Improving Transitions of Care after Critical Illness

Lori Flores

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Abstract

Post intensive care syndrome (PICS) is a recently recognized condition of a group of physical, cognitive, and socio-emotional impairments affecting patients recovering from critical illness. As a new disorder, PICS is not a familiar diagnosis in primary care and therefore, patients likely to experience PICS should attend a transitional care visit in an intensive care recovery clinic able to offer resources for recovery to improve patient outcomes. Visit attendance rates in this population lag comparable clinic attendance. A brochure was determined to be an instrumental tool for distributing PICS information, clinic availability, and contact information. Nurse-led education sessions with patients prior to hospital discharge combined with clinic brochure distribution increased clinic attendance 7.8% and decreased the clinic no-show rate 20% compared to historical clinic attendance rates in a four-month project time frame.

Key words: Post intensive care syndrome, clinic attendance, clinic no-show rate, clinic appointment, ICU Recovery Clinic

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Chapter One: Post Intensive Care Syndrome Overview

Survivors of critical illness have many long-term recovery needs following hospitalization (Goddard & Adhikari, 2016). Post-intensive care syndrome (PICS) is a recently recognized condition affecting physical, neuropsychiatric, and cognitive dysfunction following a critical illness requiring an intensive care unit (ICU) hospitalization (Elliot et al., 2017). Patients that develop PICS experience new dysfunction or persistent dysfunction after hospitalization (Makic, 2016). Treatment after hospitalization in a clinic that recognizes and addresses the impairments of PICS may improve patient outcomes (Lasiter, Oles, Mundell, London, & Khan, 2016). The purpose of this doctor of nursing practice (DNP) project is to implement patient education regarding PICS in order to improve attendance at an ICU recovery clinic, and thus improve transitions of care and patient outcomes.

Background Information

In the United States, more than 5.7 million patients experience a critical illness each year requiring hospital treatment in an intensive care unit (Society of Critical Care Medicine [SCCM], n.d.). Advances in medicine increase the number of survivors of critical illness (Sevin et al., 2018). Approximately half of ICU survivors experience significant long-term quality of life impairments after hospitalization (Khan, Lasiter, & Boustani, 2015). Persistent after-effects from an ICU stay include cognitive, psychosocial, and physical dysfunction affecting the ability to return to work, take care of oneself, and resume normal daily activities. New or worsening impairment after hospitalization is now known as post-intensive care syndrome. Post-intensive care syndrome encompasses a combination of problems, such as neuromyopathy, cognitive impairment, anxiety, depression, post-traumatic stress disorder, and physical disability (Khan et al., 2015; Sevin et al., 2018). Patients and families struggle to manage the repercussions of critical illness which may last more than eight years (Kang & Jeong, 2018).

Medical treatment in an ICU environment can be harsh. Patients are subjected to many invasive procedures, constant monitoring involving unfamiliar background noise, continual lighting, and frequent interruptions contributing to sleep deprivation, and experience a lack of control over almost all aspects of human functioning. Kang and Jeong (2018) noted a central theme of vulnerability emerging from interviews with PICS patients that created a new, but negative, "normal" state of being after critical illness. Critical care survivors experiencing PICS describe new symptoms after hospital discharge including pain, insomnia, fear, anxiety, depression, memory and concentration deficits, activity intolerance, social withdrawal, and loss of independence impairing physical, mental, and social functioning which persisted in some cases for years after hospitalization (Kang & Jeong, 2018). While PICS is now a recognized condition, research is ongoing to determine the best prevention and treatment methods (Goddard, & Adhikari, 2016; Lasiter et al., 2016).

Efforts to prevent and treat PICS are continuing to emerge. Interprofessional teams coordinate to provide evidenced-based interventions in the ICU aimed at prevention (Makic, 2016). Patients most likely to develop PICS include those with an ICU length of stay greater than 48 hours, respiratory failure requiring mechanical ventilation, use of sedation, at least one instance of delirium, and older aged patients (Khan et al., 2015). Measures to reduce the incidence of PICS include effective pain treatment, limiting sedation to the lowest effective dose, frequent reassessment for mechanical ventilation liberation, delirium assessment and frequent reorientation, and early mobility efforts (Makic, 2016). Intensive care follow-up or recovery clinics are developing to identify and treat the needs of the PICS population after hospitalization (Lasiter et al., 2016; McPeake et al., 2019; Sevin et al., 2018).

It is well documented in other complex disease states, such as chronic obstructive pulmonary disease (COPD), stroke, and heart failure that post-hospital care is fragmented. A

lack of follow-up care soon after hospitalization can lead to unintended consequences such as readmission within 30 days (Ohar, Loh, Lenoir, Wells, & Peters, 2018; Bettger, Lender, & Nutter, 2015; Soltis, Milner, & Buonocore, 2018). Similarly, critical illness survivors are at increased risk for hospital readmission (Khan et al., 2015). Critical care medicine has recognized the importance and debility of PICS (Goddard, & Adhikari, 2016). Intensive care recovery clinics serve as a transition of care after hospital discharge prior to, or in addition to, the return to primary care. It is now recognized that ICU survivors with PICS face serious recovery hurdles in cognitive, physical, and psychosocial domains, yet no guidelines exist to direct care after hospitalization (Bakhru et al., 2018). Recovery centers collect and analyze data from ICU survivors to focus appropriate intervention development based on patient report of the ICU experience and post-hospitalization dysfunction. Critical care recovery centers aim to provide comprehensive patient care and reduce morbidity and mortality during the critical illness recovery period (Sevin et al., 2018).

Significance of Clinical Problem

Currently, no standard of care exists after hospitalization for patients recovering from critical illness (Bakhru et al., 2018). The pathophysiology of ICU-acquired conditions is not well understood. Yet, the rate of survivors of critical illness with long-term disabilities is increasing, which presents new treatment challenges for current health care models. Recent research continues to add to the body of knowledge for these conditions, although identification of proven treatment strategies remains elusive. Life-sustaining treatments in the ICU are complex and the interventions developed and tested in clinical trials to address PICS symptoms are equally complex and time-consuming (Goddard, & Adhikari, 2016).

Primary care providers are tasked with managing patients during the critical illness recovery process, yet the providers may not have adequate awareness of PICS nor experience

with treatment strategies to address PICS impairments (Goddard, & Adhikari, 2016). Additionally, primary care providers may lack comprehensive information about the patient's hospital course. Receiving post-hospital care in an ICU recovery clinic provides patients with PICS the opportunity to receive appropriate diagnosis and treatment. Patients receiving care in a recovery clinic may benefit from improved quality of life, reduction of mortality and morbidity during the recovery phase, reduced hospital utilization and associated costs, decreased medication errors, and improved transition from critical illness back to the primary care environment. Post-hospital transitional care clinics, such as ICU recovery clinics, experience significant appointment cancellation and no-show rates which create inefficiency in clinic operations, lost revenue potential, and missed opportunities to improve client outcomes.

Question Guiding Inquiry (PICO)

The ICU Recovery Clinic at one large academic medical center in North Carolina has a no-show rate of 25.5% and appointment cancellation rate of 23% over a two-year period, for a combined total of 48.5% non-attendance rate (Bakhru, 2019). This transition of care clinic is interested in increasing patient attendance to improve patient outcomes in PICS, and morbidity and mortality after hospitalization for critical illness.

Population. The clinic focus is adult patients who survived a hospitalization with at least 48 hours of ICU care involving either mechanical ventilation or septic shock. Within the target clinic population of adult ICU survivors,

- patients discharged from the hospital to a long-term acute care facility, skilled nursing facility, or rehabilitation facility;
- patients with current ongoing pulmonary clinic relationship;
- patients with ongoing oncology treatment; and

- bedbound or wheelchair bound patients prior to hospital admission are not recruited for clinic appointments.

Intervention. The project intervention consists of multiple components added to the current standard appointment scheduling practice. Patient education materials will be revised to provide to ICU Recovery Clinic candidates prior to hospital discharge. A nurse will visit the patient and family during hospitalization to provide the education materials and discuss the importance of the ICU Recovery Clinic appointment. Materials will be mailed to clinic candidates after hospitalization which serve as an appointment reminder and to reinforce the importance of attending the clinic appointment.

Comparison. The ICU Recovery Clinic attendance rate of 51.5% will be used as a comparator to the post-project clinic attendance rate. Additional comparison will be made to critical illness recovery clinic attendance rates reported in the United States (US) and the United Kingdom (UK). Sevin et al. (2018) report an ICU recovery clinic attendance rate of approximately 73% over three years for a clinic in the US, although different methodology is used in comparison to the project site's clinic. Colomo, Smithers, Cherian, Pareed, and De la Cerda (2015) report a clinic attendance rate of 56% over 3.5 years at an ICU follow-up clinic in the UK. To provide an interfacility comparator, the medical center Pulmonary Clinic six-month average attendance rate for July through December 2018 was 80% (Internal Medicine, 2019).

Outcome(s). This project will measure ICU recovery clinic attendance rates. The ICU recovery clinic would like to increase clinic appointment attendance from 51.5% to 65% over the three-month project intervention period. Components of the intervention will also be measured to assess completion rates of the delivery of new education materials to patients while in the hospital, the number of instances a nurse visit was completed while in the hospital, and mailings of new materials/appointment reminders to clinic patients.

Summary

Medical advances increase the likelihood of surviving a critical illness. As more people survive critical illness, more awareness of lasting or new dysfunction after an ICU hospitalization comes to light. The impairments after critical illness are multifaceted and negatively affect mental, physical, and social functioning as well as psychiatric well-being. The constellation of cognitive, physical, and psychosocial dysfunction after critical illness is now recognized as post intensive care syndrome or PICS. PICS is a long-term condition with some deficits lasting eight or more years.

Patients experiencing PICS, as well as their families and caregivers, struggle to recover physically and emotionally while facing unexpected new symptoms after hospitalization. Inability to be independent and return to work compound the stress placed on the ICU survivors and families. The multiple dysfunctions faced in PICS may generate or exacerbate financial, safety, and environmental challenges for patients and families. Without sufficient patient resources and support, full recovery is hindered. Decreased quality of life, hospital readmission, and disability are significant consequences of PICS.

ICU recovery clinics are emerging to bridge the transition back to primary care after hospitalization. Critical care specialists are identifying PICS and providing additional resources to combat the negative effects of PICS in ICU recovery clinics. Increasing awareness, utilization, and access to ICU recovery clinics offers the potential to positively impact transitions of care after critical illness. This project seeks to improve patient attendance at an ICU recovery clinic thereby improving the transition of care following a critical illness.

Chapter Two: Review of the Literature

The literature reviewed related to appointment attendance indicated that clinic non-attendance is a pervasive health care issue transcending medical patient populations. The search process, terms, and evaluation criteria are described for a composite of literature review. This project uses evidenced-based interventions described and supported in the literature for quality improvement practice in health care.

