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Chemotherapy Side Effects at Home: A Nursing Impact

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CHEMOTHERAPY SIDE EFFECTS AT HOME: A NURSING IMPACT

Presented in Partial Fulfillment of the
Requirement for the Degree of
Doctor of Nursing Practice

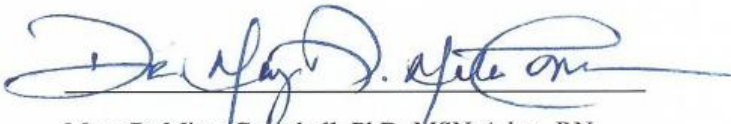
Nova Southeastern University
Health Professionals Division
College of Nursing

Gwendolyn Saint-Clarke
2017

NOVA SOUTHEASTERN UNIVERSITY
HEALTH PROFESSIONS DIVISION
COLLEGE OF NURSING

This project, written by Gwendolyn Saint-Clarke under direction of Dr. Mary D. Mites Campbell, Project Chair, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

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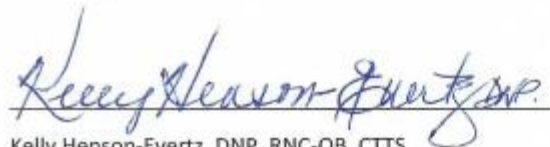
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Certification

We hereby certify that this capstone project, submitted by Gwendolyn Saint-Clarke, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Nursing Practice degree.

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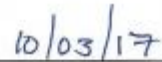


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Date

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Abstract

Background: Approximately 32% of all lymphoma patients experience immunocompromised severe avoidable side effects of nadir at home after discharge postchemotherapy. The certified oncology nurses employed at a large metropolitan hospital in Atlanta, Georgia, lack standardized discharge guidelines that include regulatory organizations' recommendations to assist patients/families with at-home self-management of the avoidable side effects.

Purpose: The purpose of this quality improvement project was to utilize the institution's existing postchemotherapy discharge protocol to assess certified oncology nurses' knowledge of severe avoidable side effects of nadir; modify the existing healthcare institution's postchemotherapy discharge protocol to reflect standardized practice for promoting clinical practice continuity by leading organizations; conduct multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline; evaluate the oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy after modified guideline implementation; and collaborate with the intraprofessional team to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide hospital implementation.

Theoretical Framework: The theoretical framework used was Benner's model of nurse proficiency: expert nurses develop skills and understanding of patient care through a sound educational base and a multitude of experiences.

Methods: The existing postchemotherapy discharge protocol was used to develop a developed standardized guideline incorporating regulatory organizations' recommendations for severe avoidable side effects of nadir postchemotherapy for nursing

discharge information and patients' at-home management. Ten oncology registered nurses on a 16-bed oncology unit participated in two 10-question Likert scale questionnaires based on the existing guideline (pretest) and the modified guideline (posttest) before and after an educational intervention. A quantitative nonparametric descriptive design was used. The questionnaires were analyzed with a two-tailed paired *t* test, $p = 0.05$, $CI = 95$, $SD = 12$.

Results: Nurses significantly improved from pretest to posttest—63% before receiving modified guideline education and 83% after receiving education ($p < 0.005$).

Conclusion: A standardized guideline that included regulatory organizations' recommendations for at-home management of severe avoidable side effects of nadir showed significant nurses' improvement in knowledge and competency. The effectiveness of nurses disseminating discharge information was paramount when knowledge awareness and appropriate patient/family assessment were incorporated in the discharge instructions.

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Chemotherapy Side Effects at Home: A Nursing Impact

Chapter 1

Nature of Project and Problem Identification

According to the American Cancer Society, average Americans' risk of developing lymphoma during their lifetime is approximately 1 in 50 (American Cancer Society, 2017; Siegel, Miller, & Jemal, 2016). A diagnosis of lymphoma can be devastating for patients and their families, as they are faced with numerous overwhelming and discouraging challenges. The burden of lymphoma lies not only in the diagnosis of the disease but also in treatment, affecting both the psychosocial and physical aspects of the patient's wellbeing.

The National Comprehensive Cancer Network (NCCN) is comprised of the world's most leading cancer centers that work together to develop treatment guidelines for most cancers. The NCCN is devoted to research that improves the quality, efficacy, and efficiency of cancer care. The NCCN has several programs that provide clinicians and healthcare professionals with access to tools and knowledge that can help guide the decision-making when treating cancer.

Approximately 97% of the cancers affecting patients in the United States have specific guidelines for management and intervention. Each guideline provides recommendations for supportive care for the patients after chemotherapy has been administered to help maintain quality of life and rehabilitation. These guideline

recommendations are evidence-based to treat the different types of cancers and the side effects that can possibly develop from these treatments. Continuous updates are also provided when new information becomes available (NCCN, 2017). Providing standardized education to nurses who instruct patients at discharge can alleviate the burden felt and improve health outcomes for both the patient and caregiver. The complexity of care necessities the need for nurses to be competent in providing discharge instructions that will enable the patients to manage the side effect postchemotherapy in the comfort of the home.

The NCCN applied the term *distress* to describe the multifaceted conditions, but the rigorousness of the side effects can be stronger than mere distress (Bergerot & Ferreira de Araujo, 2014). Side effects from the treatment can be overpowering and crippling, with the length of hospital stay not only costly but depressing. To alleviate such distress, patients and their families need to be educated on the treatment modality, the side effects of each drug in conjunction with each other, the prognosis of the treatment, and the possible length of stay during and after treatment (Bergerot & Ferreira de Araujo, 2014).

Lymphoma patients are at risk for developing infections during nadir, which occurs within 7 to 10 days' posttreatment (Wood & Payne, 2012). This development is due to the low white blood count from the effects of the chemotherapy (Mank, Lelie, Vos, & Kersten, 2011). The daunting side effects of chemotherapy mean that lymphoma patients are faced with tremendous complications and are usually hospitalized for extensive periods, ranging from 3 to 4 weeks for recuperation. Patients and caregivers

can manage these side effects in the comfort of their homes (Pederson, Koktved, & Nielsen, 2013).

The purpose of this quality improvement project was to assist specialized oncology nurses caring for such patients with the promotion of self-care through effective discharge instructions for patients' better discharge management after hospitalization. This purpose was accomplished through the evaluation of patient discharge instructions and modification of an existing protocol to effectively implement practices derived from an evidence-based protocol for symptom management (Pederson et al., 2013). The Cancer Patient Experience Survey in 2013 reported that between 61% and 89% of lymphoma patients stated that they received understandable explanations of the side effects of chemotherapy treatments. It is imperative that nursing professionals work with their patients to ensure that the information provided is relevant and in the format required for patient discharge (Roe & Lennan, 2014).

Problem Statement

Currently, certified oncology nurses at a nonprofit metropolitan hospital in Atlanta, Georgia, lack standardized guidelines for discharging lymphoma patients postchemotherapy to reduce possible severe avoidable side effects of nadir for at-home management.

Purpose Statement

The purpose of this quality improvement project was to utilize the institution's existing postchemotherapy discharge protocol to assess specialized certified oncology nurses' knowledge of severe avoidable side effects of nadir; modify the existing healthcare institution's postchemotherapy discharge protocol to reflect standardized

practice for promoting clinical practice continuity by leading organizations (i.e., American Society of Clinical Oncology [ASCO], Oncology Nursing Society [ONS], and American Cancer Society [ACS]); conduct multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline; evaluate the oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy after modified guideline implementation; and collaborate with the intraprofessional team to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide implementation at large metropolitan hospital in Atlanta, Georgia.

Project Objectives

The following were the objectives of this project to:

1. Utilize the institution's existing postchemotherapy discharge protocol to assess specialized certified oncology nurses' knowledge of severe avoidable side effects of nadir by Week 1 after approval by the Nova Southeastern University Institutional Review Board.
2. Modify the existing healthcare institution's postchemotherapy discharge protocol to reflect standardized practice for promoting clinical practice continuity by leading organizations (i.e., ASCO, ONS, ACS) by Week 4.
3. Conduct multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline by Week 6.
4. Evaluate the oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy after modified guideline implementation by Week 8.

5. Collaborate with the intraprofessional team to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide implementation by Week 12.

Theoretical Foundation

The theoretical framework selected for this quality improvement project was Benner's (1982) model of nurse proficiency. This model focuses on the concept that expert nurses develop skills and understanding of patient care over time through a sound educational base and based on a multitude of experiences. Benner's model suggests that, in the achievement and development of a skill, one passes through five levels of proficiency: novice, advanced beginner, competent, proficient, and expert. With reference to the current quality improvement project, this theoretical framework emphasizes the need for application of the five stages of skill to examine the validity and reliability of nurses' competency during lymphoma patient discharge.

The framework was used to simplify career improvement and continuing education in the nursing arena. This model has been proven to be a useful tool to improve measuring competencies in clinical performances in the healthcare setting (McEwen & Wills, 2011). Eventually, nurses gain a wealth of knowledge that facilitates the transition to status as experts in providing quality care for each patient.

Support

Benner (1982) pointed out the importance of the application of knowledge and skill as an essential part of nursing practice for the development of expert nurses. According to Luntley (2011), nurses are knowledgeable in performance of duties but, based on their acquired skills and experiences, there can be gaps in performance. As a

result, the nurses' functions will determine how knowledgeable they are on any given task (Luntley, 2011).

