more balanced team assignments. Anecdotal feedback as early as day one of the project revealed that

staff and patients saw value in the evaluation of patient complexity as matched with staff levels of competency. On many days that were busier than average, the model revealed patient assignments that were more balanced. When the census was low, and patient acuity equally low, the charge nurses were able to validate the need for more or less staff using the tool and calculations of the Synergy Model. Even with these concerns the perceptions of the model were favorable and showed staff commitment to continue using the principles implemented in the Synergy Model.

During July 2020 the unit began to receive COVID-19 positive patients. The unit had only had one COVID-19 inpatient prior to the beginning of the project in early June. These patients take considerable time, primarily due the donning and doffing of personal protective equipment (PPE). Although COVID-19 positive patients often scored with lower acuity on the Synergy Model complexity tools, they were assigned as either one patient to one nurse, or two COVID-19 positive patients to one nurse. The charge nurse was assigned to assess donning and doffing of PPE and assist with any tasks in the ante-rooms where PPE was not required. This limited the number of caregivers for exposure, but also preoccupied the charge nurse from assisting with other team members. The Synergy Model tools and assignments continued to be used to make all nurse patient assignments through many very busy and uniquely stressful shifts. There was strong commitment by charge nurses and UBC members to continued use of the model to make nurse patient assignments.

The training evaluations associated with Outcome 2, were completed in late May and early June of 2020. Twenty three of the thirty-eight nurses completed the post training evaluation (Appendix K). The training PowerPoint and pre-and post-evaluations were set-up in the organization’s learning management system. The pre-evaluation and post-evaluations were set-

up separate from the training PowerPoint. With the evaluations being set up separately, participants were given the option of completing either or both the pre- and post-evaluations. This led to inconsistent and missing data where post evaluations were not completed by the same nurses. There was overall, useful and helpful information gained from both evaluations. For example, evaluations showed that all but one respondent felt they had input into the current nurse patient assignment processes. However, there were four nurses that disagreed with the statement indicating "patient assignments allow you to complete tasks, communicate adequately with patients and family, take meal breaks and 10-15 minutes breaks during your shift and get off on time" found in the evaluation (Appendix K). Two nurses stated they were not satisfied with the current patient assignment process. All of the participants agreed with the statement "the training provided was helpful for me to understanding the tools and processes associated with the Synergy Model for making nurse patient assignments".

Using the NWQS pre-project surveys were completed by twenty-three of the assigned forty-two nurses (54.7% response rate). The post-project survey was completed by twenty of the forty-two nurses assigned (response rate of 47%). The overall pre-project responses were positive in regards to work satisfaction (95% agree), work is meaningful (100% agree), and enthusiastic about present work (90% agree). The results indicated that 30% of the participants disagreed with the work giving them opportunities to show their worth and only 56% agreed that they had enough time to deliver good care to patients. Overall the teamwork, collegiality, and support for one another questions were rated with a very high agreement over multiple questions. The questions regarding having time to deliver good care and enough opportunity to discuss patient problems with colleagues are of particular interest to the outcomes for this project and was analyzed specifically for improvement upon follow-up survey. No evidence was seen on

follow up survey. Both of these questions had higher negative responses than other questions (Outcome 3). One statement regarding having enough time to deliver good care had a 47% response of staff that partially agreed and disagreed. This statement is directly correlated to the project purpose to improve the time to care for patients through better NPA processes.

Two open-response questions were included in the inventory and inquired about the staff members least and most favorable parts of their job. There were twenty and twenty-one written responses respectively to each of these questions. The categories for worst parts of the job fell into the following areas of long hours, stressed about missing things, loss of hours, feeling unappreciated by physicians and patients, charting and staffing ratios. The categories for the best parts of the job were primarily about their team members and patients. Many of the responses included the phrase "I love my colleagues, leaders and helping patients."

In the post project follow-up using the NWSQ, the data in most areas show a decrease in overall workplace satisfaction. In the two questions that specifically correlated with time and availability to coordinate care there was significant changes in percentage of negative responses. Pre-project data showed 55% of staff felt they had time to deliver good care. Post project responses fell to 25%. For the question that asked about having opportunity to discuss problems with colleagues the pre-project percentage in agreement was 78% and the post-project survey showed a level of only 68%. Both of these questions indicate less time or opportunity to provide quality care. In the post-project open-response questions many of the same positive responses were expressed about the gratitude for teamwork and team members. The question asking about what is the worst thing about your job had an increase in statements about being overworked, understaffed, overwhelmed, and underappreciated. These were alarming statements that were

shared with unit leadership and UBC. As a result, they increased pod meetings and leadership rounding and availability to address concerns.

Patient satisfaction HCAHPS scores data associated with outcome 4 was measured through Press Ganey-mailed surveys to patients. The surveys include the standard HCAPHS questions. All questions were analyzed for changes related to this project timeframe. However, the one question that has the greatest sensitivity for improving the NPA is related to discharge education provided by the nurse. Baseline measures from January, February, and March 2020 show a percentage score agreement with patients who reported understanding of discharge education at 72%. Data from April and May 2020 measured with consistent response rates, but higher than trended scores. This was presumed to be the result of a lower patient census and higher staffing rates due to COVID-19. These months with a decrease in patient volumes could have contributed to more time for patient education.

The post-implementation monthly rates for discharge education showed the following values by month: June 71%, July 82%, and August 82%. The HCAPHS question related to education for new medication had a five-month baseline score of 79% for months preceding the project implementation. Scores for post implementation are as follows June 100%, July 57%, August 73%, for an average agreement rate of 78%. This demonstrates a slight decrease in the rate of agreement for the HCAHPS question related to nurses discussed discharge needs. see Figure 3 (Appendix V).

The timeliness of medication administration associated with Outcome 5 was measured through EHR medication reports. Times for medication administration are set by the physician order and/or routine schedules as determined by patients, nurses, and pharmacy personnel. When medications are given either early or late, which are defined as one hour before or one hour after

the scheduled time, the documentation system will generate a prompt in the system requiring the nurse to explain why the medication was not administered as scheduled. The baseline data showed that 12.3% of the medications were given late over a three-month period prior to project implementation. When these percentages are adjusted for number of patient days for those months the rate is 4.75. Of the medication given early, the most consistent rationale was patient preferred time and physician request of medications rather than the scheduled time. For medications given late the highest percentage of categories for explanation are: medication unavailable, patient unavailable, nurse unavailable, and other. In addition, the nurse availability is recorded as the highest percentage for documented reasons why medications were given late on the baseline. The post implementation data for medications given late as a percentage rate of patient days was 3.09 for the post implementation period. This demonstrated a clinically and statistically significant improvement in timeliness of medication administration with t-test of 0.0383 (Appendix W).

Interpretation

The literature surrounding Synergy Model utilization on medical surgical units suggests that because the Synergy Model focuses on patient outcomes by matching and synergizing patient characteristics and nurse competencies, positive staff and patient satisfaction outcomes would result. Although the data for this single unit implementation was limited there are indications through data and anecdotal evidence that positive outcomes are being demonstrated (Carter & Burnette, 2011). Curley (1998), found a higher trust in nurse and patient relationship after incorporating the Synergy Model into team design. Although this was not measured specifically through this project, a higher than usual positivity rate, as seen by the submission of Daisy Nominations, was seen during this implementation timeframe (Daisy, 2020). According to

Curley, outcomes associated with the Synergy Model are relevant to the individual's goals in seeking care. These goals are set and discussed by nurse and patient in coordination with the health care team as demonstrated by use on the Synergy Model and shift assessments for care, a greater likelihood of goal attainment is achieved (Curley, 1998).

There is also alignment between the Henderson's Need Theory and Synergy Model as both provide a framework to address the patient's care, safety and independence during hospitalization. Emphasis of Henderson's theory is on the basic human needs and how nurses can assist in meeting those needs as a potential solution (Henderson, 2015). Using the AACN Synergy Model for Patient Care on the medical surgical unit aligned patient needs with nurse competencies. The Synergy Model shifted the assessment of nursing skills for patients from a prevalent body systems/medical model, which did not consistently match actual practice, to a nurse competencies framework. The model allowed for many patient-related and staff nurse limitations to be accounted for by the charge nurse assisting them to make the best possible patient nurse assignments utilizing all of the information gathered during end of shift report and Synergy Model assessments of both patients and available nurses. This provided standardized or evidence-based processes for making patient assignments.

Summary of Key Findings

The Synergy Model was relatively simple to explain and implement on the medical surgical unit with help from the unit-based council and unit leadership. Matching patient complexity with nurse competency to create balanced patient to nurse assignment using the Synergy tools was done consistently and with support from staff and charge nurses. The only significant clinical area of improvement was found in the number of medications given on time, as scheduled. Staff offered feedback to the project lead that team assignments felt more balanced

and the Synergy Model also validated the nurse's feelings of being busier than usual. Overall staff and patient satisfaction were not realized for the duration of the project as measured over 16 weeks of project implementation.

The key strengthens of the project were the support and engagement of the UBC and unit leadership. The unit had not engaged in a scholarly DNP project before and were very supportive and hopeful to make substantive improvements through this project. This support was demonstrated in the charge nurse's commitment and completion of all components to the Synergy tools at a rate of 83%. The fact that neither staff nor patient satisfaction goals were achieved during initial project measure period was received by UBC members as only minor setback and reason for continued focus on NPA and overall support for patients and team members.