Literature Appraisal Methodology

Sampling strategies. The search strategy employed the use of One Search as the comprehensive database for all applicable disciplines in health care literature review. The search terms included "clinic attendance" and "hospital-based," "increasing clinic attendance," "improving attendance," and "hospital follow-up." In total, 157,626 resources were returned in the search results. Filters were applied to the search results to limit the review to publications in the last five years, printed in the English language, scholarly and peer-reviewed selections, and applicable to health care disciplines. Individual title appraisal of 771 articles determined potential applicability of 27 articles. After exclusion of duplicate material and intervention focus, 14 were used in the development of this project. Ongoing literature search will continue and focus on new resources delivered by the National Center for Biotechnology Information automated search updates and articles provided by colleagues.

Evaluation criteria. Items returned in the search were included in the literature matrix when the article offered information or content directly relating to ambulatory clinic appointments. The search excluded items published greater than five years prior, non-English language articles, and items that were not of scholarly or peer-reviewed publications. The focus of the search also attempted to limit the findings to adult medical clinics after hospital follow-up. However, filters to exclude children and non-hospital related clinics were unsuccessful and the

final search material does include children and ambulatory clinics not related to hospital follow-up. The additional literature including these populations was judged to be of value for intervention evaluation. Although utilized in dissimilar populations, the interventions noted in the pediatric and ambulatory clinic articles are applicable to this project.

Literature Review Findings

Review of the literature notes that only one randomized clinical trial focused on the problem of increasing attendance and no systematic reviews or meta-analyses of randomized clinical trials were located in the search strategies employed. Literature search will continue through project implementation and consultation with a medical librarian may be attempted. Three search items focused on research trials without randomization. However, the bulk of literature found concentrated on evidence from individual descriptive and qualitative studies.

A key feature in missing clinic appointments centers on patient forgetfulness of the scheduled appointment (Arora et al., 2014). Appointment reminders are employed in many clinic settings to prevent missed visits. In a randomized clinical trial of personalized automated appointment reminders at seven, three, and one day prior to scheduled visit, the intervention group had an increase in clinic attendance of 8.2% over the control group (Arora et al., 2014). Currently, the project site uses one standard automated phone call to remind patients of appointments. Multiple appointment reminders by patient preference for phone call or text message may improve clinic attendance. Knolhoff, Djenic, Hsu, Bouton, and Komenaka, (2016) reported that only 42% of research subjects in an appointment reminder study could be contacted by any single method offered in another appointment reminder study. Therefore, increasing contact methods may lead to successfully completing more patient encounters. Financial and systems limitations may prevent use of this option at the project site.

The standard hospital discharge teaching process at the project site includes review of clinical information and notes follow-up appointments if scheduled prior to discharge. Bettger, Lender, and Nutter (2015) described a process for scheduling appointments prior to hospital discharge as a means of facilitating continuity of care after hospitalization. Rhoades et al. (2015) employed a transition of care coordinator to schedule follow-up appointments prior to hospital discharge as part of a non-randomized trial. While the trial resulted in more appointments scheduled prior to discharge, the appointment attendance rate was not influenced (Rhoades et al., 2015). Soltis, Milner, and Buonocore (2018), reported that in a quality improvement initiative for heart failure patients, attendance was increased at appointments seven days after discharge when those appointments were scheduled prior to hospital discharge. The heart failure population may differ from the medical intensive care population who have experienced respiratory failure or septic shock, such as the patients affiliated with the project site.

While the literature supports scheduling follow-up appointments prior to hospital discharge, most candidates for the project site's ICU Recovery Clinic are not scheduled prior to discharge. The site has attempted to schedule patients prior to hospital discharge previously. When surveyed, approximately half of ICU Recovery Clinic patients with missed appointments report being unaware of having a scheduled appointment (Bakhru, 2019). Potential reasons may include problems with discharge instructions, patient understanding of instructions, a lack of health literacy regarding the appointment information, or perceived value of the appointment. The project site may be reluctant to trial scheduling appointments prior to discharge based on past experience even though the strategy is supported in the literature.

Sharma and Yoong (2016) published results of a study to determine if a reminder phone call from clinicians to patients at 24-48 hours prior to appointment times would improve clinic attendance. The purpose of a clinician conducting the call was to engage the families of

pediatric clients in clinical discussion. A 12% increase in attendance was noted in the intervention group compared to the control group who received the standard reminder (Sharma & Yoong, 2016). Clinician time constraints and limited clinical staff may prevent employment of this intervention at the project site.

In 2017, Lapointe-Shaw et al. researched the use of a physician financial incentive to improve timely completion of hospital follow-up. This intervention cost $17.5 million dollars and did not result in an increased appointment rate within 14 days of hospital discharge (Lapointe-Shaw et al., 2017). Given the negative findings of this study and lack of project funding, the project site will not attempt this intervention.

Chaudhry et al. (2019) compared three appointment scheduling time frames to measure an effect on improving attendance rates at a dermatology clinic. The scheduling time frames included offering the first available appointment, a four-week advance appointment time frame, or a two-week advance appointment time frame. Over a three-year intervention period, attendance was positively impacted when the two- and four-week scheduling time frames were used in both the Medicaid and private insurance populations. The shortest time frame, the two-week scheduling intervention, produced the most significant decrease in non-attendance in both insurance population types (Chaudhry et al., 2019). The project site currently attempts to schedule follow-up visits in a four- to six-week time frame. Minor adjustments to the project site scheduling format may be investigated.

One improvement model that increased attendance >50% at clinic visits involved a hospital partnership with a central patient contact center to focus on decreasing wasted appointments. The process involved contacting patients two weeks prior to the scheduled appointment through text, phone, or at another acute visit. The contact center asked about the intention of attending the appointment scheduled in two weeks. If the patients expressed no

intent to attend the visit, the appointment was then offered to another client. This process decreased total patient waitlists from 5,300 to 250 and increased efficiency by 10,000 patients per year (Reid, 2017). Utilizing the opportunity at acute visits to ask about future visits is an efficient proposition. As the project site population is focused on follow-up appointments after a hospitalization, no acute visits are anticipated, and the project site cannot take advantage of this strategy.

Henderson et al. (2016), conducted qualitative interviews with women regarding postpartum clinic care. Women report increasing the flexibility of appointment timing is necessary to negotiate family responsibilities and adjusting to a new lifestyle schedule with the addition of a family member. These reasons were cited as barriers to appointment attendance, however, no improvement was noted in this report (Henderson et al., 2016). The ICU Recovery Clinic population may also benefit from increased flexibility of appointment timing to adjust to caregiver needs and new patient disabilities as barriers for clinic attendance. However, facility scheduling for ICU Recovery Clinic time is not determined by project staff.

Limitations of Literature Review Process

The literature review is limited by no evidence specifically for PICS post-hospitalization follow-up, no systematic review or meta-analyses of relevant randomized clinical trials, and the time frame of this project. Additionally, several articles described female only or female majority clinics, such as postpartum care or breast clinics.

Discussion

Conclusion of findings. The literature review highlighted multiple patient contact strategies for increasing visit completion. Most of the publications reported evidence from single descriptive or qualitative studies. Very few interventions focused on provider initiatives. Patient education about visit expectations and follow-up plans provide information that may compel

patients to attend appointments. In-person patient interaction, particularly when planning hospital discharge, engages patients in the follow-up process and may motivate patients to attend appointments (Rahimi, Neeley, Bowen, Leto & Song, 2014; Soltis, Milner, & Buonocore, 2018). Frequent telephone or electronic patient communication serves to remind patients about pending appointments and may prompt visit compliance. Directly identifying patients who would benefit from clinic visits and offering an appointment, has been shown to increase clinic attendance. The ICU Recovery Clinic has a low visit attendance rate. This clinic serves a medically complex population at a transition of care point which may require specialized knowledge for full and meaningful recovery. Improving the rate of attendance in this clinic presents the possibility to improve patient outcomes. Incorporating the evidence provided in the literature, the project intervention consists of patient interaction with a nurse prior to hospital discharge who will provide a brochure containing PICS and ICU Recovery Clinic information and verify contact information for the patient. Additionally, the project team will revise the appointment reminder letter sent to the ICU Recovery Clinic patients.

Advantages and disadvantages of findings. The proposed project intervention finds support of each component in the literature. Feasibility of the interventions, as estimated by the DNP project leader, is a regulating factor in the project plan. Project time frame is also a factor in the project design.

Much of the literature demonstrates that increasing patient engagement increases clinic attendance. Personalized attention prior to and during hospital discharge focused on follow-up expectations and education has been reported to increase clinic follow-up visit attendance following hospital discharge. A personalized approach is in line with current medical objectives of patient-centered care, which is also the goal of the DNP project site. The literature supports

further personalized contact, in accordance with patient preferences, after hospital discharge to aid as appointment reminders.

The disadvantages of personalized contacts lie in the costs and burden to the facility. System barriers to this approach include weekend hospital discharges with limited staff-to-patient contact for appointment scheduling as well as a lack of dedicated hospital staff to plan and communicate follow-up care (Bettger, Lender, & Nutter, 2015). Facility scheduling dedicated for hospital follow-up visits may also be a limitation at the project site.

Utilization of findings in practice change. The proposed intervention will be implemented within the hospital environment. The project goal is increased attendance at clinic appointments following hospitalizations. The follow-up appointments will be at a hospital-based clinic that employs the clinical staff working at the hospital location, and hospitalized patients are in a confined setting. Scheduling follow-up appointments, communicating follow-up expectations, and education about follow-up appointments prior to hospital discharge are strategies supported in the literature in heart failure, stroke, and general medicine populations (Rahimi et al., 2014; Soltis, Milner, & Buonocore, 2018; Bettger, Lender, & Nutter, 2015; Rhoades et al., 2015).

Patient engagement and education about follow-up expectations prior to the patient's hospital discharge is part of the DNP project plan. Support for this intervention is noted in two heart failure publications (Rahimi et al., 2014; Soltis, Milner, & Buonocore, 2018). Rahimi et al. (2014), reported a statistically significant increase of 27.3% in completed appointments at seven days and 29.2% at 14 days post hospital discharge. Additionally, a 46% increase in the seven-day follow-up appointment attendance was reported in response to the quality improvement strategies utilized (Soltis, Milner, & Buonocore, 2018).

Redesign of existing materials and creation of new education materials are planned as part of the DNP project quality improvement intervention. Greer, Porter, Haemer, and Krajicek (2014) also created an educational brochure as part of an attendance improvement project. Attendance increased 12% over a one-year intervention period (Greer, Porter, Haemer, & Krajicek, 2014). In 2017, Butler and Hayes reported specific patient feedback that led to redesigning appointment reminder letters to be positive instead of punitive. The redesigned letter and improved educational materials were part of an improvement initiative that helped to increase appointment attendance 20% (Butler & Hayes, 2017).