Brenner's theory is an effective teaching tool that has successfully transformed the nursing practice for several decades by helping nurses develop from beginner to proficient. Utilizing this tool allows nurses to provide proper patient discharge assistance to patients in the management of postchemotherapy care. As illustrated in the figure below, Benner (1982) posited five levels of nursing proficiency: Level I, novice; Level II, advanced beginner; Level III, competent; Level IV, proficient; and Level V, expert.

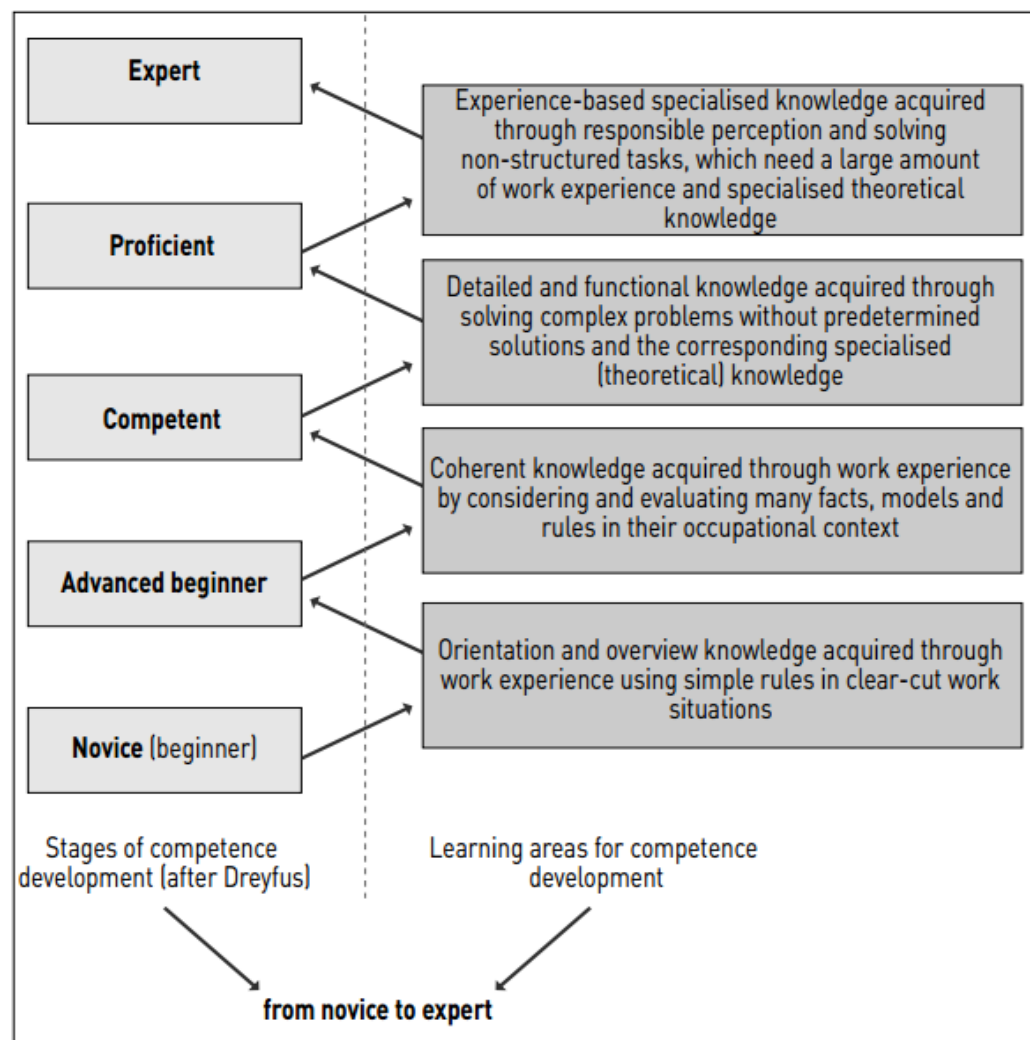


Figure. Benner's stages of clinical competence (Rauner, 2007).

Process. The application of the model to nursing practice can influence the process of nursing that outlines the five levels of clinical competency. Each of the five levels builds on the previous one, and nurses must thoroughly master each level after the first (novice) before progressing to the next. The process is long and progressive for development of nursing competence beyond clinical understanding to the application of knowledge congruency in the field of practice. Nurses' experiences with the instruction of more seasoned nurses at higher levels of competence comprise the major means of learning. Over time, nurses learn the process with competency.

Outcomes. Benner's (1982) model allows nurses to predict clinical situations and prioritize patient/family or clinical needs based on those predictions, which can improve outcomes. The model's foundation is formulated around "content knowledge" rather than "content understanding" for shifting the care paradigms to a consistency phenomenology. Experiential learning and willingness to be taught lead to competence at each level. When nurses can move from a state of "Novice" to "Expert," they will be able to incorporate experience with knowledge in any situation to develop into competent professionals.

Application of Theory

Ten nurses at the oncology unit of a large metropolitan hospital currently involved in the discharge process of postchemotherapy patients were selected based on Benner's (1982) level of hierarchy from novice to expert nurses. Level I nurses were the newly hired nurses referred to as novice, who did not acquire the skill to use flexible judgment when discharging oncology patients. Level II represented the advanced beginner nurses, who had previous experience in discharging postchemotherapy patients but still required more development and a readiness to learn. Level III nurses were the competent nurses

who after several years of experience still needed to demonstrate developmental improvement with regard to the required skills to effectively discharge postchemotherapy patients (Benner, Tanner, & Chesla, 1992; Luntley, 2011; Park, 2015).

Level IV nurses were the proficient nurses who had years of experience, skill, and knowledge to efficiently and effectively communicate what was needed for successful discharge planning. Level V nurses were the expert nurses who successfully manipulated the discharge process to safely discharge patients and inform caregivers of the correct symptom management. Level V nurses follow the discharge process and ensure that the patients and caregivers are provided with adequate information (Benner, Tanner, & Chesla, 1992, 2009). Based on the nurses' competency in effective discharge instruction appropriate for the patients and caregivers for treatment of side effects of postchemotherapy, an existing discharge tool was identified and modified to assist nurses with the discharge planning for postchemotherapy patients.

Significance of the Project

This quality improvement project provided a standardized guideline to enhance nurses' knowledge of avoidable severe side effects experienced by lymphoma patients discharged postchemotherapy for at-home management. The project's outcomes demonstrated that nurses can become knowledgeable and competent in avoidable severe side effect of nadir postchemotherapy for at-home management after discharge. The project is significant to nursing practice, healthcare outcomes, healthcare delivery, and healthcare policy.

Nursing Practice

Scientific development in nursing has changed nursing practice in addition to practice guidelines (Roe & Lennan, 2014), especially in oncology and other immunocompromised care issues. Nursing practice has evolved to engage patient-family center care that promotes at-home care management and patient/family satisfaction (Moore & Watter, 2013). As the evidence-based science of nursing has experienced a paradigm shift, the opportunity for influencing practice becomes paramount for the development of clinical practice guideline and nurses' competency in distributing information (Rauner, 2007). In 2012, NCCN published evidence-based guidelines for the prevention and treatment of cancer-related infections (Wood & Payne, 2012), such as those suffered by lymphoma patients postchemotherapy. The guidelines were focused on eliminating clinical practice gaps and lapses in care regimens and were based on decades of research and successful health outcomes.

Healthcare Outcomes

This project influenced healthcare outcomes by providing the organization with an opportunity to achieve goals of attaining the highest possible level of care and producing best patient outcomes that are cost effective and timely. Due to immunocompromised systems in patients postchemotherapy, especially after discharge to home, the task of dealing with the side effects can be significant and overwhelming (Mank et al., 2011). The side effects associated with postchemotherapy can be life threatening.

Clinical practice guidelines, promoted by the American Society of Clinical Oncology, can promote at-home self-management of postchemotherapy for patients and

families. Nurses' discharge procedures postchemotherapy can vary in competence (Gehan et al., 2013), and expert nurses can provide the optimum instruction for successful discharge planning (Park, 2015). Appropriate discharge instruction by nurses for patient at-home self-care can reduce hospital readmissions and stays significantly (Hansen-Turton et al., 2013) and advance patient recovery at home (Lee, 2015; Roe & Lennan, 2014).

Enhancing nurse competencies in discharge information can effectively produce a positive at-home outcome and reduce readmission. If patients are given the appropriate discharge information on managing nadir at home, this information can eliminate approximately 7 to 10 days of hospital readmission and costs. Nurses' competencies are also increased in disseminating discharge information.

Healthcare Delivery

The quality improvement project will influence healthcare delivery by altering practices that are currently employed with discharging lymphoma patients. Development and implementation of programs that educate nurses on the requirements for communication and collaboration to effectively discharge patients will increase positive patient outcomes. Changes in discharge practices, including the use of technology, may facilitate awareness and open communication with other healthcare systems to adopt best practices. This project will also lead to the identification of nurses' needs for continuous education in compliance with evidence-based practices relating to the discharge of lymphoma patients after chemotherapy treatment.