The findings from the project revealed limited improvements in patient and staff satisfaction. The timeliness of medication administration improved and staff credited this improvement on having more balanced teams from the Synergy Model implementation. The key findings from literature focused on improved relationship of team members and improved clinical outcomes (Curley,1998). Staff on the medical surgical unit shared that the opportunity to collaborate with charge nurses during shift report became meaningful team building time. This factor was seen in both pre- and post-NWSQ questions related to having opportunity to discuss patient care with colleagues. Teamwork and team-building are core values for the organization and the Synergy Model process adds intentional time to collaborate with team members. There are assumptions that staff and patient satisfaction have been affected by the added stress and anxiety related to COVID-19. Much of the staff and patients are under a new level of stress not experienced before. Patients were limited in family support network by only allowing one

designated visitor for the duration of their stay. Staff were working longer hours and additional shifts particularly during summer months to cover for vacationing or sick peers. These factors are contributors to the fact that anticipated outcomes were not realized. Regardless, the project was seen as a success for staff, charge nurse and unit leaders involved in this scholarly project. The unit has since begun work towards several additional nursing scholarly projects and participating in one nursing research study.

Limitations

There were several limiting factors involved in the project. First and foremost was the time limitation of the project. Due to the alignment of semester work and the timeframes for which the project needed to be implemented and outcomes measured the timeframe was narrower than the desired. Implementation was also challenged by virtual and online training modules rather than in-person training that was originally designed. In person training would have allowed for dialogue about the intended actions and outcomes found in literature and the rationale associated with implementing the Synergy Model. The narrated slideshow training gave good information but did not allow for dialogue.

During July 2020 the unit began to receive COVID-19 positive patients and continued to having at least one COVID-19 positive patient throughout the project. The unit had only had one COVID positive inpatient prior to the beginning of the project in early June. These patients take considerable time, primarily due the donning and doffing of personal protective equipment (PPE). Although the patients often scored lower acuity on the Synergy Model complexity tools, they were often assigned as one-to-one patient-to-nurse ratio, or with two COVID-19 positive patients to one nurse if staffing and patient acuity required it. The charge nurse was assigned to assess donning and doffing of PPE and assist with any in-room cares. This limited the number of

caregivers from exposure, but also preoccupied the charge from assisting with other care teams. Synergy Model tools and assignments continued to be used to make all nurse patient assignments.

Unintended Consequences

One of the unintended consequences of the project was the revelation that there were considerable staffing level variations from weekdays to weekends that required less staff. The concern was identified that often a much lower patient load was assigned to nurses on the weekends. When identified and addressed by leadership, the staff were concerned that due to the Synergy Model project, they would be required to take more patients than previously. This was not favored by staff that felt they would be required to take more patients than previously. It was also noted that variation existed from charge nurse to charge nurse in following nurse to patient ratios as set by unit management and budget. Many shifts were over-staffed with little justification. The intent of the project was not to increase the number of patients each nurse was assigned but ensure a standardized approach and rational was used to improve the NPA processes. Even with these concerns the perceptions of the project and Synergy Model are favorable and showed a commitment to continue using the principles implemented in the Synergy Model. The team work between charge nurses and frontline nurse to coordinate more appropriate patient teams for the oncoming shift has led to greater coordination and team interactions.

Conclusion

This project was developed to address the lack of a standardized and evidence-based process for making patient to nurse assignments. The problems addressed in this project were to improve the ineffective patient care as evidenced by higher than acceptable late medication

administration, lower than expected patient satisfaction scores, and staff frustration over imbalance in patient assignments. Matching patient complexity with nurse competency through the Synergy Model has improved the team assignment process and lead to greater confidence for the charge nurses and staff. The workload and flow of care for each patient team and assigned nurse therefore enhancing the likelihood that nursing tasks and duties will be performed in a timely and routine manner. The improved timeliness seen in medication administration times has lead nurse perception of support by charge nurses and assignments that are felt to be balanced and fair. The adoption of the Synergy Model, an evidence-based model, is supported by professional nursing associations as a standard for nursing practice and was seen as propelling the medical surgical unit into greater scholarly and professional practice (Acar, I. 2010).

The successful engagement in this project was prompted by the UBC and unit leader's aspiration to be involved in future EBP and nursing research. The project gave a relatively new UBC a united focus to seek improvement of both patient care and the overall morale of the nursing staff. The Synergy Model met the intent to have a standardized and evidence-based tool to make NPA. Improvements were seen in timeliness of medication administration and nurse satisfaction with the model was high although overall workplace satisfaction improvement was not realized through the NWSQ survey. The scholarly project also demonstrated the usefulness of engaging staff in evidence-based practice and teaching the processes by which quality improvement is used to address practice problems. This has led greater interest and engagement in other evidence-based practice efforts.

Sustainability

Leadership support is key to the sustainability of any endeavor. Having unit leaders and the UBC involved heavily throughout the project provided continued 'buy-in' for the tools,

processes and policy development. The unit continues to use the Synergy Model tools and collects data relevant to assessing and analyzing continued success. Data measuring the project outcomes will continue to be gathered, analyzed and shared for continual improvements in nurse and patient assignments as communication of the results is key to sustainability. Training new staff, especially charge nurses, is integral to the continued success of the model. Implementing the Synergy Model on other units of the organization is being planned and will also be a source of sustainability.

Implications for Practice

All nursing units should seek to have standardized and evidence-based systems for making safe and effective NPA. It is no longer acceptable to make these assignments on gut assumptions or based on geography, continuity, convenience or intuition. A model such as the AACN Synergy model is essential for nurses to be practicing evidence-based care. The Synergy Model, as adapted to the medical surgical environment by Carter and Burnette (2013), could also be adapted to other nursing practice settings.

Project Budget and Implication

The project was developed as a zero-based budget. All expenses associated with the project were offset by donated or in-kind revenue. As documented in appendix G, expenses fell in the categories of personnel (time), while materials will be labeled as both materials and supplies. There were four processes where personnel time are involved in the scholarly project. These expenses were largely be found in staff wages. The first area of expenses was the UBC members that assisted in development of tools to be used for rating of patient complexity, forms used to set the nurse patient assignments, as well as policies. The second group was the unit leaders that were involved in development of staff competency ratings, measurement tools and

polices associated with program procedures. The third group of personnel where time is going to be required was with staff training. All of these hours were tracked and associated with the project and considered along with regularly held UBC and unit leader meetings. The fourth group was represented by the involvement of pharmacy and quality department staff in gathering and reporting on HCAPHS scores and medication-related measures.

The other category was materials and supplies. These are expenses are related to the production of forms and office supplies used as materials for training, surveys, and shift NPA worksheets. In anticipation of further dissemination of scholarly project results, additional dollars have been budgeted for poster and brochures for the project's final presentations.

As depicted in Appendix H, the largest outlay of expense in year one was primarily in the pre-implementation planning phase of the scholarly project. Years two and three expenses will be related to ongoing training of new staff and charge nurses that have been hired into their roles after initial pilot project. These trainings will be included into unit orientation. There will also be ongoing expenses for materials and supplies as well as time for staff to continue conducting the measurement and reporting of expected outcomes in the future. It is anticipated that similar methods found in the Synergy Model could also be applied in other areas outside critical care and medical surgical units.

The Statement of Operations (Appendix I) identifies the expenses versus the revenues of this project. In-kind donations show the donated time of the project manager (DNP Student) at an average wage and anticipated hours to complete the project. There were donated materials, copies, meeting space, and personnel time included in the revenue section. The only significant expenses that are not offset in the original budget process were the expenses related to potential

travel associated with dissemination of Scholarly Project in podium or poster presentations. This is not a revenue generating project and therefore there is not any operating income anticipated.

The project had planned for minimal costs and there was no external funding. The budget was covered by the project and in-kind donations from the organization. The highest cost was attributed to the project leads consultation time. The estimated expenses were higher than actual expenses due to conducting all training electronically while staff were on duty rather than conducting separate training session as planned. Copies and forms were also reduced and replaced with electronic forms. All project lead and staff hours were recorded and logged for final analysis of project impact. Adjustments were made to project budget (Appendix G). The hospital supported all budget for the project and in-kind donations from the project leader's time and resources such as training materials. The highest cost was attributed to the project lead's consultation time. The estimated expenses were higher than actual costs due to conducting all training electronically while staff were on duty. Much of data collection and analysis time believed to take considerable time was automated through EHR software and easily processed once rules and requirements were set in inquiry formula. Copies and forms were also reduced and replaced with electronic forms. The project budget remained as planned to be budget neutral with offsetting time and materials donated in-kind from project lead (Appendix G).

Policy Implications

If nurses and nurse leaders do not set policies for nurse staffing and practice then others who govern and regulate nursing will set these rules for us. Nurse leaders have one primary function and that is to oversee resources related to patient care. These resources come in the forms of people, equipment and supplies to ensure that quality and safe care of patients is provided. The people portion of this function gets most of the attention and rightfully so. Nurse

staffing is regulated by Centers for Medicare and Medicaid Services (CMS) Conditions of Participation (2020), accrediting bodies such as The Joint Commission (2019), DNV-GL (2020) and in some cases state staffing regulations (Serratt, Meyer & Chapman, 2014). The number of patients assigned to each nurse is central to staffing ratios and often debated in policy and legislative forums. A recent failed challenge to mandated nursing ratios occurred in Massachusetts. Voters rejected the mandate after millions of dollars were spent in public education campaigns to explain that the number of patients per nurse is only one piece of the NPA process and associated outcomes (Fotsch, 2019). A systematic review of mandated staffing ratios demonstrated that without specific and measurable nurse-sensitive indicators nor instruments to validate the improvements, it is difficult to measure the influence of ratios on the nurse patient assignments (Olley, 2019).