Summary

The ICU Recovery Clinic at the project site serves a large population of medical intensive care survivors, many with pronounced debility after hospital discharge. The project purpose of improving attendance in the ICU Recovery Clinic is necessary to meet several goals. The clinic's aim is to provide services to survivors of critical illness to promote full recovery. In focusing on the patients at high risk for PICS, the clinic is poised to help a population with severe needs. The ICU Recovery Clinic's primary goals are to improve the health and functional status of the critical illness survivor population during the delicate transition of care from hospital to home. A reduction of hospital readmissions and an increase in clinic efficiency through reducing wasted appointment time are expected outcomes when attendance is increased in the clinic. Increasing clinic attendance stands to meet the Institute for Healthcare Improvement (IHI) Triple Aim Initiative by improving the health and function of the clinic population, improving the patient experience during illness recovery, and decreasing hospital utilization after critical illness (IHI, 2019).

Chapter Three: Theory and Concept Model for Evidence-based Practice

Improving one's health is often completed as a partnership between health care personnel and clients. An exchange of information between the health care team members and the patient culminates in shared goals for health improvement. This DNP project is guided by Hildegarde Peplau's theory of interpersonal relationships, which embodies the essential nature of the health care-client partnership, and Kurt Lewin's change model.

Concept Analysis

Clinic attendance has been defined as at least one visit to a clinic (Sutradhar et al., 2015). However, depending on the disease or population of study, it may involve visiting a clinic for a series of appointments (Kibaara et al., 2016). For the purposes of this project, clinic attendance will mean arriving and completing one scheduled appointment in the ICU Recovery Clinic at the project site. Clinic attendance is the opposite of *clinic non-attendance* or *no-show* referring to a client appointment scheduled in the clinic in which the expected patient does not arrive to complete a planned visit.

ICU Recovery Clinic refers to a place to receive care after surviving an illness requiring admission to an intensive care unit. This is different than the traditional *follow-up clinic,* which refers to medical care after a hospitalization, but not specifically a hospitalization involving critical illness or ICU care. This type of clinic specifically provides care to patients with PICS (Kuehn, 2019). ICU survivor clinics are relatively new, specialty practices staffed with critical care providers that diagnose, study, and treat symptoms that persist after hospitalization (Lasiter et al., 2016). The follow-up period after a hospitalization is marked in days between the discharge date and an office visit date (Rahimi et al., 2014). ICU Recovery Clinic denotes the hospital-based outpatient clinic at the project site that provides collaborative medical care to patients who have recently survived a critical illness in the hospital at the project site.

ICU Recovery Clinic Team has been discussed in the literature by a number of generic but similar titles. Lasiter and Boustani describe this group as "an interdisciplinary team of experts" conducting visits in a recovery center (2015, p. 25). Similarly, this group has been denoted as "the clinical team" of interdisciplinary providers and simply "an interprofessional group" (Sevin et al., 2018, p. 142; Huggins et al., 2016, p. 205). The main commonality of these descriptions is the reliance on experts from multiple medical disciplines. Therefore, ICU Recovery Clinic Team for the project purpose is an interdisciplinary group of critical care experts that provide care during the ICU Recovery Clinic visit for patients recovering from a critical illness that required an ICU admission during a recent hospital stay and the support personnel required to facilitate the ICU Recovery Clinic appointment.

Transition of care has been defined as "between points of care" (Lasiter et al., 2016, p. 228). "A continuum of care" is another way to denote a period of medical care received from more than one provider (Kuehn, 2019, p. 1036). For the project purpose, transition of care will refer to the time period starting immediately after hospital discharge until return to care received by a primary care provider and includes the ICU Recovery Clinic visit. The duration of the transition of care is a period of approximately six weeks.

Hospital readmission is the "rate of rehospitalization" (Khan, Lasiter, & Boustani, 2015, p. 30). Another definition is an adverse event of hospital admission (Rhoades et al., 2015, p. 291). The Centers for Medicare and Medicaid Services defines a hospital readmission as an unplanned readmission for any reason within 30 days from the discharge of the initial admission (Centers for Medicare and Medicaid Services [CMS], 2018). Hospital readmission for this project is a health outcome measure defined as a subsequent hospital admission in the specified time period following discharge from the critical care hospitalization.

Health care utilization is defined by CMS (2018) as the utilization of health care services for which prior authorization has not been processed. One study reported health care utilization as rehabilitation or out-patient health care services including nurse/physician consultations (Jensen et al., 2016). For the purposes of this project, health care utilization is unscheduled medical care sought in an emergency department or urgent care facility within a specified period of time.

Theoretical Framework

Hildegard Peplau's theory of interpersonal relations in nursing. Hildegard Peplau's theory of interpersonal relations (TIR) focuses on the patient experience, the use of nursing practice to improve patient outcomes, and communication as the basis for relationship development (Martin & Chanda, 2016). Most often employed in psychiatric nursing settings, Peplau's theory posits three phases and six nursing roles through which a therapeutic relationship progresses. The three phases or stages are orientation, working, and resolution. A fourth phase, pre-orientation, is described in later publications. The six roles Peplau proposed are stranger, resource person, teacher, leader, surrogate, and counselor (Nelson, 2015).

Each phase of Peplau's theory correlates with nursing activities. The pre-orientation stage is a data accumulation phase in which the nurse collects information about the patient (Nelson, 2015). It is also in the pre-orientation phase that the nurse performs introspection to be aware of preconceived beliefs about the client, illness, or situation (Peplau, 1997). The orientation phase involves meeting the client, an initial exchange of information, and establishing expectations of care. The relationship building process is initiated in the orientation phase. In the working stage "major therapeutic activity occurs" (Nelson, 2015, pp. 260). An outline for patient care is determined. The resolution phase prepares the client for the end of the relationship. Prior to meeting, the nurse is a stranger to the patient. Beginning in the orientation

phase and continuing through resolution, the nurse assumes appropriate roles to promote health throughout the phases (Nelson, 2015).

The literature supports the use of Peplau's TIR in a number of health applications focusing on behavioral change for well-being. Hochberger and Lingham (2017) report on medication self-management in psychiatric patients. While not determined to be the most aligned model, the use of Peplau's theory is reported in a community pharmacy setting (Galindo, Fernandez-Llimos, Sabater-Hernandez, Martinez-Martinez, & Benrimoj, 2016). A therapeutic communication application has also been studied on anxiety and depression in coronary artery bypass patients (Zarea, Maghsoudi, Dashtebozorgi, Hghighizadeh, and Javadi, 2014). Peplau's theory is also frequently reported in nursing education applications (McCarthy, Trace, & O'Donovan, 2014; Deane & Fain, 2016).

Hildegard Peplau substantiated that human relationships directly influenced quality of life and that people are interdependent upon one another. Professional relationships with patients are each unique with the purpose of supplying needed help to the client (Peplau, 1993). While Peplau's theory is a practical nursing theory, interpersonal relationships are formed between patients and other health care team members as well. Therefore, Peplau's TIR is an appropriate framework for this collaborative quality improvement project.

Application to practice change. Peplau's theory highlights the interconnectedness of the healthcare team and patient exchanges toward the common goal of health improvement in this project. The central role of nursing, and by extension - the central role of the entire project team, in this mid-range theory is reflected in the project's intervention strategy. The progression through Peplau's stages and the project intervention activities align as depicted (see Figure 1).

Figure 1. Details of Project Activities within Theory Stages

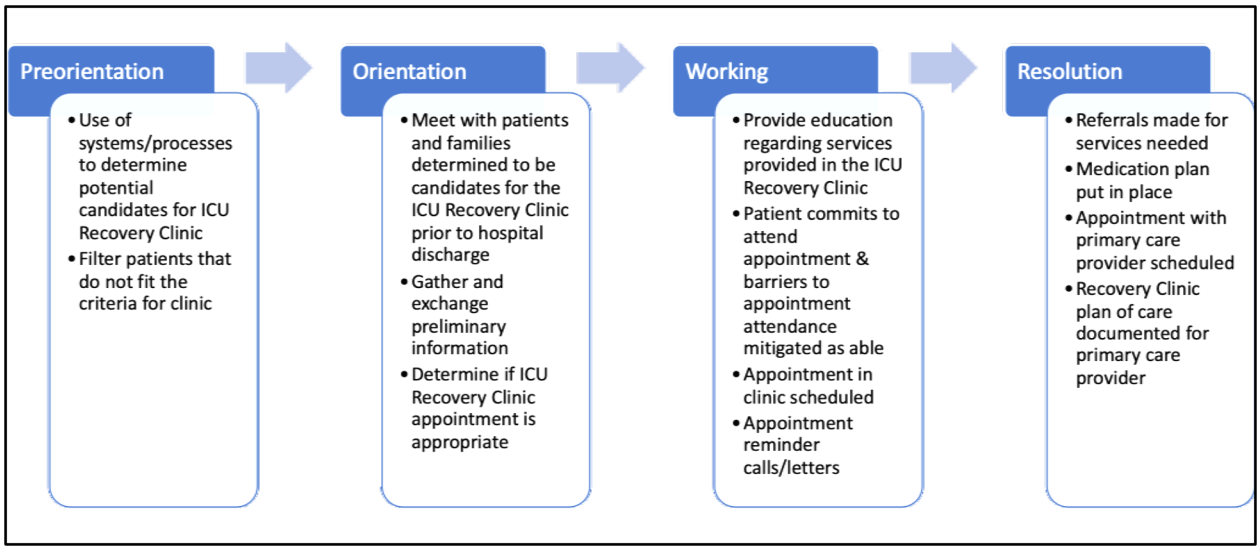

Figure 1. Alignment of project activities with theory of interpersonal relations. Adapted from "Theories Focused on Interpersonal Relationships," by S. Nelson, (2015). In J. B. Butts & K. L. Rich (Eds.), *Philosophies and theories for advanced nursing practice* (pp. 260-261). Copyright 2015 by Jones & Bartlett Learning.

Evidenced-Based Practice Change Theory

Kurt Lewin's change model. Lewin's change model is composed of three stages of change and is considered to be the foundation of change management (Cummings, Bridgman, & Brown, 2016). Cummings, Bridgman, and Brown (2016) submit that Lewin did not develop the three-step model, but that it formed from his work. Nonetheless, Lewin is credited with the easy to understand three-step change model which may be utilized in health care processes. Lewin's model proposes three stages of change oftentimes labeled unfreezing–moving–refreezing (Batras, Duff, & Smith, 2016).