Healthcare Policy

Current healthcare policy increasingly recognizes the importance of patient experience in determining care (Methven, 2010). Lymphoma is a major health problem in the United States and one of the leading causes of death (American Cancer Society, 2016). Patients with lymphoma may not be able to maintain employment due to treatment and recovery time. The cost of hospital stay is exorbitant, and time spent outside of the hospital can significantly reduce direct costs for patients. Over the last several years, the number of uninsured Americans has increased, as well as the prevalence of patients who are diagnosed with lymphoma (Bicki et al., 2013).

Healthcare policy created through governmental actions, institutional decision making, or organizational standards form a framework to facilitate delivery of healthcare services and practices to address healthcare needs. Healthcare policies influence multiple care delivery issues. These include healthcare disparities, cultural sensitivity, ethics, access to and quality of care, financing, and issues of equity and social justice in the delivery of healthcare (American Association of Colleges of Nursing [AACN], 2006).

The impact of lymphoma can have lasting financial impact that surpasses insurance coverage for the disease. Policy changes at the federal level have increased the complexity and uncertainty of reimbursement for providers and patients (Murphy, Ko, Kizer, & Bindman, 2015). Many patients are either uninsured or underinsured and may not be able to afford the care that is needed. The hospital may be required to absorb the cost of care, which can become a financial burden on the healthcare system (Wiatrek et al., 2013). With hospital and national healthcare policies that mandate standardized

postchemotherapy instructions and apply to all patients, they may be given the opportunity to recuperate in their homes, significantly reducing their costs.

Summary

In this chapter, the background of the project was described, as well as the need for implementation. For lymphoma patients, postchemotherapy side effects can be devastating, including infection, after discharge. Specialized nurses at a nonprofit metropolitan hospital in Atlanta, Georgia, lack standardized guidelines and have insufficient knowledge for discharge of lymphoma patients. The purpose of this quality improvement project was to modify and evaluate an existing healthcare institution postchemotherapy protocol for education of oncology nurses in patient lymphoma discharge.

This quality improvement project employed Benner's (1982) model of nursing proficiency, which incorporates five levels, novice to expert. The five levels of Benner's model additionally were applied to the five objectives that guided the project. The project's significance for improving nursing discharge information to patients' discharge was implemented to reduce severe at-home avoidable side effects of postchemotherapy.

Chapter 2

Review of the Literature

Lymphoma is associated with aggressive treatments, incapacitating side effects, severe physical problems, and uncertainties (Pedersen et al., 2014). Lymphoma is a subset of cancer that is presently viewed as a chronic illness, requiring complex care, and characterized by a growing demand for patient-centered quality care across the cancer trajectory. Patients undergoing chemotherapy treatment often experience both physical and psychosocial problems affecting their lifestyles and quality of life (Garcia, 2014; Gehan, Omran, Magda, Molia, & Mohga, 2013).

Ineffective care during nadir associated with postchemotherapy treatment can cause severe complications when the blood count is at its lowest point (Grove, Burns, & Gray, 2013; Roe & Lennan, 2014). According to Aapro et al. (2011), nurses are expected to be competent with discharge instructions for postchemotherapy lymphoma patients and caregivers to sustain quality of life and maintain home care. The purpose of this project was to modify and evaluate an existing postchemotherapy protocol for education of oncology nurses in patient lymphoma discharge to address the severe avoidable side effects of nadir at home.

Literature Searches

The literature review focused primarily on literature from 2010 to 2017 for identification of existing standardized processes and studies relating to care of lymphoma

patients experiencing side effects of chemotherapy. Several studies prior to 2010 were used because of specific relevance or application to the theoretical framework. Searches were conducted with search engines such as Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, MEDLINE, and other Internet sources and complete databases to locate appropriate articles. Keywords used to identify potential articles included *chemotherapy nursing competency, nursing instructions, discharging chemotherapy patients, nadir postchemotherapy, home management, a nursing perspective, patient satisfaction, and quality nursing care.*

Benefits of Standardized Discharge Education

Treatment of the side effects of chemotherapy has received wide attention (Carr, Vissers, & Cook 2014; Printz, 2015; Streckmann et al., 2014). Left untreated, side effects of chemotherapy, such as febrile neutropenia (low white blood cells), chemotherapy-induced nausea and vomiting, uncontrolled diarrhea, and mucositis can cause delays in treatment, deficits in nutrition, or death (Printz, 2015). Nurses' assessment of the ongoing problems of chemotherapy side effects has been less studied in the United States than in other countries. In the United Kingdom, assessment was conducted regarding chemotherapy services that led to development of a national policy (Roe & Lennan, 2014).

Over the last 15 years, many changes have taken place to improve the services offered, comparable to those in Europe and the United States (Roe & Lennan, 2014). Despite the knowledge of the nurses and the care they provide, there was still a lack of assessment skills. The United Kingdom Oncology Nursing Society provided guidance to practitioners and employers for providing safe care with regard to nurse-led

chemotherapy services and to ensure that patient care was not compromised (Roe & Lennan, 2014).

An exploratory descriptive study was conducted by Gehan et al. (2013) at the National Cancer Institute, Cairo University, to evaluate the quality of care provided to patients receiving chemotherapy treatment. Results from the study showed gaps in the care provided by the nurses. Their education was limited, as the vast majority were graduates of technical institutes of nursing. The researchers pointed out that nursing care is paramount to patient health. Nurses are responsible for educating patients and families on the quality of their health and possible outcomes, for helping patients understand the care they will receive in order to help them, and for actively participating in their care. As a significant part of the healthcare team, nurses play an important role in improving the quality of care (Gehan et al., 2013).

Garcia (2014) conducted an evaluation of patients' ability to cope during the difficult times in their diagnoses, treatment, and treatment side effects. The focus was on nurses' capability to provide effective education for the patients at times they were most vulnerable. A diagnosis of lymphoma is devastating to the patient and affects wellbeing, causing anxiety and depression, which have severe consequences (Bergerot & Ferreira de Araujo, 2014; Garcia, 2014). Patients who are suffering from anxiety and depression are sometimes incapable of performing self-care behaviors which are necessary to manage the common side effects of chemotherapy. The study results showed that nurses' provision of patients with beneficial information can help patients cope, decrease their anxiety, and improve their health outcomes (Garcia, 2014).

Patients undergoing therapy can develop neutropenia, which may delay treatment. Patients' quality of life and the effects on their families of the patients' chemotherapy-induced neutropenia during nadir was assessed by Methven (2010). Emphasis in this study was placed on the nurses' role of providing support to help prevent delays in treatment. Nurses' education, advocacy, and support roles for patients were explored, as well as quality improvements and proactive management by the multidisciplinary team (Methven, 2010).

Guidelines for prevention and treatment of infections accompanying cancer should be incorporated into clinical practice (Wood & Payne, 2012). Patients' levels of distress and increases in quality of life were demonstrated by Bergerot and Ferreira de Araujo (2014) with nurses' provision of education. Not only verbal and written methods should be used for patient education but also online and media resources (Zeng-Treitler et al., 2008). Both nurses and patients can learn evidence-based approaches transmitted by information technological methods for education on at-home treatment (Kvedar et al., 2015; Lavin et al., 2015). Evidence-based approaches used during lymphoma treatment have been proved to prevent complications and recurrent hospitalizations. When used in daily practice, guidelines can improve patient outcomes and reduce healthcare costs (Wood & Payne, 2012).

Successful Discharge Procedures

The literature emphasized the need for nurses to be educated in postchemotherapy at-home management of severe avoidable side effects of nadir. Nurse's competencies were challenged sometimes by shorter hospital length of stays and patient loads. Gehan et al (2013) used a cross-sectional descriptive design to test the competencies of Finland

nurses. The self-assessment data were collected with an electronic nurse competence scale, and statistical analyses were performed.

The results showed different ranges of competencies of nurses, from moderate to excellent. Significant relationships were found between nurses' levels of competence and age, work experience, work rotation, and permanent position. The researchers concluded that it is important to provide continuous nursing competency, of which one of the most important is patient-centered education focused on patients' well-being and safety (Gehan et al., 2013).

Proficient nurses apply years of experience, skill, and knowledge to efficiently and effectively communicate what is needed for successful discharge planning. In discussing nurse competency levels, Park (2015) noted that the expert nurse can successfully manipulate the discharge process to safely discharge patients and inform caregivers, providing the correct information relative to the necessary care after treatment. Continuous education and growth allow the nurse to follow the discharge process and ensure that patients and caregivers are provided with adequate information (Park, 2015).

Successful discharge after chemotherapy treatment has beneficial economic consequences as well. When patients recuperate in their homes, the costs associated with hospital accommodations are reduced by approximately 7 to 10 days. This is a significant factor associated with the recovery process (Hansen-Turton et al., 2013). Appropriate pre-discharge education by nurses can enhance patient at-home recovery (Lee, 2015; Roe & Lennan, 2014; Zeng-Treitler, Kim, & Hunter, 2008).

Incorporation of Guidelines in Clinical Practice

A study was conducted by Bergerot and Ferreira de Araujo (2014) to assess cancer patients' extent of distress and quality of life throughout chemotherapy at three points in time. Based on the severity of the lymphoma and the treatment received, over the course of the study high levels of distress decreased and quality of life increased, as measured by two self-reports. A deciding factor was nurses' competency in providing proper instructions to patients during and after treatment. A greater demand was demonstrated in the domains of emotional and functional wellbeing (Bergerot & Ferreira, 2014).