Nursing advocates understand that mandated staffing ratios will not independently improve patient outcomes (AACN, 2019). The AACN Synergy Model gives nurse leaders a standardized evidenced-based model to plan for staffing ratios while meeting accreditation and regulatory requirements and also taking into consideration patient complexity and nurse competency to improve the nurse patient assignments (AACN, 2019). Adopting models that take patient acuity and number of available and required staff into account, as does the Synergy Model, is what many of the regulatory policies require. Nurse leaders should be setting the practices and policies rather than having policies dictated or resource allocation set by others outside of the profession and practice of nursing (Carter & Burnette, 2011). The AACN Synergy Model provides evidence-based structure and process for charge nurses to incorporate elements of each patient's individual complexity and to build a patient team that is aligned with each nurse's level of competence. This scholarly project demonstrated the use of evidence-based

practice tools, processes, and principles to positively improve patient care and other staff and organizational outcomes (AACN, 2019).

Dissemination

By disseminating the process and results of this scholarly doctoral project in professional settings, it will further the efforts to support evidence-based practice. The project will be presented in detail to the practice organization where the project was based as well as to student peers, faculty and dignitaries at Boise State University. Dissemination through poster and podium presentations will be sought at both Western Institute of Nursing and American Organization for Nursing Leadership. Publication in ScholarWorks and other publications will be submitted through abstract submission processes. Dissemination of project outcomes were shared with the hospital leadership and staff in UBC meetings. Further dissemination will include ScholarWorks publication and graduate studies showcase through the project lead's academic institution. An abstract for external presentations has been accepted by the American Organizations for Nursing Leaders (AONL) for poster presentation at their national conference in July of 2021. Ongoing opportunities to share the outcomes of this project and encouraging the utilization of the AACN Synergy Model for improving the NPA will be pursued.

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Appendices

Appendix A

Literature Review Summary Table

Johns Hopkins Nursing Evidence-Based Practice - Individual Evidence Summary Tool

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
1	Stephanie B. Allen, 2015	*Qualitative*	14 Charge nurses / Community Hospital ☐ N/A	Identifies adverse patient outcomes related to nurse patient assignments. Collects data from Charge nurses to understand factors affecting assignment process.	Small sample Size in one hospital	III B
2	Stephanie B. Allen, 2018	*Qualitative Descriptive*	10 participants / Community Hospital ☐ N/A	Interviews with patients to assess their perception of quality in the nurse patient assignment process. Reveled important insights into patient satisfaction scores.	Small sample size identified through convenience	III B
3	Joel Gray, Karlene Kerfoot 2016	*Systematic Review*	✓ NA	Discusses ratio-based assignments and acuity-based assignment models as evidence-based approaches to nurse patient assignment.	System review of dated studies	IV B
4	Heather Cathro, 2013	*Practice Guideline*	✓ NA	Addresses a theory-gap analysis regarding how patient assignments are made and proposes a framework to guide the process of patient assignments.	Review of only one guide to patient assignment process	III B
5	Prattana Punnakitikash, Jay M. Rosenberger, Deborah Buckley Behan, 2013	Qualitative	Two nursing unit / Community Hospital ☐ N/A	Analysis of 3 different models to address the many variables of nurse patient assignment to determine the best practices and evidence to support the models.	Study from Engineer Management mathematical analysis. 2004 at single community hospital.	II A
6	Kimberly Diclemente, 2018	Qualitative	39 Registered Nurse / Community Hospital ☐ N/A	The study evaluates one acuity-based nurse patient assignment tool used on a medical-surgical unit. Staff satisfaction with the tool was evaluated.	Project data was collected over 8 weeks with many surveys not completed correctly.	III B
7	JiSun Choi, Peggy Miller, 2018	Qualitative	106,439 RNs in 751 Acute Care Hospitals ☐ N/A	Study explore the perceptions of nurse patient assignments and its relationships with nurse working conditions and outcomes (job satisfaction, intent to stay, and RN- rated quality of care). Findings indicate that RNs' perceptions of their patient assignments	Data is from NDNQI and large teaching hospitals. Addressed one specific quality question	II A

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
				are significantly related to nurse working conditions and outcomes.		
8	D. C. Hairr, H. Salisbury, M. Johannsson, N. Redfern-Vance, E. Thomasos, 2014	Qualitative Correlation	70 participants in Acute Care Hospital ☐ N/A	The Nursing Work Index-Revised (NWI-R) and the Control Over Practice (COP) sub- scale tool is the most widely used survey tool in the clinical nursing environment. This tool was used to evaluate nurse satisfaction as it relates to job satisfaction and intent to stay.	Small sample size	III B
9	C. J. Oostveen, A. Braaksma, H. Vermeulen, 2014	Systematic Review	Three nursing wards in a 1000-bed Dutch university hospital ☐ N/A	Review of a computerized decision support system to support charge nurses is the nurse patient assignment process.	Large foreign hospital	III B
10	M. Y. Sir, B. Dundar, L.M. Barker Steege, K. S. Pasupathy, 2015	Qualitative	Forty-five nurses from oncology and surgery units ☐ N/A	Study to compare use of Acuity Model versus other workload models.	Small sample from one nursing unit with a perception survey	III B
11	Colin Plover, 2018	Systematic Review	✓ NA	Overall evaluation of the NPA process and perceptions of Charge nurses in prioritization decision making.	Small sample, Dissertation /Gray Literature	II A
12	Ilgin Acar, 2010	Systematic Review	✓ NA	Overall evaluation of the NPA Process and the comparison of two EBP models.	Dissertation/ Gray Literature	II A
13	Duffield, C., Diers, D., O'Brien-Pallas, L., Aisbett, C., Roche, M., King, M., Aisbett, K., 2011	Mixed Methods longitudinal study	80 "Medical" and "surgical" units were selected in 19 hospitals.	Longitudinal data showed that higher levels of registered nursing staffing were associated with lower levels of adverse events (decubiti, GI bleeding, physiological/metabolic derangement, pneumonia, pulmonary failure, sepsis, and shock).	Foreign hospital, data collected over 5 years (2000-2006).	II A
14	Swiger, P., Vance, D., Patrician, P., 2016	Literature-based concept analysis study	21 publications including one government report, three integrative reviews, and 17 articles published between 1990 and 2014 were used in concept analysis	75% of the factors that influence non-direct care workload were identified as hospital and unit environmental characteristics. Nursing workload is complex and nonlinear by nature and is influenced by nurse, patient, unit, and organizational characteristics which can significantly increase or decrease the time and effort required to provide high quality nursing care and improved patient outcomes.	Bias of the literature critical appraisal and limited publications.	III B

Article #	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
15	Sally Szumlas, 2013	Practice Guidelines	✓ NA	Review guides nurse leaders in engaging staff to identify non-value added (NVA) tasks and replace with tasks that are critical to quality (CTQ) of care. Excellent guide in ways to involve staff in improving workload and patient assignment activities.	Opinion article based in other research.	IV A
16	Esther Thomasos, Edwina E. Brathwaite, Tanya Cohn, Juan Nerey, Carolyn L. Lindgren, Shatondre Williams C., 2015	Evaluative Study	Medical-telemetry unit of a 150-bed community hospital, Survey of 15 nurse managers and clinical nurses, 30 Clinical Partners (UAP)	Demonstrates the utilization of inter-professional shared governance through the UPCs as an organizational structure for assessing the need for change and producing and evaluating that change on a nursing unit.	Small Sample Size, acuity tool specific to local facility	III B
17	Carter, K. F., & Burnette, H. D. (2011)	Practice Implementation	36 bed medical-surgical and pediatric Unit	The implementation of an adapted Synergy Model for nurse patient assignments based on staff competency and patient characteristics	Single unit of study with limited evaluation	II A
18	Curley, Martha, AQ (1998)	Practice Guidelines	✓ NA	The Synergy Model matches patient complexity to the competency of the nurse to assign the best outcomes are maximized.	Theoretical conceptual model that needs further implementation and research	IV A

Appendix B

Theoretical Model

Henderson's Model for Improving the Nurse Patient Assignment (NPA) process on a Medical Surgical

Permission to use model given by Virginia Henderson International Nursing e-Repository, February 18, 2020.