Unfreezing is a phase of dissatisfaction with the current state. This stage builds momentum across an organization to promote the need for change (Batras, Duff, & Smith, 2016). While change may be uncomfortable or met with resistance, eventually the benefit of change outweighs the current standard providing the impetus for the change process (Hussain et al.,

2018). The moving phase involves identifying replacement solutions, testing new options to determine appropriateness of fit, and examining the advantages of changing (Wojciechowski, Pearsall, Murphy, & French, 2016). The refreezing step incorporates the change as the new standard process and establishes the sustainability of the change (Batras, Duff, & Smith, 2016). Lewin's change model has been utilized in nursing practice and has wide applicability for impacting bedside care (Wojciechowski, Pearsall, Murphy, & French, 2016).

Application to practice change. Lewin's three-step model will be the change structure adopted by the project team. As the literature supports, the model is suited for and has been utilized in health promotion (Batras, Duff, & Smith, 2016). The DNP project goal of increasing attendance in the ICU Recovery Clinic entails health improvement activity for the clinic population. The application of Lewin's model within this DNP project is visually represented (see Figure 2).

Figure 2. Details of Change Activities within the Project

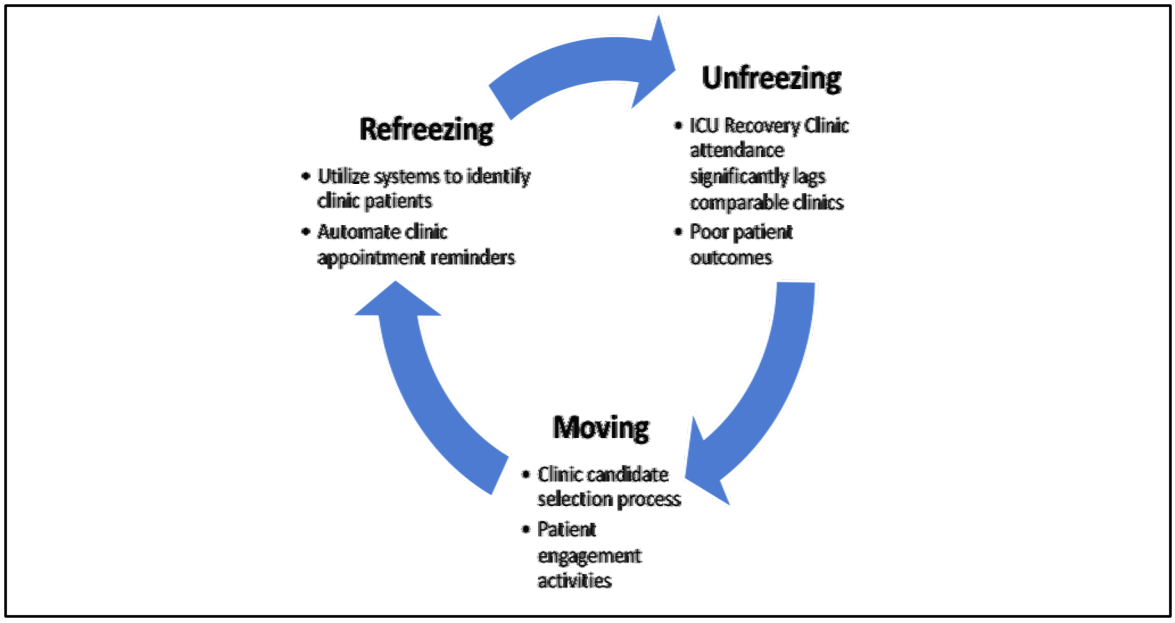

Figure 2. Application of Lewin's change model within project. Adapted from "Unfreezing Change as Three Steps: Rethinking Kurt Lewin's Legacy for Change Management," by S. Cummings, T. Bridgman, & K. G. Brown, (2015). *Human Relations, 69*(1), p. 34. Copyright 2015 by SAGE Publishing.

Summary

The preparation for a successful DNP project involves planning with the knowledge of theory application to practice and the tools of quality improvement. Hildegard Peplau's theory of interpersonal relations provides the foundation for the need and connection of the health care professional-client relationship. The service contract of health partnership is formed, agreed upon, completed, and terminated within the construct of Peplau's theory. In the same manner, hospital care becomes necessary for life sustainment, is performed as required, converts to no longer being essential, and discharge occurs. As an extension of care in the transition time after hospitalization, services are offered in the ICU Recovery Clinic for patients expected to benefit most. Utilizing Lewin's three-step model of change the project moves through the stages of change to improve the process by which the health care partnership services are offered, become known, and continue to function more effectively. In this way, improved health outcomes, improved patient experience, and improved service efficiency are the intended project goals to meet the IHI's Triple Aim Initiative (IHI, 2019).

Chapter Four: Pre-implementation Plan

Significant planning and preparation occur prior to implementing a quality improvement project. Project team members met for months to determine project objectives, goals, and feasible interventions. The pre-implementation plan for the project included introducing the project to the ICU Recovery Clinic team, working through the institution's technological processes, preparing content materials, and determining the process flow for identification of clinic patients and appointment setting in the clinic.

Project Purpose

The utilization of an ICU Recovery Clinic is to provide expert medical treatment and consultation during transitions of care after critical illness. The ICU Recovery Clinic is interested in increasing patient attendance to improve patient outcomes related to PICS, and morbidity and mortality after hospitalization for critical illness. The project purpose is to identify and implement process changes to improve patient identification and patient engagement, leading to improved ICU Recovery Clinic attendance.

Project Management

Organizational readiness for change. The ICU Recovery Clinic lead provider, also the site project champion, is connected to an SCCM initiative, Thrive™, focused on improving patient outcomes after critical illness. The Thrive™ initiative is a collaboration of SCCM members operating clinics, research, and programs generating data and reporting experiences of critical illness recovery. As part of the Thrive™ collaboration, the project site is a contributor to data generation and the site project champion is a contributing author on Thrive™ publications. The ICU Recovery Clinic serves the population of focus for the Thrive™ initiatives. Improving clinic attendance will further the programs within the Thrive™ initiative. The site project champion and critical care research group had determined poor clinic attendance was a barrier to

participation in Thrive™ initiatives and therefore, provided support and resources for planning and implementation of this quality improvement project.

Interprofessional collaboration. The DNP student leading the project serves as project co-leader. The site project champion, who is also the lead ICU Recovery Clinic physician, is the project lead partner. The ICU Recovery Clinic Team comprised of nurses, pharmacists, a project manager, and an appointment scheduler, are involved in aspects of patient identification, engagement, and scheduling improvement processes. Technology staff at the project site are involved in programming changes to the institution's systems to improve the identification of ICU Recovery Clinic patients.

Risk management assessment. A risk assessment in the form of a strengths, weaknesses, opportunities, and threats (SWOT) analysis was performed in the pre-implementation period in order to identify significant characteristics to support or hinder success of the project. Of particular concern were weaknesses and threats, which the project team maintained awareness and readiness to intervene if required. Strengths and opportunities were considered for further improvement potential.

A substantial project strength was engagement of the project team. The clinic staff and project team had worked well together for three years prior to project conception. The project team represented complementary medical disciplines and support personnel. Other project strengths included reasonable project aims, a simplified data collection plan, a concise project time line, and available technology staff to implement system changes.

Limited project weaknesses were identified. One project weakness was noted to be a single individual with the responsibility to schedule appointments, conduct appointment reminder phone calls, and mail reminder appointment letters. Another potential weakness may be the inability to alter the clinic schedule for patient convenience.

Project opportunities include the potential to apply successful interventions to other clinics within the institution. Increasing clinic attendance may result in increased research participation and reduced staff frustration from cancelled appointments or no-shows. Association and collaboration with Thrive™ provides a potential opportunity to share successful interventions for improved clinic attendance and patient outcomes at sites across the country.

An identified project threat concerns the data collection process. The clinic is primarily scheduled by one individual. The same person records cancelled appointments. Therefore, relying upon one support staff individual for project data collection represents a threat for data accuracy and completeness.

Organizational approval process. The project site is the DNP student's employer. The ICU Recovery Clinic non-attendance issue was known to the student and the site champion prior to the project conception. A project to increase clinic attendance was agreed upon by the site champion and DNP student. The site champion and DNP student project leader received project approval from the clinic director (see Appendix A).

Information technology. The project site uses the Epic™ software system customized for the institution. Clinic patients are identified through a combination of personal team member interaction with patients during the ICU stay and record review in the electronic health system. In order to further facilitate potential clinic patients, a discharge location chart created with Tableau™ was added to an existing Medical ICU data dashboard. Additionally, an Epic™ report request was placed for the ICU Recovery Clinic team to identify ICU patients over the past week that had required either vasopressor medications or mechanical ventilation. The ICU Recovery Clinic scheduler used an Excel spreadsheet to capture patient appointment data routinely for historical and project data (see Appendix B). In order to engage patients and families in self-

identification as potential clinic patients and to facilitate information exchange, an email address specifically to contact the ICU Recovery Clinic team was created within the institution's system.

Cost Analysis of Materials Needed for Project

Project costs include personnel time for programming in three different software systems, increased postage, printing costs, and paper supplies for appointment reminder letters, flyers, and clinic brochures. Increased clinic attendance increases revenue generation for the clinic as well as interfacility referrals. Programming changes represent a minor decrease in personnel time for clinic patient identification. However, utilizing the new methods of identifying patients does increase potential patient contacts and therefore, increases support personnel time, printing, paper, and postage costs. Prevention of one re-hospitalization generates an average savings of $10,400 and prevention of one emergency room visit generates an average savings of $2,200 (Agency for Healthcare Research and Quality, 2014; Ho et al., 2016). Total estimated project costs are $1,117 and estimated project revenue and savings are $15,342 (see Appendix C).

Plans for Institutional Review Board Approval

The project site has an Institutional Review Board (IRB). The ICU Recovery Clinic has been developed as a health care improvement measure and operates to reduce the gap in health care for this patient population during the transition back to primary care time period. The clinic also offers multiple research projects focused on various critical illness recovery aspects. The ICU Recovery Clinic itself has an IRB approval. This quality improvement project was submitted as an amendment to the ICU Recovery Clinic IRB application. The project site IRB approved the project and patient contact materials (see Appendix D). The project site IRB and the ECU IRB directors communicated via email and created a reliance agreement for this project (see Appendix E).

Plan for Project Evaluation

Outcome measurement. The project will measure ICU Recovery Clinic attendance rates. Attendance rates from the project intervention period will be compared to historical rates to evaluate intervention effectiveness. Components of the intervention will be measured to assess completion rates of the delivery of new education materials to patients while in the hospital, the number of instances a nurse visit was completed while in the hospital, and mailings of new appointment reminder letters to clinic patients.