The researchers suggested that for health improvement outcomes of lymphoma patients, nurses must be competent, in the interest of both patients and caregivers to lessen their burdens during the time of illness. Despite study limitations, such as small sample and use of only one oncology facility, the results indicated the need for education by nurses as an integral part of care. Nurse education in aspects of cancer and chemotherapy effects must be centered on their learning needs (Bergerot & Ferreira de Araujo, 2014).

Internet Use for Better Patient Outcomes

Proper discharge instructions, a requirement of the Centers for Medicare and Medicaid Services and the Joint Commission on Accreditation of Healthcare Organizations, are crucial for patients to effectively manage their care after treatment. Typically, this pertinent information is presented and explained verbally and through written formats. These means may present challenges for patients with low literacy levels (Halverson et al., 2015). To this end, it is imperative that discharge information offered to

patients include websites and other media sources that may provide additional information for understanding that would better assist the patients and caregivers to ensure effective self-care in the home (Zeng-Treitler et al., 2008).

Information technology can aid nurses in education of patients for their continued implementation of guidelines at home (Lavin, Harper, & Barr, 2015). Nurses can learn strategies of technology to guide patients at home toward compliance with treatment (Kvedar, Cove, & Everett, 2014). Nurses can use technology to increase their own knowledge of patient care and help empower cancer patients with guidelines for home use through information technology (Groen et al., 2015). With regard to the present project, the use of technology for postchemotherapy discharge guidelines for nurses' education of lymphoma patients about nadir at home can help nurses, patients, and their families.

Summary

Evidence-based clinical practice guidelines implemented by nursing can significantly influence successful at-home care and management outcomes. The competency of nurses provides a congruency in the information given to patients and families at discharge, in addition to nurses' abilities to assist in the reduction of postchemotherapy avoidable severe side effects of nadir for at-home self-management. According to Roe and Lennan (2014), the benefits of standardized discharge education enhances nurses' knowledge and empowers patients' and families' self-proficiency. In addition, Gehan et al. (2013) echoed other research that supports the need for nurses to broaden their cancer-related care, especially patients' at-home management.

Chapter 3

Methods

The purpose of this quality improvement project was to utilize the institution's existing postchemotherapy discharge protocol to assess specialized certified oncology nurses' knowledge of severe avoidable side effects of nadir; modify the existing healthcare institution's postchemotherapy discharge protocol to reflect standardized practice for promoting clinical practice continuity by leading organizations (i.e., ASCO, ONS, ACS); conduct multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline; evaluate the oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy after modified guideline implementation; and collaborate with the intraprofessional team to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide implementation at a large metropolitan hospital in Atlanta, Georgia.

Project Design

This quantitative project used a nonparametric descriptive design. Two Likert scale questionnaires were implemented at two different periods, pretest with existing guideline, and posttest with modified guideline, to certified oncology registered nurses. The questionnaires were administered before and after evidence-based education to assess nurses' knowledge of avoidable severe side effects of nadir postchemotherapy for patient discharge and at-home management.

The pretest questionnaire, administered as a baseline, included demographic items and the preexisting discharge guideline. The posttest included the modified discharge guideline. The questionnaires were analyzed using a two-tailed paired *t* test, *p* value = 0.05, *CI* = 95, and *SD* = 12. The SPSS statistics dataset was used to analyze data and create tables.

Setting

The setting for the project was an oncology inpatient unit located in a nonprofit hospital in Atlanta, Georgia. The oncology medical-surgical unit has 16 beds and is staffed to accommodate effective and efficient patient care. The unit is equipped to provide treatment for patients who are diagnosed with lymphoma by 10 specialized nurses who are trained to provide care before, during, and after chemotherapy treatments through the instruction of several oncologists.

Inclusion Criteria

Nurses included in the project were full-time certified oncology registered nurses employed by the hospital. Nurses must have had 1 year or more work experience on the lymphoma unit where the project was conducted. The nurses had to speak, read, and write in English.

Exclusion Criteria

Nurses excluded from the project were full-time, part-time, or per-diem certified or noncertified oncology registered nurses working at the organization through agencies or on contracts. They had to have had less than 1 year of work experience with lymphoma management or work on the oncology unit. The nurses were not proficient in speaking, reading, and writing in English.

Ethical Considerations

This project was exempt from approval of the Nova Southeastern University Institutional Review Board because it did not directly affect human subjects and dealt with nurse competency in providing proper discharge instructions. A letter of exemption was provided (Appendix A). Letters of support and permission to link the discharge instructions to the nonprofit hospital's established procedures were obtained from the management (Appendix B).

Project Phases/Objectives

The project's implementation occurred at several timeframes to meet its objectives:

Objective 1: To utilize the institution's existing postchemotherapy discharge protocol to assess specialized certified oncology nurses' knowledge of severe avoidable side effects of nadir by Week 1 after approval by the Nova Southeastern University Institutional Review Board (Appendix A). The project clinical site provided letters of support (Appendix B).

This objective was accomplished by review of the healthcare institution's existing postchemotherapy discharge protocol used by the certified oncology nurses to educate patients on avoidable severe side effects of nadir for at-home self-management.

Objective 2: To modify the existing healthcare institution's postchemotherapy discharge protocol to a guideline that reflected standardized practice of regulatory organizations (i.e. ASCO, ONS, ACS) for promoting clinical practice continuity.

This objective was accomplished by use of standardized practice guidelines from regulatory organizations (i.e. ASCO, ONS, and ACS) to change the existing discharge protocol to a standardized guideline. This process consisted of two phases that included

an assessment of the certified oncology nurses' knowledge of the existing postchemotherapy protocol and avoidable severe side effects of nadir for at-home self-management.

Phase 1: A participatory brochure and letter were presented to the certified oncology nurses with information on the project's description (Appendices C, D, E). These materials included the approval content from the institution's intraprofessional team governed by the Nursing Research Council. Participating nurses completed an Informed consent (Appendix F).

Phase 2: A pretest Likert scale 10-question questionnaire was administered to assess the certified oncology nurses' knowledge of the existing postchemotherapy discharge protocol and severe avoidable side effects of nadir postchemotherapy at home (Appendix G).

Objective 3: To conduct several multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline that incorporates severe avoidable side effects of nadir for at-home self-management.

This objective was accomplished in two phases:

Phase 1: A postchemotherapy discharge guideline including regulatory guidelines were developed. The guideline incorporated severe avoidable side effects of nadir for at-home self-management postchemotherapy discharge (Appendix H).

Phase 2: Three 7am to 7pm educational seminars were conducted on three different shifts to capture the majority of the oncology nursing staff. The modified postchemotherapy guideline, a nadir educational discharge checklist, and a nursing

teaching brochure were provided to promote nurses' competency on severe avoidable side effects of nadir postchemotherapy for at-home discharge management (Appendix I).

Objective 4: To evaluate oncology nurses' knowledge of the severe avoidable side effects of nadir postchemotherapy for at-home discharge management after modified guideline implementation.

This objective was accomplished with a posttest Likert scale 10-question questionnaire to assess the certified oncology nurses' knowledge and competency on the modified postchemotherapy discharge guideline and severe avoidable side effects of nadir postchemotherapy for at-home management (Appendix J). A nonparametric two-tailed paired *t* test was used to analyze the differences between participants' pretest and posttest scores before and after educational seminars.

Objective 5: To collaborate with the intraprofessional team, especially the Nursing Research Council (NRC) to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide implementation.

This objective was accomplished through biweekly NRC meetings to determine if the modified guideline was feasible for the oncology nursing staff and system wide adaptation. The information disseminated to the oncology nursing staff was presented at staff meetings, face-to-face discussions, and unit group huddle round sessions.

Timeline

The timeline for this project took place over 12 weeks. Objective 1 was completed by the end of Week 1. Objective 2 was completed by the end of Week 4, including both phases. Objective 3 was completed by the end of Week 6, including both phases.

Objective 4 was completed by the end of Week 8. Objective 5 was completed by the end of Week 12.

Resources/Budget

Costs related to the project included web design, website domain registration, website package, and SurveyMonkey subscription. Costs also included supplies for the educational program and tokens of appreciation to participants. The total cost for the project was \$368.91, as itemized in Table 1.

Table 1

Project Resources and Budget

Category	Item	Description	Quantity	Total
Web Design	Weebly.com	Starter site	12 months	\$49.00
			6 months	\$19.01
	Weebly.com	Pro-Upgrade domain	2 years	\$67.90
Printing Services	Paper, ink and custom printing and binding	Printing		\$500.00
Weekly Thank You for Office Staff	Edibles	Pastries and coffee	\$15.00 x 5	\$75.00
			\$30.00 x 1	\$ 30.00
	Appreciation token for staff	Coffee cup/ office pens with logo		\$50.00
Questionnaire	SurveyMonkey	Collection of data and analysis	3 months	\$78.00
Total Costs				\$ 868.91

Summary

This quality improvement project was conducted to utilize an existing postchemotherapy discharge protocol to assess specialized certified oncology nurses' knowledge of severe avoidable side effects of nadir; to modify an existing healthcare institution's postchemotherapy discharge protocol to reflect standardized practice for promoting clinical practice continuity by leading organizations (i.e., ASCO, ONS, ACS); to conduct multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline; to evaluate the oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy after modified guideline implementation; and to collaborate with the intraprofessional team to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide implementation at a nonprofit hospital in Atlanta, Georgia.