Appendix C

Kellogg Logic Model

Resources/Inputs	Activities	Outputs		Outcomes: Short term	Outcomes: Intermediate term	Outcomes: Long term
Tools, Process and Policy Development						
- Unit Leaders, Charge nurses and Staff time is required for training, implementation and daily use of assignment tools and processes. 2 hours per staff member = 100 hours x $25/hr = $2,500. - Printed Forms = $200 - Time for post-training follow - up survey, dissemination, collection and analysis. 20hr x $25/hr = $500	What about meetings to discuss & complete these tasks? - Development of Unit Specific Tools, including Patient complexity scale and assignment rating, Staff competency leveling and Patient assignment matrix., Policy/procedure development	Use of standardized tool to make nurse patient assignments which contributes to improved nurse to patient assignments Utilization of Synergy Tool and Processes	Unit Leaders, Charge nurses, Staff and Patients	1) NPA tools are completed by charge nurse on 75% of shifts at the 4-week, 8-week and 12-week post implementation assessment. (PO)	7) NPA tools and processes are completed at 100% in the daily workflow for all charge nurses at 6-months post implementation assessment. (CO)	13) NPA tools and Policies are being shared and used on other units throughout the organization within 3 to 5 year of implementation.
Staff Training and Satisfaction						
- Time and materials for staff training; Staff Training for 38 RN's including 12 **charge nurse**s x 2hr x $25/hr = $2,700 - Time to analyze post training evaluations; 4hr x $25/hr = $100 - Time to review annual staff satisfaction data; 4hr x $25/hr = $100	Train staff in the components and processes of making NPA using the Synergy Model through a narrated online training in the May/June 2020 Conduct post-training evaluation of understanding for synergy model and new NPA policies and processes to	Staff appreciate the improved NPA with use of the Synergy Model and have greater involvement in assignment process.	Charge nurses and Staff Nurses	2) Following staff introduction to Synergy Model in spring of 2020, 90% of the RN Staff replied increased understanding of the NPA Process in post education evaluation. (PO)	8) Staff reported greater job satisfaction as a percent increase as evidenced by annual employee survey scores to be conducted in summer of 2020. (CO)	14) RN retention rate for the medical Surgical department are better than national average at 3 years following implementation of Synergy Model NPA.

	be conducted at end of training					
Model Utilization and Evaluation						
- Staff Nurse time to complete survey during shift while on the job - Time to build online questionnaire - Time for gathering and analysis of information; 4hr x $25/hr = $100	Survey staff nurses at pre post implementation of synergy model to assessment their attitudes towards effective team assignments	Survey implemented to measure the percent of staff workplace and role satisfaction	Charge nurses, Staff Nurses	3) 75% of Nurses reported through the NWSQ that they are satisfied in role as evidenced by having time to deliver good care (CO)	9) Nurses report greater satisfaction, as evidenced through the increase scores in NWSQ (CO)	15) Synergy Model enculturated and used for NPA 100% of organizations units as measured 3 years following implementation
Patient Care Measurement						
- Staff time in Pod and Staff meetings; On the Job - Time to gather, review and analyze HCAPHS data; 4hr x $25/hr = $100	Using new model for assignment to allow for more time to perform discharge education in a timely and appropriate manner.	Patients recognize that staff and nurses are more available to respond to their needs and report this is Pt Surveys.	Unit Clerks, Charge nurses, Staff nurses, Patients/Family Members	4) 75% of Patients reported understanding of discharge education as evidenced by HCAPHS scores three month following SP implementation. (CO)	10) 90% of Patients reported understanding of discharge education as evidenced by HCAPHS scores three month following SP implementation. (CO)	16) The organization achieves ANCC Pathway to Excellence Designation within 3 years of project.
Personnel: - Training Time for Staff and Pharmacist; 1hr/month x $35 = $35 x 12months = $420 - Pharmacy time to pull medication audits; On the job - Unit Leaders time to analyze report data; On the job	Use of Synergy Model and patient complexity tools to identify appropriate assignments and medication scheduling. These processes will improve the likelihood of timely medication administration.	Medication are given per order and as scheduled or processes are developed to improve the reasons for delay.	Staff Nurses, Patients, Pharmacy and Providers	5) 50% reduction of med administration delays related to lack of staff availability/staff time issues as per medication audit reports at 4-week, 8-week and 12-week post implementation measurement period. (CO)	11) 75% reduction of med administration delays related to lack of staff availability/staff time issues as per medication audit reports at 6-month medication audit report. (CO)	17) Confidence in nursing by pharmacy and providers as reported in pharmacy and medical staff annual surveys for the 3 years following Synergy Model implementation.
Dissemination						

- Time to complete abstracts; 40 hrs - Time and funds to generate presentations and posters; 20hrs and $200 - Printing costs Funding for travel to share project results; Printing $50, Travel $15000.	Audiences and media will be identified, abstracts submitted and project results will be shared. Internally in Staff meetings and in Hospital Social Media pages. Externally to WIN, AONL and BSU poster and presentation forums.	Share the practical use of the synergy model for use in the medical surgical environment to improve the NPA through poster, podium and written presentation of the project.	Facility and Nursing Community at Large	6) Dissemination of project findings are shared Internally via hospital publication, social media, and council presentations within 3 months from project completion. (PO)	12) Dissemination of project success are shared Externally via publication and presentations within a year from project completion by evidenced of a published article and acceptance and evaluations of presentation. (PO)	18) The Organization, Unit and Staff are recognized as models of exemplary practice by peers and leaders as demonstrated by advancement in individual and organizational recognition in 3 years following implementation.

Appendix D

Scholarly Project Timeline June 2019 to May 2021

Improving the Nurse Patient Assignment (NPA) process on a Medical Surgical Unit											
	Month/Year										
Activity	June /July 2019	Sept/ Oct 2019	Nov/ Dec 2020	Jan/ Feb 2020	Mar/ Apr 2020	May /July 2020	Sept/ Oct 2020	Nov/ Dec 2020	Jan/ Feb 2021	Mar/ Apr 2021	May /July 2021
PLANNING											
Finalize Problem and Literature Review											
Identify Theoretical Framework											
Timeline Design											
Project Logic Model											
Present Project to Facility AC and UBC											
Form Advisory Committee/Meet Bi-monthly											
Establish Budget											
Develop Nurse and Patient Criteria											
Develop Education, Assignment Form											
Establish Boise State IRB Approval											
Establish Measurement Tools											
Train Charge nurses and Present to Staff											
IMPLEMENTATION											
Synergy Model in Use											
4-Week Data Review											
8-Week Data Review											
12-Week Data Review											
HCAPHS Review											
Medication Reports Review											
DATA COLLECTION											
Evaluated Assignment Compliance w/Model											
Collect Measurement and Outcomes Data											
DATA ANALYSIS											
Compare Model Compliance and Outcomes											
COMPLIATION											
Final Project Paper and PowerPoint Report											
DISSEMINATION											
DNP SP BSU Presentation											
DNP SP Poster/Podium Presentation											
DNP SP Abstract Submission											

Appendix E

Memorandum of Understanding

Memorandum of Understanding
Between *Kevin K McEwan*, Doctor of Nursing Practice (DNP) student at Boise State University and *Madison Memorial Hospital*

This Memorandum of Understanding (MOU) outlines the terms and understanding between the Kevin K McEwan, a DNP student at Boise State University, and *Madison Memorial Hospital*, in the adaptation of the AACN Synergy Model on the Medical/Surgical Unit of Madison Memorial Hospital. There are 4 short term project outcomes. These outcomes will demonstrate improved specific strategies of patients by matching patient complexity to staff nurse competency in setting nurse patient assignment that are more manageable. With the assistance of the Unit-based Council (UBC) and Unit Leadership the development of tools, policies and processes will be established. Project implementation will include charge nurse and staff education, and monitoring of process function, tool utilizations and outcomes measurement and analysis. The project will be initiated in early 2020 with the help of the Unit-Based Council members and Unit Leadership. The tools necessary for project implementation consist of the patient complexity scale and assignment rating, staff competency leveling guide and nurse patient assignment grid.

Background
Charge nurses have integral roles in healthcare organizations. Making patient assignments is an important charge nurse role that requires theoretical support, practical guidelines and a framework to guide the process. The lack of a standardized and evidence-based process for making nurse-to-patient assignments on nursing units has led to less effective patient care, as evidenced by a higher than acceptable rate of late medication administration and lower than expected patient satisfaction scores. Workload has been the common theme in unit reviews of why medications have been delivered late and call-lights not answered in a timely manner. In addition, staff become frustrated over the imbalance in patient assignments which has led to a higher than acceptable turnover. The challenge of having no consistent method to making nurse patient assignments from shift to shift impacts the confidence of less experienced charge nurses making assignments. This creates a significant dissatisfaction with the charge nurse role. This is becoming a significant disruption and failure in the service delivery process that adversely affects patients, staff, and the entire system of service and prevents care from being at its full potential. Historically, the organization has used a nurse-to-patient staffing matrix. The matrix is set for every nurse to have 4-5 patients. This matrix is still in place as the basis of the nurse patient assignment budget process. With the nurse patient assignment process largely focused on number of patients assigned to each nurse, other considerations have been secondary.
There are many considerations that fall into the areas of clinical care. Complexity of patient condition and nurse competency factors each are critical elements in making the best nurse patient assignment possible. The clinical presentation of each patient plays a significant role in the decision of the charge nurse when making the assignment of a nurse. This is complicated by the complexity of each patient and the degree of care processes involved. The individual nurse's competency which is often measured in years of experience, training, certifications, and skill

acumen is also a factor warranting consideration. Patient and family social determinants and health literacy add to the competencies that need to be considered. Taking all these factors into consideration is essential to the making a nurse patient assignment.

Purpose

A primary focus of the DNP Project is to improve the nurse patient assignment to address identified problems. Issues that stem from ineffective patient assignments, such as higher than acceptable late medication administration, lower than expected patient satisfaction scores and staff frustration are related in part to patient assignments. By adequately assessing patients' needs as outlined by Henderson's theoretical framework and applying the Synergy Model concepts it is anticipated that improvement in each of the identified outcome will be demonstrated.

Intended Project Outcomes

- Charge nurses report greater satisfaction, engagement and retention in their role as measured in pre-implementation and at 6 months following project implementation.
- Patients reported understanding of medication and discharge education as evidenced by HCAPHS scores three month following SP implementation.
- A reduction of medication administration delays related to lack of staff availability/staff time issues as per medication audit reports.
- Dissemination of project findings are shared Internally via hospital publication, social media, and council presentations within 3 months from project completion.

Duration

The DNP project will begin in early 2020 with preliminary work by UBC and Unit Leaders to develop the processes, tool and policies associated with the training, uses and implementation of the synergy model. Staff training will occur is early spring with processes and tools beginning to be used shortly thereafter. Monitoring of the process and tools utilization with collection of outcomes measurement data and analysis will be concurrent and throughout the project ending in late summer 2020.