Evaluation tool. Spreadsheets were used to collect appointment data for the project. The staff member responsible for scheduling appointments, conducting reminder phone calls, and mailing appointment reminder letters tracked these elements using Excel. Each completed component was recorded for every ICU Recovery Clinic patient (see Appendix B). Another spreadsheet was used to track which patients received ICU Recovery Clinic information brochures, nurse visits while hospitalized, and clinic appointment scheduled before hospital discharge (see Appendix F).

Data analysis. The number of patients attending appointments, cancelling appointments, and missing appointments without cancelling in the ICU Recovery Clinic will be totaled during the implementation period. These totals will be compared to the number of patients scheduled for an appointment in the clinic to determine a percentage of attended and not attended appointments. The attendance rates during the project will be compared to historical rates of ICU Recovery Clinic and Pulmonary Clinic attendance to evaluate intervention effectiveness.

ICU Recovery Clinic Team nurse contacts with potential ICU Recovery Clinic patients while still hospitalized will be tracked as an assessment of feasibility. Completed nurse visits will be correlated to appointment attendance. There are no standards or benchmarks for nurse visits influencing clinic attendance rates.

Data management. Data collection spreadsheets were stored on the institution's security protected shared servers. The servers are backed-up daily and managed by the information technology department. Shared servers allow each team member to access and edit the data as needed and eliminates the need for hard copies. Data will continue to be kept on ICU Recovery Clinic appointments as long as the clinic continues to operate and data are deemed necessary. Appointment data collection has been ongoing since clinic inception.

Summary

Implementation of this project to increase attendance in the ICU Recovery Clinic required significant preparation prior to implementation. The project leaders determined goals and evaluated strategies and goals. ICU Recovery Clinic fliers, brochures, and appointment reminder letters were created, revised, and approved by the organization's IRB. An IRB reliance agreement between the two institutions was established. The project data plan was supported by the team and adopted. Team roles and responsibilities were finalized in group meetings. Modifications to the project were made as needed throughout the pre-implementation phase.

Chapter Five: Implementation Process

Implementation of this project to increase clinic attendance required a team effort. The project focused on the processes to identify appropriate clinic patients and engaging with patients to communicate the value of attending a clinic appointment. Implementing improved patient identification, engagement, and communication practices required significant collaboration and encompassed all clinic operations aspects.

Setting

The project aimed to increase attendance in the ICU Recovery Clinic, which is a public non-profit, hospital-based outpatient transitional care clinic within a large academic medical center in western North Carolina. The clinic provides a comprehensive transitional care experience for adult patients recently discharged from a hospital stay that are recovering from a critical illness. While hospitalized for at least two days in the ICU, patients required treatment with either mechanical ventilation or vasopressor medication intravenous infusion for life support. This population of critical illness survivors have a higher probability of developing PICS. The ICU Recovery Clinic is staffed by critical care certified providers with experience in identifying and treating PICS to improve patient outcomes. As the ICU Recovery Clinic patient population is very specific and limited, the current clinic schedule is one afternoon per week. The clinic has received some minimal grant funding, but most financial support is obtained from insurance, Medicare or Medicaid reimbursements, and private-pay patient fees. The clinic providers are also involved in the SCCM Thrive™ collaborative to improve PICS patient outcomes as well as research efforts in various aspects of critical care recovery.

Participants

Project participants included the DNP student project leader, the lead clinic provider, ICU pharmacists, research nurses, clinic schedulers, information technology staff members, and a

research project manager. All project participants are employees of the medical center where the clinic is located. The lead clinic provider is the site project champion and a physician board certified in pulmonology and critical care. Occasionally, other critical care physicians assist in the clinic when the lead provider is unable to be present. A few ICU pharmacists are involved in the project. The pharmacists are the primary source for patient identification during the ICU stay leading to clinic referral. During the clinic visit, a pharmacist provides a full medication reconciliation and patient education session. The pharmacists interact with the primary team during the hospital stay to determine expected discharge plans and patient appropriateness for an ICU Recovery Clinic appointment. During the clinic visit, the research nurse interacts with clinic patients to determine eligibility and willingness for research participation. Clinic schedulers set clinic appointments, phone patients with appointment reminders, and mail appointment information to clinic patients. Information technology staff provide computer support and solutions with medical record systems that regulate hospital and clinic operations. The research project manager oversees regulatory and data collection aspects of research projects that recruit participants during the clinic visit.

Recruitment

Project participants were engaged in this project through two methods. Some project team members were organically incorporated in the project due to their role within the ICU Recovery Clinic. A few project members, such as the project manager and information technology staff, were specifically asked to join the team or complete a part of the implementation process by the project co-leaders when a project need or role was identified. The invited team members supported the project by creating technology applications to improve patient recruitment processes and data collection but did not remain engaged with the project through

implementation. The ICU Recovery Clinic staff remained project team members throughout implementation due to ongoing patient care roles.

The core project team readily agreed with the necessity of the project and were enthusiastic about the process changes being implemented. Several team members indicated that the newly created patient brochure would have a significant impact on the patients' understanding of the purpose for the appointment and what to expect during the clinic visit. Team members expressed that both of these matters had repeatedly arisen in conversations with patients and family members and were felt to be a barrier of clinic attendance. Somewhat surprisingly, no reluctance to participate in the project was perceived or voiced by any core team member even though current practices would change and additional effort would be expended for project data collection. Most team members have a clinical role at the academic medical center project site and as such, understand and support research and quality improvement processes. Therefore, the team participants appeared eager to support the project efforts and success of improving clinic operations, while also understanding the nature of the DNP student's role as team leader and necessity of this project for personal academic achievement.

Implementation Process

Once interventions and materials were sourced and finalized in the pre-implementation process, the team met to determine specific member roles, new process flows for patient identification and communication, and to set a timeline for project implementation and data collection. Several team roles had at least one new process flow and data collection component for the implementation period.

Patient identification. Critical care pharmacists continued to remain as the main source to identify patients for clinic referral. A new patient identification tool was provided by accessing a data dashboard already in use for in-patient medical ICU operations. Dashboard

access allowed pharmacists to identify medical ICU patients requiring mechanical ventilation or vasopressor infusions across all ICU services and even if the pharmacist was not on a service team. A new dashboard feature was created by information technology team members to help track the discharge location of ICU patients. The utility of dashboard access allows pharmacists to identify patients that may have been missed if not previously identified during the ICU stay. This feature was incorporated in the identification process as an additional measure to use as needed, likely weekly, to assist in patient referral generation. Pharmacists also planned to more thoroughly vet the patients during the identification process to determine barriers to clinic attendance such as residence distance to clinic, skilled nursing facility placement prior to hospital admission, and perceived need for discharge to skilled nursing facility of one month or longer. The process for referral notification to clinic scheduler remained unchanged.

Patient engagement and communication. Project leaders met with ICU unit managers to inform the managers about the ICU Recovery Clinic purpose and secure agreement for posting the new clinic informational fliers. The fliers list a new email address for the ICU Recovery Clinic where patients and families can request further information or self-identify for clinic consideration. The ICU Recovery Clinic email flow will be managed simultaneously by the lead clinic scheduler and lead clinic physician. The flyer also lists the clinic phone number which connects to the scheduler who will initiate pharmacist or physician evaluation of patient appropriateness for clinic referral.

For patients identified as clinic candidates while still hospitalized, research nurse team members instituted a new process to visit patients and caregivers once out of ICU. During the hospital visit, the research nurse would inform patient and caregivers about the clinic, provide the new patient brochure, and discuss the value of the clinic appointment paired with the patient's recovery goals. From the patient's hospital room, the nurse would contact the clinic

scheduler and determine a future clinic appointment. The patient and caregiver would be provided with an appointment card listing the date and time of the scheduled visit and containing clinic contact information. The nurse would also confirm the best contact information for the patient and caregiver after hospital discharge for appointment reminder notification. If an appointment was scheduled prior to hospital discharge, the appointment would print on the hospital after visit summary information that a bedside nurse would again review at the time of hospital discharge.

The clinic scheduler continued the current practice of calling to remind the patient of the appointment and ascertain planned attendance. A newly revised appointment letter with more specific visit information would be mailed to the patient approximately two weeks prior to the visit. The new clinic brochure would also be included in the mailed packet providing either a reminder of, or the initial receipt of, clinic services and purpose. During the reminder phone call, the clinic scheduler was authorized to mention the availability of a free parking voucher to facilitate clinic attendance.

Patient outcomes and data collection process. Pharmacists mark patient records for clinic referral in the EMR and notify the clinic scheduler of referrals by email at least once weekly. Calendar reminders were set for the pharmacists to prompt referral activity so there are no lapses in patient identification. The research nurses and clinic schedulers access the referrals in a folder within the EMR at least once weekly during project implementation. Calendar reminders were also set for research nurses and schedulers during the implementation period to prompt hospitalized patient contact. A new REDCap database was created by the project manager to track patient contacts, outcomes, and interventions. In the previous process, patient outcomes and clinic scheduling data were kept in an Excel spreadsheet by one scheduler. The database allows for multiple team member access and intervention tracking (see Appendix F for

intervention tracking). Research nurses and schedulers enter all patient contacts during the interaction, or as soon after, as possible. The data can be entered, viewed, and exported for project purposes as needed, but at a minimum the project leaders will review data collection monthly for completeness and evaluation of any process complications.

The implementation period spans from initiation on July 15, 2019 to completion on November 30, 2019. Successful implementation is defined as ability to carry out clinic scheduling processes by all team members and data collection completed without undue burden, as reported in team meetings. Project leaders will continue to seek team input and refine project processes for optimal clinic operation throughout implementation.

Summary

An implementation process and timeline were determined during a team meeting in which members of each role were present. Minor process changes included access to new tools to assist with patient identification, informational fliers, and a new email address specifically associated with the clinic. Major process changes involved nursing interaction with clinic candidates to educate and inform patients and caregivers of the services offered and a new data collection process to track project interventions. The team's positive support of the need for clinic improvements and scheduling process changes was a key component in successful project implementation.

Chapter Six: Evaluation of the Practice Change Initiative

The purpose of this project was to implement strategies to increase attendance in the ICU Recovery Clinic. The main improvement strategies implemented were a nurse-led education session with hospitalized patients recently discharged from the medical ICU and a re-designed ICU Recovery Clinic brochure detailing information about ICU recovery sequelae and services offered in the clinic. The project spanned a four-month time frame. The following data are project outcomes.

Project Leadership Qualifications

The project team was well-qualified to design and execute this project. The DNP student project leader has a Bachelor of Nursing degree with bedside experience in critical care, more than 10 years of nursing research experience, and national certifications in research coordination and as a dementia practitioner. The project champion is a physician with more than 10 years of experience, board certification in Pulmonology and Critical Care, member of the SCCM Thrive™ initiative, multiple publications on PICS recovery, and Director of the ICU Recovery Clinic. Both pharmacy team members are practicing critical care pharmacists with PharmD preparation and active participation and publications in pharmacy research. The clinic nurse has eight years of nursing experience, a Bachelor of Nursing degree and a Bachelor of Science degree in Health Promotions/Exercise Science. The project manager has Bachelor of Science in Public Health and Bachelor of Arts in Business Administration degrees, five years of clinical research experience, and national certification as a clinical research professional. The ICU Recovery Clinic scheduler is an administrative professional with over 15 years of experience.