The project received supportive letters from both Nova Southeastern University Institution Review Board (Appendix A) and the practice site institution Nursing Research Council (Appendix B). All outcomes were achieved by assessment, development, implementation, and evaluation of certified oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy discharge for at-home management. The implementation of the project was cost effective and proved to be feasible and acceptable for the healthcare institution's utilization.

Chapter 4

Results and Discussion

According to the American Cancer Society (2016), approximately 1 in 50 Americans are at risk for developing lymphoma during their lifetime. Approximately 32% of all lymphoma patients experience immunocompromised avoidable side effects postchemotherapy that can occur at home (Magge & DeAngelis, 2015). When nurses incorporate discharge education that provides patients and families with information on severe avoidable side effects of nadir postchemotherapy discharge for at-home management, the patients and families are more likely to manage at-home symptoms without seeking rehospitalization.

Based on Benner's (1982) stages of clinical competence, the certified oncology nurses associated with the project varied in their postchemotherapy baseline knowledge. To participate in the project, certified oncology nurses had to have at least 1 year or more of experience. Table 2 illustrates their stages of competence by years of experience. Five in Proficient, Competence, and Advanced Beginner had over 5 years of experience, and three in Advanced Beginner had 1 to 2 years, followed by two at 2 to 4 years.

Results of Evaluation of Project Objectives

The participants were defined by Benner's stages of competence and gender, as illustrated in Table 3. Of the 10 participants, only the male was expert, and the most females (4) were Advanced Beginner, followed by Competent (3), and Proficient (2).

Table 2

Nurses' Stages of Competence (N = 10)

Stages of Competence	1-2 Years	2-4 Years	Over 5 Years
Expert	N/A	N/A	1
Proficient	N/A	N/A	2
Competent	N/A	1	1
Advanced beginner	3	2	1
Novice (beginner)	N/A	N/A	N/A

Note. All project participants worked at least 1 year or greater on the lymphoma unit.

Table 3

Stages of Competence by Gender

Stages of Competence	Female	Male
Expert	0	1
Proficient	2	0
Competent	3	0
Advanced beginner	4	0
Novice (beginner)	0	0

Note. The participants consisted of women ($n = 9$) and men ($n = 1$) who comprised the sample of 10.

Project Objectives Results

Objective 1: To utilize the institution's existing postchemotherapy discharge protocol to assess specialized certified oncology nurses' knowledge of severe avoidable side effects of nadir.

This objective was accomplished by the exemption from Nova Southeastern University's Institutional Review Board (Appendix A) and letters of support from the medical institution (Appendix B). The project identified that the existing postchemotherapy discharge protocol for oncology nurses to educate patients on avoidable side effects of nadir resulted in the development of a discharge standardized guideline for increasing nurse's knowledge and competency. Based on the standardized processes, a 10-item pretest questionnaire was developed to obtain data on levels of nurse competency (Appendix G). Ten nurses responded to the invitation to participate (Appendix C), and these nurses were sent a letter of information about the study participation (Appendix E) and attended training seminars. All 10 of the certified oncology nurses signed and completed informed consents (Appendix F). The questionnaire was posted on SurveyMonkey, and participants were e-mailed a URL link to the pretest survey.

Objective 2: To modify the existing healthcare institution's postchemotherapy discharge protocol to reflect standardized practice for promotion of clinical practice continuity by leading organizations (i.e., ASCO, ONS, ACS) by Week 4.

This objective was met by the scholar utilizing the existing protocol and modifying it with the guidelines and practices of the ASCO, ONS, and ACS. The preexisting protocol was not specific to postchemotherapy lymphoma patients dealing

with side effects of nadir at-home. Information from the preexisting protocol was used to complete the new evidence-based modified discharge guideline (Appendix H). The modifications were presented to the NRC for evaluation. Upon approval by the NRC (Appendix B), the education sessions were developed and presented to the participants.

Objective 3: To conduct multifaceted training seminars to disseminate the modified postchemotherapy discharge guideline by Week 6.

This objective was accomplished through the nurses' educational training development and material resources provided on the modified postchemotherapy discharge guideline for participants (Appendix I). The materials were available on a special website designed for this purpose. The instruction was conducted through a group PowerPoint presentation, as well as individually, for 14 days at different intervals. After this period, all participants received another e-mail with the URL link to the posttest (Appendix J).

Objective 4: To evaluate the oncology nurses' knowledge of severe avoidable side effects of nadir postchemotherapy after modified guideline implementation.

This objective was accomplished by the implementation of a pretest and posttest (Appendices G, J) to assess the certified oncology nurse's knowledge and competency of severe avoidable side effects postchemotherapy for at-home management. The assessment took place with a nonparametric two-tailed paired *t* test to analyze differences between the test scores (i.e., before and after the educational seminars). Findings are reported later in this chapter.

Objective 5: To collaborate with the intraprofessional team to determine if the modified postchemotherapy discharge guideline was feasible and acceptable for system wide implementation.

This objective was met through the development and implementation of the modified guideline (Appendix H) that incorporates standardized recommendations from professional organizations to increase nurses' knowledge and competency at discharge to educate patients and families in avoidable side effects postchemotherapy for at-home management. The modified guideline was disseminated through staff meetings, face-to-face individual discussions, huddle rounds, and a nursing education board on the nursing unit. The certified oncology nurses' feedback was positive, with a 100% participation pretest and posttest modified guideline implementation. The modified guideline was reviewed and 100% accepted by NRC. The intraprofessional team including the NRC recommended that the modified guideline be distributed to nonproject participants for care consistency and congruency.

The statistical analysis of pretest and posttest scores showed nurses' significantly improved knowledge from 62.50% to 83.33% ($CI = .95, p < 0.005$), with 100% of the certified oncology nurses participating. Each nurse participated at 100% in the modified guideline and discharge process. The intraprofessional team, including the NRC, recommended the modified guideline for system wide utilization after the project feasibility and acceptability were approved.

Discussion of Findings of the Project

Objective 1 indicated that the existing postchemotherapy discharge protocol for nurse education of lymphoma patients was deficient. As in previous research (Gehan et

al., 2013; Roe & Lennan, 2014), nurses lacked comprehensive information about at-home procedures for patients to avoid side effects of nadir. Participating nurses recognized the beneficial role they could play in learning how to help patients at discharge cope with at-home nadir, similar to the findings of Garcia (2014). Nurses participating in the current project were enthusiastic about learning how to help the lymphoma patients postchemotherapy with avoidable severe side effects of nadir for at-home management.

The results of the statistical analysis, with a p value of < 0.005 , showing significant improvement from pretest to posttest indicated that the new standardized modified guideline had a significant influence on nurses' increased knowledge and competency in providing postdischarge information to postchemotherapy discharge patients. The results of Objectives 1 and 2 demonstrated a significant improvement in relation to the probability of the modified guideline being recommended.

Objective 3 included the training seminars for dissemination of the standardized guideline that incorporated regulatory professional organizations' recommendations for increasing nurses' knowledge and competency in avoidable severe side effects of nadir postchemotherapy at-home management. To avoid gaps in certified oncology nurses' knowledge and competency, all seminars were developed to meet the required skill set for standardizing the discharge processes. The educational seminars and preprinted supplementary materials proved to be assets to the project's outcomes. The statistical results showed that standardizing the discharge guideline discharge information on avoidable severe side effects of nadir postchemotherapy should be incorporated in the nurse's discharge process. This rationale was related to the first two questions on the Likert scale.

The standard derivations (SD) of the pretests and posttests increased from 0.422 (pre) to 0.483 (post), which demonstrated how the data surrounds the mean. Generally, the SD data results would be the goal of the investigator. In circumstances when observations or recorded data are employed, a larger SD does not represent a negative outcome but a positive one. The larger SD of the posttest in this project predicted that the group responses varied (Table 4). The varied responses of the participating certified oncology nurses can be associated with their Benner (1982) stage level of competence. Drawing from the literature search and the experiences of the certified oncology nurses, the developed standardized guideline of this project demonstrated that the guideline must be comprehensive and detailed for best knowledge and competency outcomes.

Objective 4, to conduct the data analysis for the pretest and posttest, was accomplished with statistical analysis using a two-tailed paired *t* test. All 10 participants responded to all 10 questions on the Likert surveys. The confidence interval was 95% and the *p* value was set at 0.005. The project compared certified oncology nurses at two different timeframes, pre- and postimplementation of the modified guideline for severe avoidable side effects of nadir for discharge implementation postchemotherapy for at-home management.

The results showed statistically significant differences between the pretest questionnaire that addressed the institutions' existing discharge protocol and the posttest questionnaire, based on the modified discharge guideline. The posttest questionnaire showed a significant probability related to the change in guidelines, nursing knowledge, competence, and utilization. For questions 3 through 10, the differences in the pretest-posttest means showed no significant improvement.