Reporting

The DNP Scholarly Project will include a final report, an abstract, an oral presentation of the report and potential publication. The DNP student will submit a Final Project Report for publication in ScholarWorks. ScholarWorks is a collection of services designed to capture and showcase all scholarly output by the Boise State University community, including doctoral dissertations and doctoral project reports.

No personal identifiers will be included and all data will be reported in aggregate form. The author welcomes any comments or suggestions from Madison Memorial Hospital, but reserves the right to publish findings and analysis according to professional standards and principles of academic freedom. For any work of a scholarly nature, the author agrees to follow the organization(s) preferences in how it is to be named (or not) in the work.

<u>Agency preferences for referral within the student's work:</u>

In the student's Final Report as Madison Memorial Hospital

In an abstract as Madison Memorial Hospital
In professional presentations as Madison Memorial Hospital
In professional publications as a Rural Community Hospital

Student Contact Information
Kevin K McEwan

Appendix F

Outcomes Table

Outcome	Data Collection Instrument / Data	Analysis Goal	Analytic Technique
1) NPA tools are completed by charge nurse on 75% of shifts at the 4-week, 8-week and 12-week post implementation assessment.	Instrument: An audit tool developed with the UBC to assess that the NPA tools are utilized completely when all field are used. Data: Percent of completed NPA tools data will be reviewed periodically throughout the implementation phase and reported in a trend line for compliance to tool utilization.	To verify that consistent and progressive utilization of the NPA tools as evidence by audit data.	Descriptive statistics: A quantitative comparison of audit data reviewed at established periods and compared over 4, 8, 12-week time period.
2) Following an online training module of Synergy Model in the spring of 2020, 90% of the RN Staff replied increased understanding of the NPA Process in pre and post education survey. As a part of the post education survey the participants will also provide feedback on the presentation of the education content.	Instrument: A pre/post questionnaire will be used to compare staff knowledge of the Synergy model, tools and associated policies/procedures before and after staff educational session. Likert rating of questions to determine staff understanding use of Synergy model processes and procedures. Data: Staff knowledge of the Synergy model, tools, and associated policies/procedures: aggregate mean data from the pre- and post-test questionnaire will be shared in aggregate mean data for each questionnaire item.	To demonstrate through pre/post data the knowledge advancement following staff educational sessions on the synergy model, processes, policies and tools. Educational offerings will improve using the feedback from post education survey.	Descriptive statistics: A comparison of aggregate mean scores for each questionnaire item using a pre/post assessment data following educational sessions.
3) Nurses report improved satisfaction in Nursing Workplace Satisfaction Questionnaire (NWSQ) as demonstrated in pre- and post-implementation.	Instrument: Using the NWSQ survey nurses are assessed during pre-implementation of the Synergy Model NPA and then again at 3 months post implementation. Data: Pre and Post data will be reviewed to determine changes in nurse's intent to stay in role.	To determine changes in staff satisfaction.	Using qualitative analysis to review the staff explanatory data describing nurse intent to stay in role or on the current unit of employment.
4) A comparison of Patients reported understanding of	Instrument: Press Ganey written survey forms are mailed to 100% of patients discharged home from	To measure the changes in patient satisfaction that align	Qualitative and Quantitative data are provided in aggregate

medication and discharge education as evidenced by HCAPHS scores during three months prior to implementation and the three-month period of the project and following scholarly project's implementation.	medical surgical unit. 32 questions in 9 domains make up the patient satisfaction assessment tool. Data: Monthly secondary data are sent to the organization for review. All domains will be reviewed with primary focus on the domains that are aligned with staff ability to spend more time involved in individual patient care. Those domain data being specific to nurse communication, communication about medications, and discharge information.	with staff nurses having more time engaged with patient in providing discharge information.	top box scores and narrative responses. These will be comparison for changes in overall patient satisfaction in the primary focus domains.
5) A reduction of medication administration delays related to lack of staff availability/staff time issues as per medication audit reports reviewed monthly for five months preceding and three months following implementation.	Instrument: Pharmacy audit report that indicates on-time and late medication administrations. The report can be as by unit. Data: Percent of medications that were given on-time and late per medication administration schedule. Nurses will make notations in medication documentation process as to why the dose was late. Data will be gathered monthly throughout the project timeframe and compared for changes.	To quantify the percent of medications that are given on time over time prior to and in months that follow the Synergy Model Implementation as a result the change of improved nurse patient assignments.	Pharmacy audit reports provide descriptive statistics and t-test for determining nominal count and percentages of medication that were given on-time or late. Using these percentages, the project team can determine an impact of changes of the rates of timely medication administration. Data will be displayed in line graph showing trends of timely medication administration.
6) Dissemination of project findings are shared Internally via hospital publication, social media, and council presentations within 3 months from project completion.	Instrument: Measurement of this outcome will be evidenced by completion of each the following four strategies. 1. Podium presentation, 2. Written Publications, 3. Poster Presentation, and 4. Social Media Posts. Data: Outcomes data will be shared in equal percentage in the four dissemination strategies. 25% completion for each of the four strategies.	To report on the completion of each dissemination strategy in effort to share the project findings and encourage improved NPA processes through the use of the Synergy model.	Descriptive quantitative data in the form of percentage of completed dissemination of project results will be calculated and reported as a part of final project presentation.

Appendix G

Project Expense Report

Kevin K McEwan, Scholarly Project Expense Report

					Grand Total	$ 7,910.00
Expense Category	**Expense Description**	**Explanation of Expense**	**Type of Cost (variable/fixed)**	**Volume**	**Cost per Unit**	**Total**
Personnel	Unit Leader Wages	Unit Leader Training (Educator, Manager, Director)	variable	4hrx $45/hr = $180	$45/hr	$ 180.00
Personnel	Charge Nurse (QTL) Wages	Staff Training for 12 QTLs	variable	4hr x $35/hr = $1,680	$35/hr	$ 1,680.00
Personnel	Unit Staff Wages	Staff Training for 42 RN's including 12 QTLs	variable	Online	0 hrs	$ -
Material & Supplies	Printer supplies, paper, copying, pens, general office use.	Office Supplies and materials for training, surveys, and shift worksheets	fixed	$600	$50/month	$ 600.00
Personnel	Training Evaluations	Time for post-training follow - up survey, dissemination, collection and analysis	variable	20hr x $25/hr = $500	$25/hr	$ 500.00
Personnel	Shift Surveys	Time for gathering and analysis of information	variable	4hr x $45/hr = $180	$45/hr	$ 180.00
Personnel	HCAPHS	Time to gather, review and analyze HCAPHS data	variable	4hr x $25/hr = $100	$25/hr	$ 100.00
Personnel	Pharmacy and Quality staff time	Pharmacy and Qualty staff time to pull and report data	variable	1hr/month x $35 = $35 x 12months = $420	$35/hr	$ 420.00
Personnel	Complete abstracts	Unit leadership time to complete project abstract for presentation	fixed	40 hrs x $45/hr = $1,800	$45/hr	$ 1,800.00
Personnel	Generation of presentations and posters	Unit leadership time to complete project presentation and poster	fixed	20hrs x $45 = $900	$45/hr	$ 900.00
Material & Supplies	Poster and Handout costs	Poster and Handouts for project presentation	fixed	$50	$50/presentation	$ 50.00
Personnel	Funding for travel to share the project results	Travel costs for staff to present project	variable	Per person	$1500/person	$ 1,500.00

Appendix H

Project 3-Year Budget

Yearly Totals:	$ 9,250.00	$2,250.00	$ 2,250.00	
Expense Category	**Year 1**	**Year 2**	**Year 3**	**Rationale**
Personnel	$50,000	0	0	Project Manager hours
Personnel	$5,400	$450	$450	Year 1; Includes all staff training hours. Year 2&3; Annual training for new QTLs schedule as needed. Anticipated for 3 new QTLs and unit educator time. $150 each traing session. $450 annually.
Material & Supplies	$ 650.00	$100	$100	Year 1; Included all staff training materials. Year 2&3; Forms used for daily assignments. $100 annually.
Analysis	$1,200	$1,200	$1,200	Annual analysis of data collected by pharmacy and nursing staff both monthly and quaterly.
Dissemination	$2,000	$500	$500	Annual dissemination of project findings.

Appendix I

Statement of Operations

SP Statement of Operations		
Operating Income		**$ (2,000.00)**
	Revenue Total	**$ 57,250.00**
Source	**Description**	**Amount**
DNP Student donated hours	Pay for time, 1000hrs x $50/hr	$ 50,000.00
In-kind from organization	materials, copies, meeting space, personnel time	$ 7,250.00
	Expenses Total	**$ 59,250.00**
Expenses	**Description**	**Amount**
$50,000	Project Manager	$ 50,000.00
$ 5,400.00	Personnel	$ 5,400.00
$ 650.00	Material & Supplies	$ 650.00
$ 1,200.00	Analysis	$ 1,200.00
$ 2,000.00	Dissemination	$ 2,000.00

Appendix J

IRB Acceptance Letter

BOISE STATE UNIVERSITY
RESEARCH AND ECONOMIC DEVELOPMENT
Research Compliance

Date: April 28, 2020

To: Teresa Serratt cc: Kevin McEwan

From: Social & Behavioral Insitutional Review Board (SB-IRB)
c/o Office of Research Compliance (ORC)

Subject: SB-IRB Notification of Approval - Original - 186-SB20-076
Improving the Nurse Patient Assignment Process on a Medical Surgical Unit

The Boise State University IRB has approved your protocol submission. Your protocol is in compliance with this institution's Federal Wide Assurance (#0000097) and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Protocol Number:	**186-SB20-076**	Received:	4/14/2020	Review:	Expedited
Expires:	**4/27/2021**	Approved:	4/28/2020	Category:	7

Your approved protocol is effective until 4/27/2021. To remain open, your protocol must be renewed on an annual basis and cannot be renewed beyond 4/27/2023. For the activities to continue beyond 4/27/2023, a new protocol application must be submitted.