Participant Demographics

During the project period, 49 patients were referred for a clinic visit. Patients referred to clinic ranged in age from 24-94 years old. Clinic referrals were 61% male (n=30) and 39% female (n=19).

Intended Outcome(s)

The intended outcome was to implement changes to increase clinic attendance roughly 15% above the historical clinic attendance rate of nearly 52% during the four-month project period. Additionally, the project aimed to develop a clinic brochure for patient distribution to provide education about the challenges faced during a critical illness recovery period that may be addressed in the ICU Recovery Clinic.

Findings. During the project period from July 15, 2019 through November 15, 2019, 49 patients were identified for clinic referral. The patients were followed by the DNP student project leader and ICU Recovery Clinic staff during the hospital stay to determine appropriateness for clinic visit and potential for a nurse-led education visit before hospital discharge. Of these, eight patients died or were discharged to hospice during the hospital stay. Table 1 displays the attendance, no-show, cancellation, non-scheduled cases, and death data collected during the project period. Of the remaining 41 patients, 25 received a nurse-led education visit and clinic brochure while hospitalized. Through nurse review of patient charts, five patients did not meet eligibility for an ICU Recovery Clinic visit and therefore, no nurse-led education visit was conducted during hospitalization. These cases are included in the "Not Scheduled" column of data in Table 1. In total, 69% of the patients eligible for a clinic visit received a nurse-led education session. Figure 3 provides project data with a visual comparison of nurse-led education visits to no nurse visit. During the project period, the overall ICU Recovery Clinic attendance rate was 59.3%. The attendance rate for patients receiving a clinic

brochure during a nurse-led education session was 63% compared to 55% in the group that did not receive a nurse visit. The nurse visits typically also involved scheduling a clinic appointment prior to hospital discharge. Compared to two-year historical clinic attendance rates, nurse-led education visits combined with the distribution of a clinic brochure increased clinic attendance 7.8%, and appointment scheduling increased 14%, although offset by a cancellation rate 12% higher. Notably, the no-show rate declined 20% during the project period.

Table 1.

ICU Recovery Clinic Appointment Data

Monthly by hospital D/C date	**Total Screened into Clinic** (RN-led visit)	**Arrived** (RN-led visit)	**No-Show** (RN-led visit)	**Cancelled** (RN-led visit)	**Not Scheduled** (RN-led visit)	**Deaths/ Hospice**
July 15-31, 2019	6 (0)	1 (0)	0	0	2 (0)	3
August 2019	12 (8)	6 (5)	0	3 (1)	2 (2)	1
September 2019	13 (5)	5 (2)	0	1 (1)	4 (2)	3
October 2019	14 (10)	4 (3)	2 (1)	4 (3)	3 (3)	1
November 1-15, 2019	4 (2)	0	0	1 (0)	3 (2)	0
Totals	**49** (25)	**16** (10)	**2** (1)	**9** (5)	**14** (9)	**8**

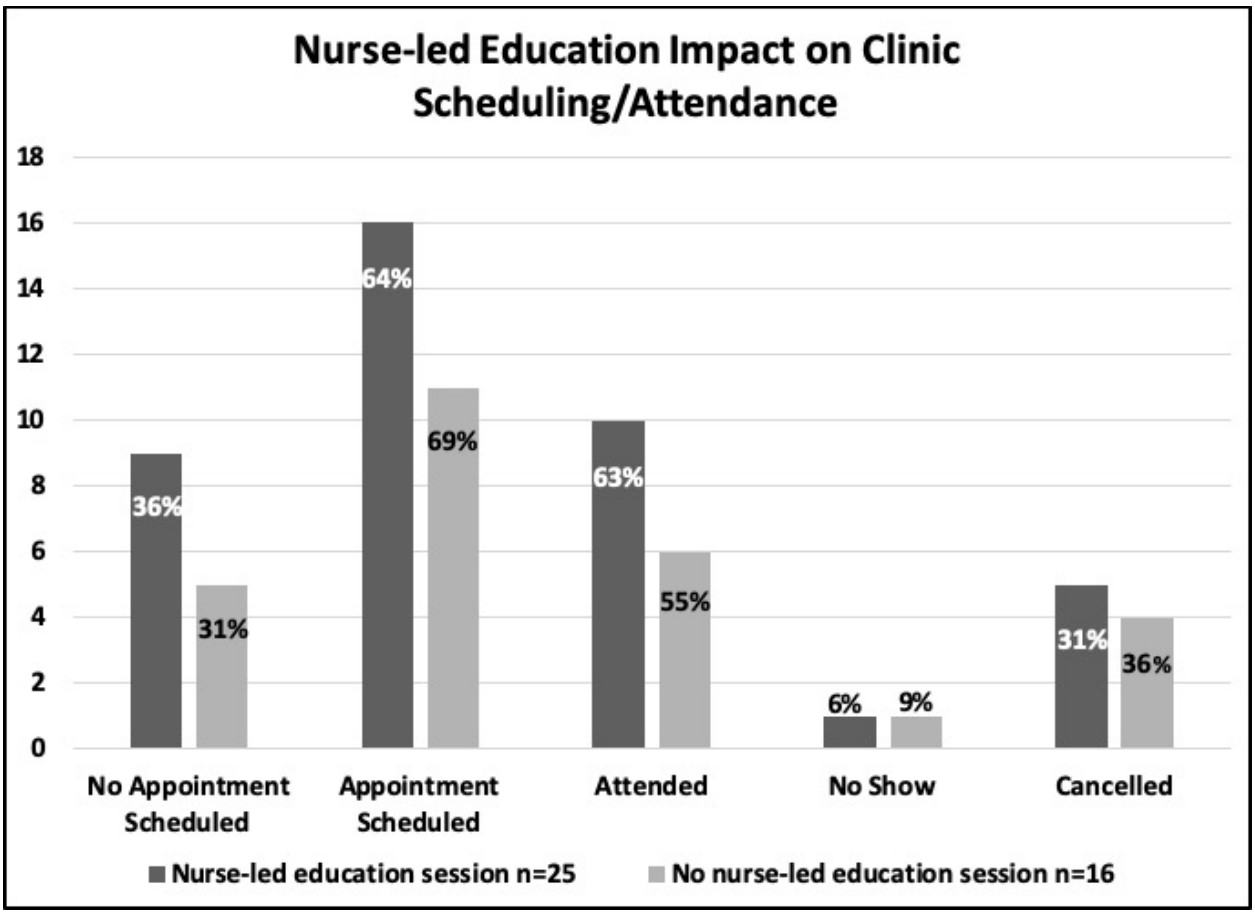

Figure 3. Nurse-led Education Sessions. This graph illustrates the impact of nurse-led education on clinic scheduling and attendance.

The redesigned ICU Recovery Clinic brochure was developed to detail common sequelae after critical illness and provide contact information for the clinic. The brochure is included as Appendix G. The brochure was provided to patients and families during nurse-led education sessions and in mailings sent from the scheduling staff for the ICU Recovery Clinic. The purpose of the brochure was to inform patients of what to expect during the clinic visit and clarify the reason for the clinic visit. Anecdotally, scheduling staff noted a reduction of questions and confusion from patients regarding the clinic visit after brochure implementation.

Summary

Nurse-led education sessions combine with clinic brochure distribution increased ICU Recovery Clinic appointment scheduling and attendance rates. The attendance rate was improved by almost 8%. These sessions also are instrumental in the meaningful decrease of the no-show rate for appointments. However, the cancellation rate of appointments is higher than expected in the nurse visit cohort. The cancellation rate was almost as high as the increase in appointment scheduling, and therefore, these rates offset each other. While no statistical calculation of the brochure impact alone was measured in the project, all ICU Recovery Clinic staff agreed that the brochure is comprehensive and a valuable addition for information dissemination about the recovery process and clinic services.

Chapter Seven: Implications for Nursing Practice

Health care transitions are critical time points in the continuity of care for patients. Improving transitions in care and health care delivery to patient populations are essential to increasing the quality of nursing practice. As such, this project incorporates the American Association of Colleges of Nursing (AACN) Doctor of Nursing Practice (DNP) Essentials I through VIII for nursing practice (American Association of Colleges of Nursing [AACN], 2006).

Practice Implications

Essential I: Scientific underpinnings for practice. Scientific evidence guides nursing practice to provide competent and appropriate care to patients. The DNP provider must be able to analyze and apply research and theory to improve patient outcomes and current practice. This project, developed and executed as part of the DNP program, required the DNP project student leader to demonstrate the scientific underpinnings for practice by recognizing an area of practice in need of improvement, performing a literature search, analyzing the literature for applicable strategies to reach project goals, and employing the evidence to change practice and processes with the intention to increase clinic attendance. The project was guided by nursing and organizational change theories.

Essential II: Organization and systems leadership for quality improvement and systems thinking. The integration of evidence from business, policy, economics, communications, and other fields enriches the practice of health care and improves delivery to populations. The development of this project involved creating a plan, a budget, a database, and organizational processes for a team of interprofessional health care providers. Meetings with the project team and systems leaders were utilized to elicit and apply changes in workflow and systems communication in the course of the project. Project execution demonstrates nursing leadership application of quality improvement processes leading to efficiency in health care

delivery. Increased attendance in one clinic has implications for clinic attendance increases system-wide.

Essential III: Clinical scholarship and analytical methods for EBP. The AACN direction for quality improvement in DNP practice is to provide patient-centered care. This project is designed to increase specialty medical provider evaluation in critical illness survivors, a population consisting of complex patients, often with multiple chronic conditions, consuming expensive and precious health care resources. Attending clinic appointments promotes patient safety through medical evaluation, timeliness by assisting in patient recovery, effectiveness and efficiency seeing multiple specialists in one location and timepoint, and equitable delivery of patient-centered care in an out-patient setting.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. Information systems utilization in this project was necessary to identify clinic candidates, communicate with project team members, and collect data. Pharmacy team members used the EPIC® electronic medical record system to identify clinic candidates and mark the records for clinic nursing visits. Nursing team members used the EPIC® electronic medical record system to locate clinic candidates for in-patient visits and to populate the project database. A REDCap® database was created for project data collection and clinic operation purposes.