Table 4

Pretest and Posttest Survey Results

Question	N	Mean		Variance		SD		P-Value		Outcome	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Paired T-Test	Improvement
1	10	1.8	1.3	0.1778	0.2333	0.4217	0.483	0.005	0.005	Significant	62.50%
2	10	1.6	1.1	0.2667	0.1	0.5164	0.3162	0.005	0.005	Significant	83.33%
3	10	1	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4	10	1	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
5	10	1.6	1.5	0.7111	0.7222	0.8433	0.8498	0.005	0.005	Not Significant	N/A
6	10	1.2	1.1	0.1778	0.1	0.4217	0.3162	0.005	0.005	Not Significant	N/A
7	10	1.4	1.6	0.2667	0.2667	0.5164	0.5164	0.005	0.005	Not Significant	N/A
8	10	1.1	1.1	0.1	0.1	0.3162	0.3162	0.005	0.005	Not Significant	N/A
9	10	2.1	1.9	1.211	1.211	1.1005	1.1005	0.005	0.005	Not Significant	N/A
10	10	1.4	1.6	0.7111	0.4889	0.8433	0.6992	0.005	0.005	Not Significant	N/A
		P= 0.005		CI=.95		Question 1 = 62.50% significant				Question 2 = 83.33% significant	

For questions 1 and 2, the differences in the pretest-posttest means were significant. Question 1 asked, Do you provide information about nadir (neutropenia) upon discharge? (Appendix C). The pretest mean was 1.8 and posttest mean was 1.3. At $p = 0.005$, the paired t test showed the difference between the means was significant, with 62.50% improvement (Table 4).

Question 2 asked, Do you assess the patients understanding of possible side effects that can occur postchemotherapy? (Appendix C). The pretest mean was 1.6 and the posttest mean was 1.1. At $p = 0.005$, the paired t test showed the difference between the means was significant, with 83.33% improvement (Table 4).

Objective 5 showed positive results. The feedback from the intraprofessional team was positive and included the NRC on the acceptance of the modified discharge-guideline on avoidable severe side effects of nadir postchemotherapy for at-home management. Acceptance was 100%. To demonstrate the significance of the guideline implementation the NRC not only recommended the feasibility and acceptability of the guideline but demonstrated appropriate institutional benefit for global utilization in both the inpatient and outpatient services.

The development of the modified guideline was an innovation at the facility, because no specific guidelines had existed specifically for lymphoma patients postchemotherapy to avoid the side effects of nadir at home. Nurses' informal feedback revealed they welcomed receiving the guideline; they wanted to help patients combat distress and anxiety from at-home side effects. According to Saijad, Ali, Gul, Mateen, and Rozi (2016), research reflected similar findings when applied to the improvement of

breast cancer patients' quality of life, and physical and emotional outcomes when these patients were provided appropriated at-home discharge information.

Expected and Unexpected Findings

Expected Findings

Several findings were expected in this project. The institution and NRC supported the project and encouraged modification of the existing protocol without additional costs. The oncology organizations' guidelines were extremely informative and helpful, adding to the comprehensiveness of the new protocol. The nurse participants were enthusiastic, recognizing the suffering of lymphoma patients who had side effects postchemotherapy at home and having treated many of these patients at readmission.

Unexpected Findings

Two of the 10 questions on the pretest and posttest surveys showed significant results. For questions 3 through 10, the results were inconclusive, that is, no significant differences were found between the participants' scores on the pretest and posttest. This finding was surprising, because the preexisting guideline did not specifically include instructions for lymphoma patients postchemotherapy. Participants seemed to learn the educational materials quickly and eagerly, but their responses to questions 3 through 10 did not reflect their learning.

Strengths and Limitations

Strengths

Several strengths of the project were evident. The project received full support of the institution. The modified guideline was thoroughly researched with recommendations from the ASCO, ONS, and ACS. Participants were full-time nurses with more than 1 year

of experience treating oncology patients. The nurses also participated fully in the pretest, educational training, and posttest.

Limitations

Limitations also existed in this project. Delays took place in approval of the project, which hindered implementation and subsequent improvement in practice. The sample size was small and may not have reflected the learning of all nurses on the unit. A single oncology unit in one hospital was focused on, limiting generalizability of results. The findings of significant differences for only two of 10 questions on nurses' pretest-posttest scores was difficult to explain and supports the need for future research.

Implications for Practice, Healthcare Outcomes, Healthcare Delivery, and Healthcare Policy

Change was needed in the present practice. Nursing practice requires evidence-based quality improvement and healthcare transformation, with emphasis on the need for reshaping care that is efficient, effective, and safe (AACN, 2006). The outcome of this project can greatly affect nursing practice, healthcare outcomes, healthcare delivery, and healthcare policy by supporting improved nursing practices.

Nursing Practice

Postchemotherapy lymphoma patients need proper discharge information specific to treating severe avoidable side effects of postchemotherapy at home. Nurses should be both knowledgeable and competent in providing the care that is suitable for the specific needs of these patients. The quality improvement evidence-based modified discharge guideline provided by nurses will educate these patients in avoiding side effects of nadir

at home. With this guideline, nurses will provide patients with the necessary information to manage their postchemotherapy symptoms.

Healthcare Outcomes

With the modified guideline supplied by nurses for lymphoma patients' at-home management of postchemotherapy nadir, these patients should reduce their distress and anxieties. They will also be less often readmitted to the hospital for symptom management; with readmission, their stays will be shorter and less costly than otherwise. Nurses' education of patients prior to discharge for at-home self-care should also improve their quality of life postdischarge.

Healthcare Delivery

This project focused on the identification of nurses' needs for continuous education in compliance with evidence-based practices as they relate to the discharge process of lymphoma patients' postchemotherapy treatment. Dissemination of the modified protocol will impact healthcare delivery by altering the inadequate practices that have been applied to discharging of lymphoma patients. Nurses will benefit from the increased knowledge and materials they share with patients about postchemotherapy practices to avoid the side effects of nadir. Patients will benefit by following the instructions for at-home management of the side effects of nadir, will reduce the need for hospital readmission, and will likely gain confidence in their self-care abilities.

Healthcare Policy

Healthcare costs in the United States are among the highest worldwide and continue to increase (Bicki et al., 2013). Implementation of the quality improvement evidence-based modified guideline will provide the opportunity for patients to recuperate

in their homes, avoid readmission, and decrease their hospital stays. Reimbursement policies under the current healthcare financial system are chaotic, and policy changes at the federal level have increased the complexity and uncertainty of reimbursement for providers and patients (Murphy et al., 2015). Nurses' use of the modified guideline from this project would help reduce all patient costs.

The results from the project provide strong support for national policies standardizing discharge guidelines for nursing, increasing knowledge and utilization of information that can inform patients about avoidable severe side effects of nadir postchemotherapy. Hospital policies for standardized guidelines, as in the modified guideline developed, enable nurses to use increased knowledge and educate patients during the discharge process. Organizations such as the ASCO, ONS, and ACS could endorse and encourage standardized guidelines for lymphoma patients upon discharge to lessen and avoid symptoms of nadir from postchemotherapy side effects.

Future Research

This study was conducted to promote continuity of care for lymphoma patients postchemotherapy at home through nursing competency. Future quantitative research should replicate this project with larger sample groups, promoting a greater level of confidence in the data collected. Sites should include more than one oncology unit in a single hospital.

Additional educational sessions should be instituted between the posttest and pretest administration, and the data collection period should be lengthened to promote additional participant responses. The survey could be modified to structure the questions

to better test the knowledge gained from the educational training. Further questions could test the depth of knowledge gained to a greater degree.

Additional demographic information from nurses should also be collected, and studies conducted on the relationship of demographic characteristics, such as experience, age, and education, to survey responses. Control group studies could be conducted, with one group of nurses receiving the education and the other not receiving it, and survey results compared. Additional educational trainings for nurses in related aspects of treatment of lymphoma patients postchemotherapy could be designed for additional help and nurses' knowledge subsequently measured.

Comparisons of nurses' satisfaction with sharing educational information and lymphoma patients' satisfaction with receiving it postchemotherapy could also be conducted. Longitudinal studies of lymphoma patients' readmission rates after discharge education could be instituted. Such studies would determine the long-term effects of education on reduction of patient postchemotherapy symptoms.

Qualitative studies could include nurses' views on lymphoma patient education postchemotherapy and nurses' recommendations for increasing education and follow-ups. Interviews with other hospital stakeholders could be implemented, such as with oncology unit directors and physicians. Qualitative studies could also be implemented with patients' experiences postchemotherapy and those of their families, as well as their views on nursing education delivered prior to discharge.

Summary

A quality improvement evidence-based modified discharge guideline for lymphoma patients postchemotherapy at home with self-care was implemented and tested

with oncology nurses to promote continuity in practice. The guideline targeted improvement of the nurses' competency in helping patients manage severe avoidable side effects associated with postchemotherapy in the home. A pretest survey was administered to determine baseline knowledge. Educational training was provided to the participants, and the competency improvements were assessed with a posttest survey.

Five objectives were determined, and all were met. The institution supported the project, a 10-item questionnaire was developed, and 10 nurses participated. The existing discharge protocol was modified to reflect standardized practice for promotion of clinical practice continuity. Nurses participated in an educational training, with supplementary materials provided.