ORC will notify you of the protocol's upcoming expiration roughly 30 days prior to 4/27/2021. You, as the PI, have the primary responsibility to ensure any forms are submitted in a timely manner for the approved activities to continue. If the protocol is not renewed before 4/27/2021, the protocol will be closed. If you wish to continue the activities after the protocol is closed, you must submit a new protocol application for SB-IRB review and approval.

You must notify the SB-IRB of any changes to your approved protocol and the committee must review and approve these changes prior to their commencement. You should also notify the committee if your activities are complete or discontinued.

Current forms are available on the ORC website at http://goo.gl/D2FYTV

Please direct any questions or concerns to ORC at 426-5401 or humansubjects@boisestate.edu.

Thank you and good luck with your research.

1910 University Drive Boise, Idaho 83725-1139
Phone (208) 426-5401 orc@boisestate.edu

Appendix K

Nurse Patient Assignments Education Survey
Pre and Post

Kevin McEwan, a doctoral student at Boise State University, is conducting a pilot project to evaluate the improvement of the Nurse Patient Assignment Process on a Medical Surgical Unit. You are being asked to complete this survey because you are a staff nurse of the medical surgical unit. Participation is anonymous and voluntary.

Please evaluate the following statements about your knowledge, input and understanding of the process for making nurse patient assignments.

1. I have input into the nurse patient assignment process.
   Disagree Somewhat Disagree Somewhat Agree Agree

2. The processes for making nurse patient assignments are fair and balanced. (Circle One)
   Disagree Somewhat Disagree Somewhat Agree Agree

3. The nurse patient assignments allow you to complete tasks, communicate adequately with patients and family, take meal breaks and 10-15-minute breaks during your shift and get off on time. (Circle One)
   Disagree Somewhat Disagree Somewhat Agree Agree

4. Which of the following models is used by the Medical Surgical Unit at Madison Memorial to make nurse patient assignments? (Circle One). Intuition Model, Synergy Model, Convenience Model, Continuity Model, or Geography Model.

5. I am satisfied with how nurse patient assignments are made on my unit. (Circle One).
   Disagree Somewhat Disagree Somewhat Agree Agree

6. (Post-Training Only). The training provided was helpful me to understanding the tools and processes associated with the synergy model for making nurse patient assignments.
   (Circle One).
   Disagree Somewhat Disagree Somewhat Agree Agree

Appendix L

Nursing Workplace Satisfaction Questionnaire (NWSQ)

Improving the Nurse Patient Assignment Process on a Medical Surgical Unit

Kevin McEwan, a doctoral student at Boise State University, is conducting a pilot project to evaluate the improvement of the Nurse Patient Assignment Process on a Medical Surgical Unit. You are being asked to complete this survey because you are a staff nurse of the medical surgical unit.

Participation is voluntary. The survey will take approximately 10 minutes or less to complete.

This study involves no foreseeable risks. We ask that you try to answer all questions; however, if there are any items that make you uncomfortable or that you would prefer to skip, please leave the answer blank. Your responses are anonymous.

If you have any questions or concerns feel free to contact Kevin or his faculty advisor:

Kevin K McEwan, Doctoral Student
School of Nursing

Dr. Teresa Serratt, Associate Professor
School of Nursing

Additionally, if you have questions about your rights as a project participant, you may contact the Boise State University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research projects. You may reach the board office between 8:00 AM and 5:00 PM, Monday through Friday, by calling (208) 426-5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Dr., Boise, ID 83725-1138.

If you would prefer not to participate, please do not fill out a survey.

If you consent to participate, please complete the survey.

Appendix M

Nursing Workplace Satisfaction Questionnaire (NWSQ)

Below are a series of statements concerning your thoughts/findings about your job. Please circle the number that most appeals:
1 = fully agree, 2 = agree, 3 = partly agree/partly disagree, 4 = disagree, 5 = definitely disagree

	fully agree	Agree	partly agree/ disagree	Disagree	definitely disagree
How much you enjoy your job					
• My job gives me a lot of satisfaction	1	2	3	4	5
• My job is very meaningful for me	1	2	3	4	5
• I am enthusiastic about my present work	1	2	3	4	5
• My work gives me an opportunity to show what I'm worth	1	2	3	4	5
• In the last year, my work has grown more interesting	1	2	3	4	5
• It's worthwhile to make an effort in my job	1	2	3	4	5
Doing your job					
• I have enough time to deliver good care to patients	1	2	3	4	5
• I have enough opportunity to discuss patient problems with colleagues	1	2	3	4	5
• I have enough support from colleagues	1	2	3	4	5
• I function well on a busy ward	1	2	3	4	5
• I feel able to learn on the job	1	2	3	4	5
• I do not feel isolated from my colleagues at work	1	2	3	4	5
• I feel confident as a clinician	1	2	3	4	5
The people you work with					
• It's possible for me to make friends among my colleagues	1	2	3	4	5
• I like my colleagues	1	2	3	4	5
• I feel that I belong to a team	1	2	3	4	5
• I feel that my colleagues like me	1	2	3	4	5
Overall					
• What's the best thing about your job?					
• What's the worst thing about your job?					

Appendix N

Patient Score Guidelines Tool

Stability

1. Stable vital signs (VS) ordered routine Q 6 hours, Q 4 hour
2. Frequent reassessment of VS and/or deviation from baseline, PCA
3. Meets one or more of the following criteria: post op x 24 hrs., pediatric monitoring, telemetry monitoring, and epidurals

Predictability

1. One or more of the following: expected discharge, ambulatory assist
2. One or more of the following: DNR/comfort care, language barrier, seizure precautions, fall risk
3. One or more of the following: worsening medical condition, disoriented, social and family dynamics

Complexity

1. Self-care activities of daily living (ADLs), requires little extra intervention
2. Patient has one or more of the following: central-line management, blood glucose monitoring/measurement, minimal ADL assistance, simple dressing changes, dialysis, pediatric patients over age 2 requiring minimal monitoring, Q2hr turn.
3. Patient has one or more of the following: total care, multiple tube management, complex drips(heparin, insulin), fluids/blood transfusions, CBI, frequent/complex dressing changes/ ostomy, wound care, isolation, pediatric patient's ages newborn to 2 years, frequent pain meds (Q 2hr or less). Frequent blood draws

Suggested staffing for each shift is based on 5:1 ratio.

Appendix O

Staff Competency Leveling Guide

Nurse	Employee Code	Competency Level
Nurse 001	NBL	Competent
Nurse 002	NBM	Competent
Nurse 003	NCA	Expert
Nurse 005	LNCB	Competent
Nurse 006	NCK	Independent
Nurse 007	NCT	Independent
Nurse 008	NCC	Expert
Nurse 009	NCL	Competent
Nurse 010	NDS	Independent
Nurse 011	NFM	Independent
Nurse 012	NFA	Competent
Nurse 013	NHK	Expert
Nurse 014	NHC	Expert
Nurse 015	NHCQ	Expert
Nurse 016	NHJ	Independent
Nurse 017	NHM	Independent
Nurse 018	NHD	Independent
Nurse 019	NKA	Competent
Nurse 022	NKE	Competent
Nurse 023	NLA	Competent
Nurse 024	NLK	Independent
Nurse 025	NLN	Independent
Nurse 026	LNMS	Independent
Nurse 027	NMJQ	Expert
Nurse 028	NMJ	Independent

Nurse 029	NNK	Independent
Nurse 030	NPL	Competent
Nurse 031	NPJ	Independent
Nurse 032	NPA	Independent
Nurse 033	NPL	Expert
Nurse 035	NPLQ	Expert
Nurse 036	NRE	Independent
Nurse 037	NRM	Competent
Nurse 038	NRC	Independent
Nurse 039	NSC	Competent
Nurse 040	NSM	Expert
Nurse 041	NTJ	Competent
Nurse 042	NTH	Independent
Nurse 043	NVT	Independent
Nurse 044	NWC	Competent
Nurse 045	NWA	Independent

Appendix P

Madison Memorial Medical Surgical/ICU

Synergy Model Assignment Grid																
Patient Scores																
Room #	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Stability (1-3)																
Predictability (1-3)																
Complexity (1-3)																
Total Score																
Patient Scores																
Room #	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Stability (1-3)																
Predictability (1-3)																
Complexity (1-3)																
Total Score																
Patient Scores																
Room #	2017	2018	2019	2020												
Stability (1-3)																
Predictability (1-3)																
Complexity (1-3)																
Total Score																
Acuity Scale																
Low 3-4																
Med 5-6																
High 7-9																
Staffing for Shift																
Assignment	High	Med	Low		Room	Room	Room	Room	Room							
Nurse:																
Nurse:																
Nurse:																
Nurse:																
Nurse:																
Nurse:																
Nurse:																
Nurse:																

Nurse	Low	Medium	High
Independent	3	1	1
Competent	2	2	1
Expert	1	2	2

Notes:_____
_____
_____
_____

Off-going QTL_____. On-coming QTL_____

Date: _____

Appendix Q

Synergy Model Assignment Grid Audit Tool
Check each box for completeness of content

Shift Date	Scores Complete	Acuity Scale Complete	Assignment followed Scoring	Nurse Level Complete	QTLs Signed &dated	% complete ___/6

Appendix R

Synergy Model Policy – Medical Surgical Unit

Community Hospital	Version #: 1	
Title: Synergy Model on Medical Surgical Unit		Date Approved: 03/01/2020
Process Owner: (Director of Inpatient Services)		Effective Date: 05/01/2020
Approver(s): Chief Nursing Officer		Next Review Date: 05/01/2021
Department(s): Medical Surgical/ICU		

Printed copies are for reference only. See the Intranet for released version.