Essential V: Healthcare policy for advocacy in healthcare. This project received approval from institutional level decision-makers for clinical care. Project planning and execution also involved approval and oversight from two ethics committees and direction, guidance, and support from parties across the state of North Carolina. The project results were presented to the project team, department leaders and policy makers in the health care system in charge of out-patient clinics, and to nursing faculty and future nursing leaders in the DNP

program. The project author plans to seek opportunities to further disseminate findings by presenting or publishing in nursing, quality improvement, or other applicable venues.

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. This project reflects the principles of interprofessional collaboration for improving patient and population health outcomes in all stages of development and implementation. The project team itself is interprofessional consisting of nurses, pharmacists, the DNP project student leader serving as project manager, an administrative support professional, and a physician. The DNP student leader collaborated with health system informaticists for technology development. Publication of the project will involve the peer-review process and may highlight practice change improvements in standards of care.

Essential VII: Clinical prevention and population health for improving the nation's health. Health care is delivered in many different settings by many different providers requiring many transitions, particularly across the life span. Improving transitions in health care affects all populations and the nation's health. This project focuses on critical illness survivors which is continually increasing with the advancement of health care. Due to the complexity of this patient population and organ failure, critical illness survivors require extensive healthcare resources for recovery and have increased susceptibility to infirmity. Therefore, the ICU Recovery Clinic visit is an important patient-to-provider contact point to assess patient healthcare needs, promote wellness, and prevent health decline and rehospitalization in a growing critical illness survivor population.

Essential VIII: Advanced nursing practice. By partnering with patients and health care professionals, DNP-prepared nurses advance the practice of nursing. This DNP project particularly embodies this essential through the process of patient interaction to foster clinic services. The nurse visit is a connection to the patient and clinic staff to promote health care

delivery. This project facilitated collaboration among an interprofessional team to improve patient outcomes and demonstrate nursing contributions and leadership.

Summary

Nursing clinical practice at the doctoral preparation level is guided by the framework of the AACN essentials (AACN, 2006). Incorporating all eight essentials into DNP projects demonstrates a standard of rigor for professional practice. The AACN essentials provide a measurement for DNP education and a public declaration of the capabilities of a DNP provider.

Chapter Eight: Final Conclusions

The final chapter of this paper communicates the project significance and conclusions. An overview of project strengths, weaknesses, and limitations will be detailed. Finally, suggestions for future directions involving ICU Recovery Clinic operations and hospital processes will be offered.

Significance of Findings

The overall project aim was to increase clinic attendance. Attendance in the clinic was increased during the project intervention and data collection period. This was accomplished by implementing nurse to patient/family interaction. Personal interaction to exchange information about the clinic and to gather information from the patient and family about attendance potential was the critical project component. Involving patients and families in clinical decision-making is providing patient-centered care.

The clinical course, hospital stay, and discharge planning are unpredictable events in this patient population. These important patient population characteristics had an ongoing effect on the project intervention. Events that affect scheduling in the ICU Recovery Clinic include discharge to a long-term care facility, newly diagnosed cancers or long-term cancer treatment plans, insurance or benefit status, and hospice or palliative care involvement. The variable hospital course in this patient population made timing of the nurse visit during hospitalization and timing the clinic appointment after hospitalization difficult. The intervention was more time consuming than anticipated. Therefore, one of the key values of this project was identifying the need to improve the clinic referral process, likely with a systems-level change in the hospital discharge planning practice.

Another important observation worthy of review is the appointment cancelation process. Patients cancelling appointments through the automated text reminder system and the “my chart”

features are not required, and at times not able, to provide a cancellation reason. The current systems also do not have an automated rescheduling process or alert to the clinic provider and staff that the appointment has been cancelled. Appointments may be cancelled at the last minute through a text or electronic method leaving a gap in the clinic schedule that could have been utilized by another patient or time that could have been repurposed by the clinic provider.

Project Strengths and Weaknesses

The project strengths included:

- Patient-centered focus and improvement goal with wide generalizability to post-hospital follow-up clinics for other patient populations;
- Accomplished with existing resources for a very low cost;
- The support and willingness of clinic staff to change processes targeted to improve patient experiences and clinic efficiency; and
- Project design included measurable clinic attendance outcomes demonstrating value to the institution.

The project was strongly supported by the Clinical Site Project Champion, Dr. Rita Bakhru, as well as the East Carolina University Faculty Mentor, Dr. Jan Tillman.

The project weaknesses included:

- Inability to incorporate and test systems-level changes;
- Reliance on human resources for clinic screening, impacting sustainability and cost; and
- Narrow scope of data collection to effectively correlate clinic visit attendance to preventing rehospitalizations.

This project represents an attempt to offer comprehensive quality improvement for a complex gap in medical care. The project design was necessary to also meet the goal of submission in partial fulfillment of the requirements of the DNP degree for the DNP student project leader.

Project Limitations

The project limitations included:

- Compressed implementation and data collection time period;
- Limited electronic systems-level support; and
- Limitations of resources to deliver care to the clinic population.

The compressed project time period limited the project scope to local intervention selections which impacts the ability to demonstrate the full value of the ICU Recovery Clinic on patient outcomes. The project limitations support the potential for committing further resources to improve clinic and hospital efficiency and positively influence patient outcomes.

Project Benefits

The dramatic decrease in the no-show rate by 20% during the project implementation and data collection period clearly points to the benefit of nurses' ability to personally interact with patients to produce positive outcomes. The project benefitted patients by improving communication using a clinic brochure and personal contact with a nurse to inform about potential common critical illness sequelae and services available. Patient and family involvement in medical care planning improves patient experiences. Attending an appointment in the ICU Recovery Clinic has the potential to improve each patient's circumstances physically, emotionally, and neurologically by identifying PICS impairments and offering treatment. The recovery process and timeline for patients treated for PICS symptoms may be shortened for those receiving treatment in an ICU Recovery Clinic. The project benefits patients by providing the information necessary to be aware of clinic services and value of the appointment.

The project benefitted the institution by increasing clinic attendance 7.8% in a 4-month timeframe, which improves clinic efficiency and financial operations. Nurse education sessions led to less confusion and fewer questions regarding the purpose of the appointment, reducing the amount of staff time required for clinic scheduling. Increasing patient attendance in the clinic, particularly by reducing the no-show rate in the clinic, improves clinic efficiency and reduces wasted staff time. Clinical staff are qualified and skilled team members, highly educated team members. The human resources required to operate a medical clinic come with a premium cost. Increasing attendance in the clinic allows for service reimbursement from insurance and other forms of medical coverage while reducing unbillable clinic operation expense. Clinic efficiency reduces medical waste and saves the institution financial resources that can be devoted to other services. The project increased attendance almost 8% in a short time frame and provides recommendations for further practice improvements, which translate to real financial gains.

Practice Recommendations

Potential future clinic considerations that may reduce the dependence on human capital and improve the identification of appropriate clinic referrals include: 1) investing in the creation of referral algorithms within EPIC™ to identify appropriate clinic patients, 2) creation of a Best Practice Alert (BPA) to clinic staff for patient engagement and appointment discussion when nearing hospital discharge, 3) a systematic change to the hospital discharge process that incorporates communication to interprofessional teams that a patient is preparing to discharge within a set time period, and 4) a review of the electronic methods to cancel clinic appointments that alert the clinic provider/staff and allow patients to report a cancellation reason. The patient referral process requires further review and modification to support sustainability and the clinic mission.

Programming changes within EPIC™ to identify appropriate clinic patients may include a review of the assigned patient Medical ICU service-line, a review of the patient problem list for key diagnoses, and review of procedures, medications, or billing charges for key treatments. Simultaneously, EPIC™ could evaluate clinic exclusions such as current Pulmonary clinic patients, oncology clinic patients, patients with Veterans benefits/insurance plans, and patients whose home address is too far away for practical clinic attendance. An automated list of patients could then be generated as the starting point for clinic referral which would allow for clinic eligibility chart review.

Creation of a BPA to the ICU Recovery Clinic staff/scheduler could prompt patient interaction prior to hospital discharge. A BPA could be programmed to fire when a discharge summary is initiated. The BPA could alert all clinical providers, case management, research teams, and the "gold card" scheduling team that a patient is preparing for hospital discharge. Initiation of the discharge summary can also fire a BPA to the current provider team to check with any specialty services about post-hospital patient follow-up to improve disjointed transitions of care.

At the time a clinical team feels a patient will reasonably discharge from the hospital in approximately 72 hours, a discharge summary should be initiated as standard hospital practice. Allowing a 3-day window prior to discharge can help with scheduling follow-up appointments, arranging for home supplies or home health needs, and alert research teams to arrange study protocol activities involving in hospital discharge. Instituting this change as standard hospital protocol can help define the expected discharge date and cue the chain of events across hospital operations to include pharmacy, physical therapy, occupational therapy, and others that need to be involved in discharge evaluation and recovery planning. Establishing a discrete time period

for hospital discharge summary initiation also has the potential to reduce discharge planning fatigue on staff.

A review of clinic appointment cancellation procedures should be conducted for process improvement. If a patient cancels an appointment in the ICU Recovery Clinic, scheduling staff should be promptly notified in order to determine if a patient needs resources to attend the appointment or if the appointment should be rescheduled. Evaluating the timing of automated appointment reminders may also provide further benefit for filling cancelled appointment slots. A system-wide review of clinic appointment cancellation processes may be beneficial for all institution clinic operations.

Final Summary

Treatment of critically ill patients, the sequelae that often accompany critical illnesses, and the recovery time and process of critical illness survivors is very costly. The recovery process after critical illness may be long and complicated, particularly for patients who develop PICS. There is a great need to focus improvement efforts on this patient population to reduce the incidence of PICS, the costs associated with PICS, and negative outcomes in the PICS patient population. Transitions of care, particularly in the critical illness survivor population, represents a gap in the current medical system whereby improving post-hospital clinic visits has the potential to improve health outcomes and patients' experiences while reducing medical costs in the process.

The interprofessional project team analyzed the primary drivers of clinic attendance to identify improvements associated with the patient notification process in order to communicate the value of a clinic appointment. Findings from the literature were utilized to determine changes to implement in order to improve clinic operations. Each nurse visit coupled with clinic brochure distribution was tracked and correlated to appointments scheduled, as well as clinic

arrival, no-show, or appointment cancellation. The data analysis revealed higher percentages of clinic attendance with lower rates of no-show and cancellations in the group of patients referred to the clinic who received a nurse visit during their hospital stay and were provided a clinic brochure during the nurse visit.

Nurse-led patient education sessions combined with the use of a clinic brochure are a valid combination to increasing ICU Recovery Clinic attendance. The project implementation period lasted four months and conducted 25 nurse-patient visits resulting in a 7.8% attendance increase. Additionally, the utilization of nurse-patient interaction with clinic brochure distribution decreased no-show appointments 20%, further improving clinic efficiency and increasing the value of the project's financial impact.