On evaluation with the posttest, nurses' knowledge on two of the 10 questions significantly increased: for question 1, approximately 63% improvement was shown; for question 2, approximately 83% improvement was shown. Both of these improvements were statistically significant ($p < 0.005$). Unexpected was the lack of improvement in nurses' responses for questions 3 through 10. The intraprofessional team cooperated with 100% participation, and the modified protocol was accepted and disseminated.

Future research should include replication of this project with more participants and from additional oncology units. Enhanced pretest-posttest surveys are recommended also to assess nurses' knowledge more comprehensively. Ongoing continuing education for nurses is further recommended, as well as a range of quantitative and qualitative studies to help increase nurses' knowledge of lymphoma patients' postchemotherapy and patients' responses.

Application of the quality improvement evidence-based modified protocol developed for nurses to aid lymphoma patients postchemotherapy to better manage their side effects at home will provide patients better understanding of management of avoidable side effects. Nurses will be fulfilling their duties of educating patients toward improvement and recovery. Patients' rates of readmission, hospital stays, and associated costs will be reduced.

Implementation of this project revealed the need for nurses' ongoing continuing education in current evidence-based treatment methods. This project also highlighted the need for up-to-date guidelines for cancer patients. The modified protocol based on oncology organizations' guidelines is essential for patient education. Oncology nurses can provide essential education to their lymphoma patients postchemotherapy with the most current protocols prior to patient discharge.

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Appendix A

Nova Southeastern University Institutional Review Board

Letter of Exemption



MEMORANDUM

To: **Gwendolyn saint-Clarke**

From: **Vanessa Johnson,
Center Representative, Institutional Review Board**

Date: **May 10, 2017**

Re: **IRB #: 2017-325; Title, "Chemotherapy Side Effects at Home: A nursing Impact"**

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review under **45 CFR 46.101(b) (Exempt Category 3)**. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

- 1) **CONSENT:** If recruitment procedures include consent forms, they must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.
- 2) **ADVERSE EVENTS/UNANTICIPATED PROBLEMS:** The principal investigator is required to notify the IRB chair and me (954-262-5369 and Vanessa Johnson, respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.
- 3) **AMENDMENTS:** Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: **Mary D Mites-Campbell, PhD
Vanessa Johnson**

Appendix B
Emory Letters of Support

**Emory Saint Joseph's Hospital
Nursing Research Committee**
Letter of support with Modification

Date: 6/14/2017

To: Gwendolyn Saint-Clarke

RE: Research Proposal: Chemotherapy Side Effects at Home: A Nursing Impact

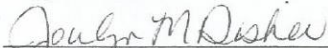
The Nursing Research Committee (NRC) will support your nursing project proposal with modifications.

If you received approval with modifications, these modifications must first be presented to the NRC within two weeks to continue this process. See modification in appendix. After full support from NRC, an IRB determination must be obtained and documented prior to starting your project.

Remember the agreement you originally signed in the application packet indicated:

- A. You will present the results of the project, including any impact on nursing practice, to the NRC within six months of the completion.
- B. You will submit a final project report that includes data analysis and results to the NRC within six months of the completion.
- C. You will submit required Emory Saint Joseph's Hospital IRB Forms to indicate that your project is completed.
- D. You will provide written notification to NRC of any presentations or publications related to the project. *The project site shall not be identified by name in any presentation or publication without prior written approval of the NRC and the Chief Nursing Officer. No human subjects shall be identified by name in any presentation or publication.*

Congratulations!



NRC Chairperson Signature

6/14/2017

Date

Emory Saint Joseph's Hospital
Nursing Research Committee
Letter of support

Date: 7/12/2017

To: Gwendolyn Saint-Clarke

RE: Research Proposal: Chemotherapy Side Effects at Home: A Nursing Impact

The Nursing Research Committee (NRC) will support your nursing project proposal. To proceed, you must first have full approval from the Emory Saint Joseph's Hospital IRB. A Summary of the NRC proposal review will be forwarded to IRB. After IRB approval, you may implement this study, as proposed, within the units/departments of nursing as indicated in your application.

Remember the agreement you originally signed in the application packet indicated:

- A. You will present the results of the project, including any impact on nursing practice, to the NRC within six months of the completion.
- B. You will submit a final project report that includes data analysis and results to the NRC within six months of the completion.
- C. You will submit required Emory Saint Joseph's Hospital IRB Forms to indicate that your project is completed.
- D. You will provide written notification to NRC of any presentations or publications related to the project. *The project site shall not be identified by name in any presentation or publication without prior written approval of the NRC and the Chief Nursing Officer. No human subjects shall be identified by name in any presentation or publication.*

Congratulations!


NRC Chairperson Signature

7/12/2017
Date

Appendix C

Participation Notification Brochure



**BECOME A PART OF THE SOLUTION:
HELP YOUR PATIENTS TO
UNDERSTAND NADIR**

Participate in a Capstone Project:
Chemotherapy Side Effects at Home: A
Nursing Impact to improve patients'
outcome and increase quality of life

This study is approved by Nova Southeastern University
(NSU)



Date: June 2017

**7 East Emory
Saint Joseph
Hospital**

**Who: Participants
welcome
Knowledge
requirement:
oncology novice
to expert nurse 1
year to over 10
years**

**For more information
please contact
Gwendolyn Saint-
Clarke**

**NSU DNP student
954-593-6702**

**email
gs462@nova.edu**

**Nova Southeastern
University 3801
College Avenue,**

Ft Lauderdale, 33314

Appendix D

Participatory Letter

Date: _____

Dear _____

Description of Study: My name is Gwendolyn Saint-Clarke, a Doctoral of Nursing student at Nova Southeastern University. As part of the requirement for the completion of my degree I am expected to complete a Capstone Project. The purpose of my study is to evaluate competencies of Nurses' knowledge regarding evidence-based practice instructions for postchemotherapy lymphoma patients experiencing unavoidable side effects, and develop a quality improvement evidence-based nursing postchemotherapy discharge guideline to be utilized and to modify the present discharge protocol a quality improvement evidence-based nursing discharge protocol guideline to be utilized by nurses that may serve to increase patient's quality of life after discharge. This component will provide methods for selecting, and educating, nurses to participate in survey type questionnaires in an effort to develop the guideline.

If you agree to participate, you may be asked to take part in the following: (1) completion of two sets of online survey type questionnaires (a pre-test and a post-test) which consist of 10 questions each, that seek to evaluate your knowledge of evidence-based practice instructions for the postchemotherapy lymphoma patient population. These tests are expected to take approximately 12 minutes to complete. Data from these questionnaires will be used to identify types of education needed by nurses, as it pertains to evidence-based discharge practices. This data will also be used to create the guideline for the project, (2) disseminate of the modified postchemotherapy discharge protocol will be introduced to nurses through staff meeting, in service grand rounds and electronic medical record screen saver.

Risks/Benefits to the Participant: There is no risk involved in participating in this study. There are no direct benefits to for agreeing to be in this study. Please understand that although you may not benefit directly from participation in this study, this study will be scientifically useful to the nursing profession and patients alike.

Cost and Payments to the Participant: There is no cost for participation in this study. Participation is completely voluntary, and no payment will be provided.

Confidentiality: The questionnaires are completely anonymous. Information obtained in this study is strictly confidential unless disclosure is required by law. All paper tests done will be stored in a secured place, and only the investigator and study advisor will have

access to it. Information from the online survey will be stored on an encrypted file with a secured password for retrieval.

Participant's Right to Withdraw from the Study: You have the right to refuse to participate in this study and the right to withdraw from the study at any time without penalty.

I have read this letter and I fully understand the contents of this document.

Respectfully,

Appendix E

Information About the Project

What is the study about?

The purpose of this DNP Project is to: (1) develop a standardized process for health providers that assist chemotherapy patients at-home nadir side effects prevention or minimization; (2) implement standardized process for healthcare provider's congruency with at-home patient/family information pre discharge; and (3) evaluate nurses competency through an electronic survey, on discharge instruction with nadir side effects in the effort to promoting optimum health status post discharge from a Non Profit Healthcare Facility in Georgia.

Why are you asking me?

You are being asked to participate in this project because you are a Registered Nurse that specializes in chemotherapy and provides direct care to patients who will experience nadir side effects postchemotherapy. Approximately 10 Registered Nurses will participate in this project.

What will I be doing if I agree to be in the study?

You will be asked to complete to different Likert scale 10 question questionnaires. A pre-questionnaire at the beginning of the project and a post questionnaire at the project's completion. The questionnaire is present in a multiple-choice format. You will be asked to attend a 30 minutes' seminar with other healthcare providers to discuss the prevention of nadir side effects post inpatient discharge.

Is there any audio or video recording?

There will be no audio or video recording for the meeting that will be held.

What are the dangers to me?

There could be minimal risks that are associated with this project. Sharing your ideas at the proposed meeting may lead in identifying the questionnaire respondents. This could be classified as loss of confidentiality. If you have questions about the project, your research rights, or if you experience any injury because of the research, please contact Gwendolyn Saint-Clark, principal investigator, and Dr. Mary Mites Campbell, project chair. You may also contact the IRB at the numbers indicated above with questions about your research rights.

Are there any benefits to me for taking part in this research study?

There are no benefits to you for participating in this project.

Will I get paid for being in the study? Will it cost me anything?

There are no costs to you or payments made for participating in this project.

How will you keep my information private?