Purpose/Summary:

To ensure that Madison Memorial Hospital Medical Surgical Unit has an organized and evidenced-based model for assigning qualified nursing staff to each patient based on patient needs and nurse's ability to provide that care on each shift.

Definitions:

None

Procedure:

Process Owner: (Director of Inpatient Services)	Date Approved: 03/01/2020
Approver(s): (Chief Nursing Officer) (Chief Executive Officer)	Effective Date: 05/01/2020
Department(s): Medical Surgical/ICU	Next Review Date: 05/01/2021

- During end of shift report the off-going nurse will use patient scoring guideline tool to calculate the patient's overall complexity score using a 1-3 rating of stability, predictability and complexity. This score will be added to the synergy model assignment grid by the QTL. Using the patient scores the QTL will develop assignment patient teams for each nurse that in accordance with synergy model with nurse competency level as listed below:
    - Independent – Requires supervision; can complete necessary skills but requires more time; requires assistance from others; may need to review care policies.
    - Competent – Undertakes skills easily, within time frame, and without assistance.

- Expert – Can teach skill to others; reached maximum level of competency; has an independent understanding of the skill.

Internal References:

- Patient Score Guidelines Tool
- Synergy Model Assignment Grid

External References:

- Carter, K. F., & Burnette, H. D. (2011). Creating patient-nurse Synergy on a medical-surgical unit
- *MEDSURG Nursing*, *20*(5), 142-148.
- Cathro, H. (2013). A Practical Guide to Making Patient Assignments in Acute Care. *Journal of Nursing Administration*, *43*(1), 6-9.

Requirements:

NIAHO NS.1

Quality Records:

QUALITY RECORD	Location Kept	Filling Order	Duration Kept	Disposition	Comments
Med/Surg/ICU Daily Staffing Report	Med/Surg/ ICU Director's Office	Date	2 years	Shred	Copy sent to Quality Improvement

Appendix S

Synergy Model Staff Training Plan

Objectives:

a. Staff will be able to describe the various methods for making nurse patient assignments
b. Staff will be able to explain how they can share patient conditions and circumstances to influence patient assignments for oncoming shift.
c. Staff will can execute the Patient Scoring Guidelines Tool.
d. Staff will be able demonstrate utilization of the Assignment Grid.
e. Staff will give input into the nurse patient assignment process.

Content:

- PowerPoint presentation that presents an overview of the Synergy Model and each of the associated forms and tools that will be utilized to develop patient assignments.
- Survey (Pre and Post)
- Patient Scoring Guidelines Tool (a laminated card will be provided to each participant)

Training Agenda:

1. Welcome and Consent
2. Pre-training Survey (Appendix K)
3. PowerPoint Presentation including introduction to all tools and processes
4. Q&A
5. Post-training Survey (Appendix K)
6. Dismiss

Appendix T

Scholarly Project Plan

Pre-implementation Phase

Summer 2019

- Finalize Problem and Literature Review
- Identify Theoretical Framework – Henderson's Needs Theory identified
- Timeline Design – Coordinated by semester work
- Project Logic Model – Short, Intermediate and Long-term outcomes identified

Fall 2019

- Present Project to Facility Administration and Unit-Based Councils, initial introductions to the Synergy Model concepts
- Identify Project Team, comprised of Unit leaders and Charge nurses
- Establish Approved Budget, mostly in-kind time and materials from the organization.

Winter 2020

- Develop Nurse and Patient Criteria. Nurse competency assessment set by unit leaders (See Appendix 0) and Patient Complexity tool coordinated with UBC representative (See Appendix N).
- Develop Education (See Appendix S), Assignment Form (See Appendix K)
- Establish Nurse Satisfaction Questionnaire (See Appendix M)

Spring 2020

- Establish Boise State IRB Approval (Submitted March 2020)
- Train charge nurses and Staff. UBC review of patient criteria schedule for April 6th and then Lead charge nurses will train others in UBC on May 4th. Staff Training is being scheduled for last two weeks of May 2020 (See Appendix S)
- Pre-implementation NWSQ survey sent out to all nurses via email last week of May (See Appendix L).
- HCAPHS Review of pre-implementation baseline scores
- Medication Reports Review of pre-implementation baseline rates

Implementation Phase

Summer 2020

- Synergy Model Implemented on Unit in early June.
- Daily Data Review to include completeness of Assignment Grid
- 4-Week Data Review to include completeness of Assignment Grid using audit tool (See Appendix Q)
- 8-Week Data Review to include completeness of Assignment Grid using audit tool (See Appendix Q)
- 12-Week Data Review to include completeness of Assignment Grid using audit tool (See Appendix Q)
- HCAPHS Review of post-implementation scores monthly (June-August)
- Medication Reports Review of post-implementation rates monthly (June-August)

Post Project Review

Data Collection

- Evaluated Assignment Compliance w/Model –Throughout project and final analysis
- Collect Measurement and Outcomes Data –Throughout project and final analysis

DATA ANALYSIS

- Compare Model Compliance and Outcomes – August 2020

COMPLIATION

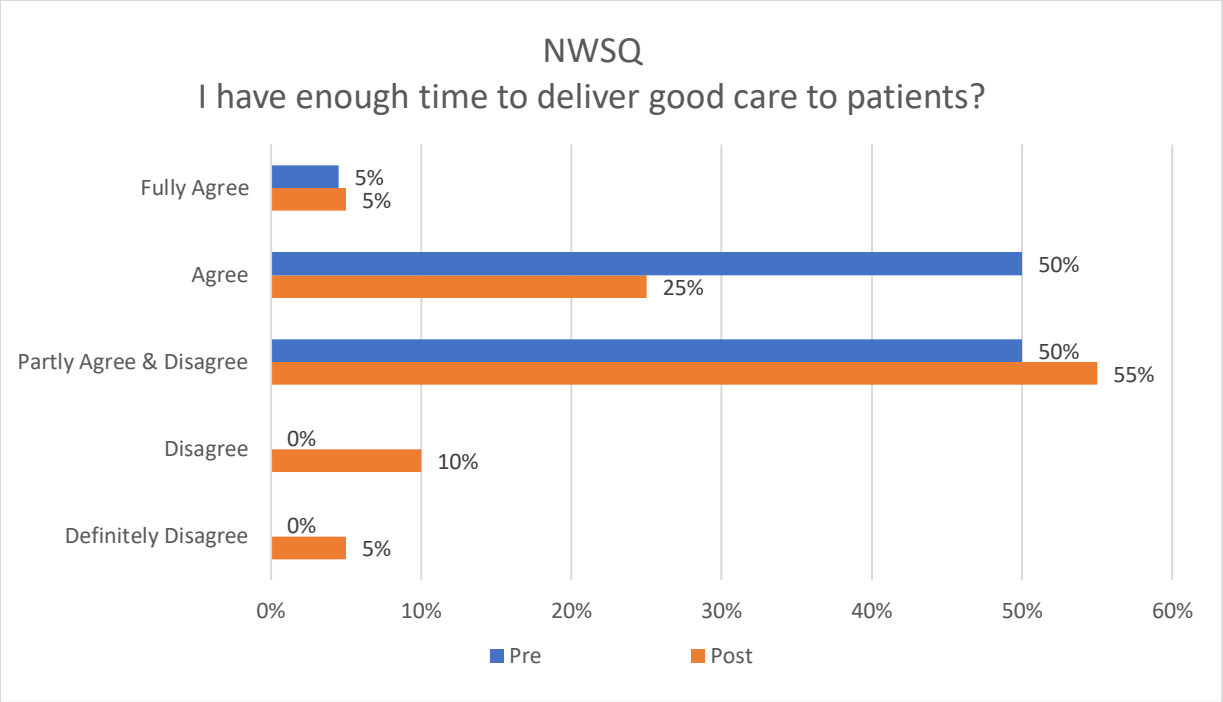
- Build Project Paper and Report – September - October 2020