The project establishes that clinic attendance can be positively influenced in this patient population. The project demonstrates how utilizing the nursing process to involve patients in appointment scheduling decision-making allows for patient ownership of their care, which may explain the dramatic decrease in appointment no-show rates. This project exemplifies the Triple Aim Initiative set forth by the IHI whereby improving clinic attendance can improve health outcomes, patient experiences, and practice efficiency. The design, execution, and results of this project clearly display the influence nurse leadership provides to improve patient outcomes and quality of life while increasing efficiency in health care operation, translating to thousands of precious healthcare dollars saved.

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Appendix A

Organizational Letter of Approval

To East Carolina University College of Nursing:

We, at [redacted] Health, have reviewed Lori Flores's DNP Project Proposal "Improving Transitions of Care after Critical Illness". Ms. Flores has organizational support and approval to conduct the project within our institution clinic. We understand that the timeframe for this project is from the date of this letter through April 30, 2020. Implementation at the project site will occur August/September through November 30, 2019, unless otherwise negotiated. We understand that for Ms. Flores to achieve completion of the DNP program, dissemination of the project will be required by the University which will include a public presentation related to the project and a manuscript submission will be encouraged.

Our organization has deemed this project as a quality improvement initiative. Our organization is aware that this project will be processed first through our organizational IRB and then through the University and Medical Center Internal Review Board of East Carolina University (UMCIRB). Our organization does have an Internal Review Board (IRB).

Thank you,

Appendix B

Data Collection Tool Pre-Implementation

Schedule appt 3-4 weeks post d/c						letter sent			
Last name	**First Name**	**DOB**	**MRN**	**Admit Date**	**D/C Date**	**Y/N**	**Follow-up appt date**	**Arrival Status**	**Notes**

Appendix C

Cost Benefit Analysis

Projected Costs

Item	**Cost per unit**	**Quantity of units**	**Total Costs**
Personnel Costs			
Epic Data Developer (ZipRecruiter.com, 2019a)	$50.00/hour	~4 hours	$200.00
Epic Report Developer (ZipRecruiter.com, 2019a)	$50.00/hour	~4 hours	$200.00
Tableau Developer (ZipRecruiter.com, 2019b)	$41.00/hour	~4 hours	$164.00
RN Interaction with Patient (ZipRecruiter.com, 2019c)	$8.00/patient	~60 patients	$480.00
Patient Materials			
Paper	$.02/page	500 sheets	$10.00
Printing	$.25/copy	120 copies	$30.00
Postage	$.55/letter	60 letters	$33.00
Total Costs			**$1,117.00**

Projected Revenue and Savings

Potential Revenue and Savings	**Revenue/Savings per unit**	**Quantity of units**	**Total**
Revenue Generation			
Office Visit Level 5 CPT 99215 (CMS, 2019)	$148.00	~12	$1,776.00
Personnel Savings			
Physician Time (Bureau of Labor Statistics, 2019a)	$100.00/hour	~6 hours	$600.00
Pharmacist Time (Bureau of Labor Statistics, 2019b)	$61.00/hour	~6 hours	$366.00
Medical Care			
Prevention of re-hospitalization	~$10,400.00 per hospitalization	~1	$10,400.00
Prevention of Emergency Visit	~$2,200.00 per visit	~1	$2,200.00
Total Savings			**$15,342.00**

Appendix D

IRB Approval

MEMORANDUM

Office of Research
INSTITUTIONAL REVIEW BOARD

[redacted]

To:

From:

Date:

Subject: Evaluation of Outcomes following Critical Illness through a MICU Recovery Clinic
Amendment 25 for IRB Study #IRB00031295

Study Documents:
Protocol Version: Recovery Clinic CRF 08 21 17-Echo Table final.docx, Recovery Clinic IRB revised 08 21 17 final accepted.docx; Informed Consent Version: Recovery clinic consent 04 10 15. revised 01 28 16 final.docx (approved); Advertisements: After the ICU Trifold Brochure 6 3 2019 final[2].pdf, ICU Recovery Clinic Flyer 06 03 2019.docx; Other Documents: BPI-SF-24h-SAMPLE.pdf, CAPE_voice recording and EAT-10.doc, Connor Davidson Resiliency Scale.pdf, ICU Recovery Letter Revised Letterhead 06 03 2019.docx, ModifiedMSKpainquestionnaire.docx

The amendments listed below have been approved in accordance with HHS regulations for the protection of human research subjects that provides for the expedited review and approval of minor changes in previously approved research [45 CFR 46.110(b)(2)]. This action of the Board does not extend the term of approval for this protocol.

The amendment includes the following:

Implementation of a Quality Improvement project to increase overall attendance in the ICU Recovery Clinic.

This application indicates that advertising materials will be used for research purposes. Please consult with Creative Communications to ensure the appropriate visual identity is put forth.

[redacted]

Appendix E

IRB Reliance Agreement

SMART IRB

Acknowledgement of Site Agreement to Cede IRB Review and Reviewing IRB to Provide Oversight

This form documents that:

1) [redacted]

and

2) East Carolina University has agreed to cede IRB review to [redacted] Review Board for the study noted below.

Study Title:	Evaluation of Outcomes following Critical Illness through a MICU Recovery Clinic: Implementation of a Quality Improvement project to increase overall attendance in the ICU Recovery Clinic.
Overall PI:	[redacted]
Relying Site Investigator:	Lori A. Flores

IRB review will be ceded under the SMART IRB Master Common Reciprocal Institutional Review Board Authorization Agreement.

Acknowledged by (sign/date):

Reviewing IRB designee Signature: Brian Moore	**Date:** 6/14/19
Print Name: Brian Moore **Title:** Director HRPP & IRB	
Relying Institution Designee Signature:	**Date:**
Print Name: Michael R. Van Scott **Title: Senior Associate Vice Chancellor for Research and Institutional Official**	

www.smartirb.org

Funded by the NIH National Center for Advancing Translational Sciences through its Clinical and Translational Science Awards Program, through grant number 3UL1TR002541-01S1.

Appendix F

Intervention Tracking Tool

Last name	First Name	DOB	MRN	Admit Date	D/C Date	Letter Sent Y/N	Follow-up appt date	Arrival Status	Notes

Received RN visit while hospitalized (Y/N)	Received ICU Recovery Clinic brochure (Y/N)	Clinic appointment scheduled prior to hospital discharge (Y/N)

Appendix G

ICU Recovery Clinic Informational Brochure

Emotions

Approximately 30% of ICU patients experience depression, anxiety, and/or post-traumatic stress disorder (PTSD) following hospital discharge. Family members may also experience these emotions. Chronic health issues, family relationship challenges and financial difficulties may worsen these problems. Patients and their family members should seek support for these problems.

- **Depression:** It is common for patients to experience sadness, crying, sleep disruption, poor appetite, and/or loss of energy or interest in activities during recovery.
- **Anxiety and Panic Attacks:** ICU patients often experience delusions, paranoia, hallucinations, and nightmares. After discharge, many patients will have fragmented memories and confusion about what occurred during their hospital stay. Feelings of fear and uncertainty may cause a general sense of anxiety or panic attacks.
- **Post Traumatic Stress Disorder:** While in the ICU, patients have a lot of physical and psychological stressors. Common PTSD symptoms include flashbacks, vivid dreams, nightmares, and difficulty falling or staying asleep.

Please discuss these issues with a doctor to help find relief and ways to cope.

- **Resources to Help:**
  Wake Forest ICU Recovery Clinic:
- **Websites to Visit:**
  MyICUCare.org

We are here to help. Call us if you would like to schedule an appointment with the ICU Recovery Team in the clinic. We have doctors, pharmacists, nurses, and other specialists to help you during your recovery process.

Wake Forest® Baptist Health

Pulmonary, Critical Care, Allergy & Immunologic Diseases
Medical Center Blvd.
Winston-Salem, NC 27157
336-716-4649
wakehealth.edu/Pulmonary-Critical-Care-Allergy-and-Immunologic-Diseases

Wake Forest® Baptist Health

Life After Leaving the Intensive Care Unit

A Guide for Patients and Their Loved Ones

This handout is designed to provide a brief overview of what to expect after leaving the Intensive Care Unit (ICU). Each person's recovery process will be unique.

A Mission to Care. A Mission to Cure.

Post-Intensive Care Syndrome

Post-Intensive Care Syndrome (PICS) is defined by new or worsening impairment in cognition (thinking), mental health, and/or physical function after critical illness. Symptoms may start in the ICU and may persist once you are home.

Cognition and Memory

- **Cognitive Difficulties:** About half of ICU survivors experience cognitive impairment (including difficulties with memory, focus, and attention) when discharged from the hospital. These symptoms may be disabling enough to 1) require a caregiver for some time and 2) to prevent an immediate or eventual return to work.
- **Amnesia:** Most patients have hazy or absent memory from their time in the ICU. Instead, patients might recall hallucinations, nightmares, distortions of actual events, or even events that did not occur. It may be helpful to discuss this with a family member, caregiver, or physician to learn more about what happened in the ICU.

Dr. Rita Bakhru is an ICU doctor specializing in recovery from critical illness. For more information or to schedule a visit in the ICU Recovery Clinic, please call 336-716-4649.

Other Changes

- **Hair Loss, Dry Skin, and Bruising:** After a critical illness, some patients experience a temporary period of hair loss, perhaps for even months after discharge from the hospital. This is not unusual and the hair usually grows back. Patients may also experience dry or itchy skin, and bruises due to the tubes or injections received in the ICU. These will improve with time.
- **Sex:** When recovering from a critical illness, many patients experience a decreased sexual desire, complicated by anxiety or a lack of energy. Patients should discuss these feelings with their partner. If ongoing medical problems present a concern, patients should seek the advice of a physician.
- **Smoking:** The time period following discharge from the ICU is an ideal time to consider quitting smoking. Quitting smoking completely (including vapes and e-cigs) is best. Please ask your physician for help.
- **Alcohol Intake:** A patient should consult his or her physician before consuming any alcoholic drinks. Alcohol may interfere with certain medications or medical conditions.

Nutrition and Exercise

- **Nutrition:** Patients may experience difficulty eating due to a lack of appetite, sore mouth/throat, change in taste, or weakness. Eating small meals more frequently, drinking (fluids more often and adding) liquid supplements [and staying hydrated] may help with the transition.
- **Physical Function:** Patients may spend weeks or even months in the ICU with very limited physical activity. Because of this, activities that previously were effortless may now be difficult or impossible. This is due to a variety of reasons including loss of muscle mass, muscle weakness, joint problems and fatigue. Physical rehabilitation or physical therapy may help you regain your physical function. We can help connect you with a physical therapist to work with you.
- **Exercise:** When returning to exercise, patients should set realistic targets and avoid overexertion. Patients recovering from a physical injury or surgery should consult a physician for guidance.