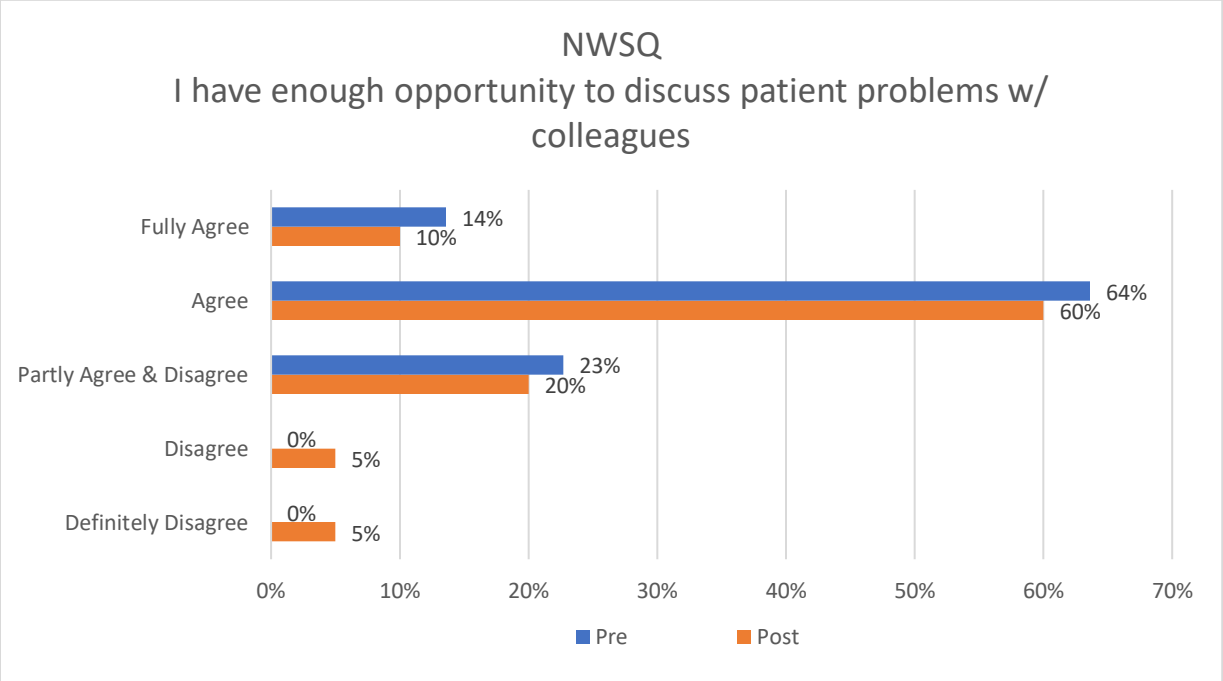
DISSEMINATION

- DNP SP Abstract Submission – November 2020
- DNP SP BSU Final Presentation – March 2021
- DNP SP Poster/Podium Presentation – AONL Conference 2021

Appendix U

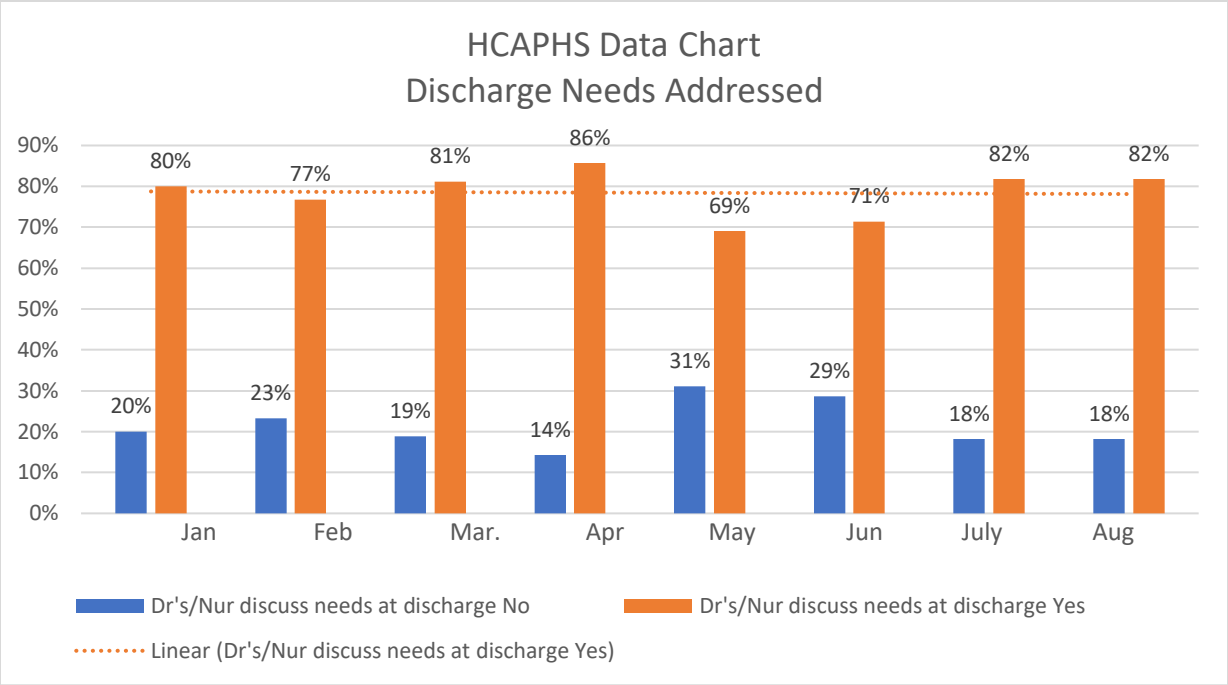
Figure 1. Workplace Satisfaction Questionnaire Outcomes

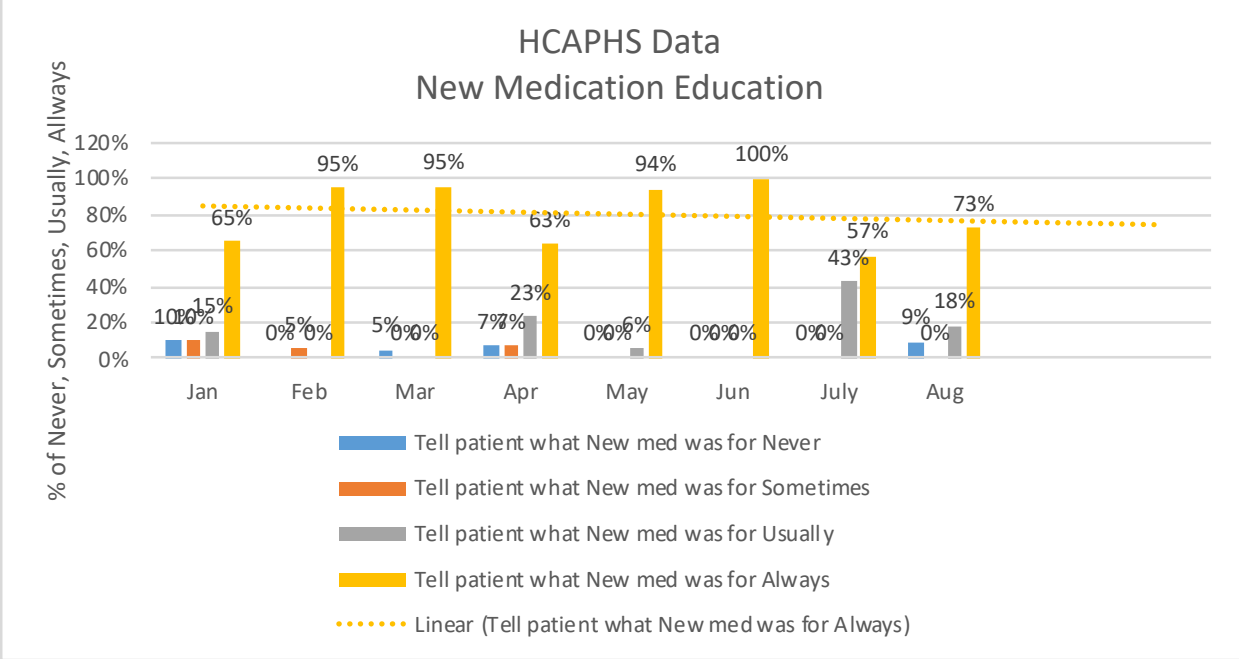




Appendix V

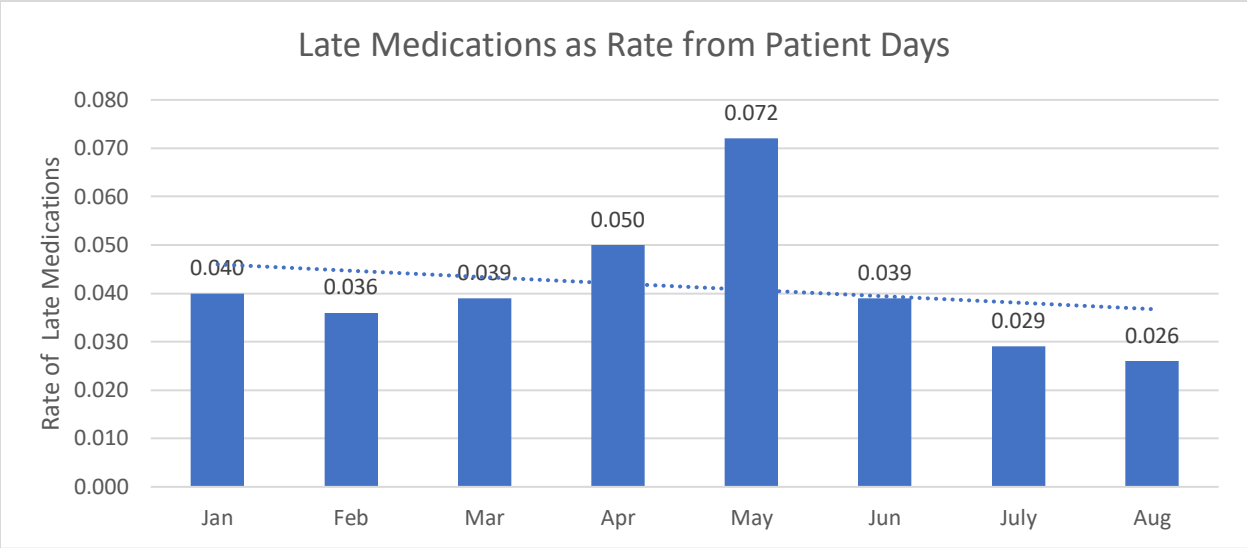
Figure 2. HCAPHS Outcomes





Appendix W

Figure 3. Late Medication



Appendix X

Figure 4. Assignment Grid Audit Outcomes