The notes from the seminar meeting and online questionnaire will not ask you for any private information. The collected information will be stored in a secured area, and on an encrypted file with a secured password which will be destroyed 36 months after the project ends. Participant's responses to tests and survey questionnaire will be protected from anyone outside of the project. All information obtained in this project is strictly confidential unless disclosure is required by law. The Nova Southeastern University IRB, regulatory agencies, and Capstone chair may review research records.

Page 2 of 2

Initials: _____ Date: _____

Appendix F
Informed Consent

Consent Form for Participation in the Research Study Entitled:
Chemotherapy Side Effects at-home Prevention: A Nursing Impact

Funding Source: None.

IRB protocol #

Principal investigator

Gwendolyn Saint-Clarke, MSN, RN
3938 Fellowship Drive
Buford, Georgia, 30519
(954) 593-0702

Co-investigator

Dr. Mary Mites Campbell, PhD, MSN, RN
College of Nursing
11501 N. Military Trail
Palm Beach Gardens, Florida 33140
(561) 805-2201

For questions/concerns about your research rights, contact:

Human Research Oversight Board (Institutional Review Board or IRB)
Nova Southeastern University
(954) 262-5369/Toll Free: 866-499-0790

IRB@nsu.nova.edu

Site Information

Emory Saint Joseph Hospital
5665unwoody Road
Atlanta, Georgia, 30342

Page 1 of 3

Initials: _____ Date: _____

What is the study about?

The purpose of this DNP Project is to: (1) develop a standardized process for health providers that assist chemotherapy patients at-home nadir side effects prevention or minimization; (2) implement standardized process for healthcare provider's congruency with at-home patient/family information pre discharge; and (3) evaluate nurses competency through an electronic survey, on discharge instruction with nadir side effects in the effort to promoting optimum health status post discharge from a Non Profit Healthcare Facility in Georgia.

Why are you asking me?

You are being asked to participate in this project because you are a Registered Nurse that specializes in chemotherapy and provides direct care to patients who will experience nadir side effects postchemotherapy. Approximately 10 Registered Nurses will participate in this project.

What will I be doing if I agree to be in the study?

You will be asked to complete to different Likert scale 10 question questionnaires. A pre-questionnaire at the beginning of the project and a post questionnaire at the project's completion. The questionnaire is present in a multiple-choice format. You will be asked to attend a 30 minutes seminar with other healthcare providers to discuss the prevention of nadir side effects post inpatient discharge.

Is there any audio or video recording?

There will be no audio or video recording for the meeting that will be held.

What are the dangers to me?

There could be minimal risks that are associated with this project. Sharing your ideas at the proposed meeting may lead in identifying the questionnaire respondents. This could be classified as loss of confidentiality. If you have questions about the project, your research rights, or if you experience any injury because of the research, please contact Gwendolyn Saint-Clark, principal investigator, and Dr. Mary Mites Campbell, project chair. You may also contact the IRB at the numbers indicated above with questions about your research rights.

Are there any benefits to me for taking part in this research study?

There are no benefits to you for participating in this project.

Will I get paid for being in the study? Will it cost me anything?

There are no costs to you or payments made for participating in this project.

How will you keep my information private?

The notes from the seminar meeting and online questionnaire will not ask you for any private information. The collected information will be stored in a secured area, and on an encrypted file with a secured password which will be destroyed 36 months after the project ends. Participant's responses to tests and survey questionnaire will be protected from anyone outside of the project. All information obtained in this project is strictly confidential unless disclosure is required by law. The Nova Southeastern University IRB, regulatory agencies, and Capstone chair may review research records.

What if I do not want to participate or I want to leave the study?

Your participation in this project is voluntary. You have the right to withdraw from this study at any time or refuse to participate. If you decide to leave or you decide not to participate, you will not experience any penalty or loss of services you have a right to receive. If you choose to withdraw, any information collected about you **before** the date you leave the study will be kept in the research records for 36 months from the conclusion of the study and may be used as a part of the research.

Voluntary Consent by Participant:

By signing below, you indicate that

- this study has been explained to you
- you have read this document or it has been read to you
- your questions about this research study have been answered
- you have been told that you may ask the researchers any study related questions in the future or contact them in the event of a research-related injury
- you have been told that you may ask Institutional Review Board (IRB) personnel questions about your study rights
- you are entitled to a copy of this form after you have read and signed it
- you voluntarily agree to participate in the study entitled: *Chemotherapy Side Effects at-home Prevention: A Nursing Impact*

Participant's Signature: _____ Date: _____

Participant's Name: _____ Date: _____

Signature of Person Obtaining Consent: _____

Date: _____

Initials: _____ Date: _____

Appendix G
Prequestionnaire SurveyMonkey

1. Do you provide information about NADIR (Neutropenia) upon discharge?

- Always
- Sometimes
- Neve

2. Do you assess the patients understanding of possible side effects that can occur postchemotherapy?

- Always
- Sometimes
- Never

3. How do you assist the patient with symptom management post discharge?

- Provide educational material on side effects and treatment postchemotherapy
- Tell patients to call provider and give the provider's telephone number
- Encourage patient to go to the nearest emergency room
- Other (please specify)

4. What are some of the resources you provide to patients to assist in the discharge postchemotherapy?

- Discharge instructions
- Educational material on how to treat side effects of chemotherapy
- Nothing

5. When do you provide discharge teaching?

- Upon admission
- Daily during patient care
- At discharge

6. Since nausea and vomiting is complex in nature and management can be very difficult how would you instruct the patient postchemotherapy?

- Educate patient on anti-nausea medications, Eat and drink slowly, Try having small meals throughout the day instead of a large breakfast, lunch and dinner, Rinse your mouth often to eliminate any bad taste.
- Make sure your anti-nausea medication is available at all times
- Be sure to take your medication as ordered
- All of the above
- None of the above

7. When do you assess the patient readiness to learn?

- Upon admission
- Before, during and after chemotherapy
- When patient is ready
- Never

8. How can you help to prevention re-admission from side effects of chemotherapy?

- Medication reconciliation
- Educate patient on self-care and ongoing discharge instructions
- Explain possible side effects and treatment of postchemotherapy
- All of the above

9. How long have you been an oncology nurse?

Over 5 years

2- 4 years

1-2 years

Under 1 year

10. What is your current level of education?

- Associate degree
- Bachelor degree
- Graduate degree

Appendix H

The Modified Guideline

THE MANAGEMENT OF CHEMOTHERAPY AT-HOME SIDE EFFECTS GUIDELINES		
Effective Date 4/28/2017	Revised Date	Supersedes
Distribution: MD, DO, PA, APRN, RN		

PURPOSE

To provide specialized healthcare providers (i.e. MD, DO, PA, APRN, RN) information on managing chemotherapy at-home side effects for patient/family prone for Nadir after hospital discharge.

POLICY:

The hospital is committed to serve all patient/families prone for chemotherapy at-home side effect identified as Nadir. Recognizing that patient/family who are prone for Nadir side effect have special needs the hospital is commitment and an obligate to meet those needs through provider competency.

If healthcare providers recognize or have reason to believe a patient/family upon discharge is prone for Nadir side effect after chemotherapy, providers must inform them through educational processes that meets the need of the patient/family. The responsibility of the healthcare provider is to ensure that such education and services includes interpreters as often needed. All healthcare providers will inform patient/family of the appropriateness of care continuity from admission to follow-up. The information of this content will likewise be made available to any overt request for appropriate auxiliary aids or services including interpreters.

Providers delivering care to various population of adult lymphoma patient must incorporate the following practice information to ensuring best patient outcome and treatment based on recommendations from the Oncology organizations such as; American Society of Clinical Oncology (ASCO), Oncology Nursing Society (ONS), American Cancer Society (ACS).

THE PROVIDER:

- Must be culturally competent in social determinants (i.e. age, gender, race, ethnicity, educational level)
- Must provide Lymphoma postchemotherapy side effects (Nadir) information reflective of the patient's cultural norm while maintaining evidenced-based practice and regulatory standards
- Must have received cultural competency training in residency, internship or clinical practice from an academic institution, hospital or current clinical setting.
- Must demonstrate continual cultural and clinical competency in standardize chemotherapy management.

PROCEDURE:

- Nadir education or information distribution begins on admission throughout hospitalization.
- Information will be disseminated in accordance with patient/family educational needs and level of Nadir understanding.
- Healthcare providers engage in the "Teach Back" process to verify patient/family understanding of new medication prone for Nadir side effects.
 - Patient/family states at least one (1) medication with two (2) to three (3) possible side effects prior to discharge.
 - Patient/family engage in the "Teach Back" process identifying possible signs and symptoms of Nadir.
- The Discharge Nurse (RN) reassess patient/family understanding of Nadir, provide relevant educational materials on effectively managing home based care postchemotherapy at discharge.
- The hospital interpreter services to be utilized in Nadir education and discharge instructions to prevent learning language barriers and enhance follow up. (i.e. If applicable).
- Healthcare providers will address common chemotherapy mythologies referred as patient encounters.

PATIENT RESOURCES:

- Patient Education – The Management of Rituximab Treatment and Side Effects
- Patient Education – The Management of Etoposide Treatment and Side Effects

REFERENCES:

- Aapro, M. S., Bohlius, J., Cameron, D. A., Dal Lago, L., Donnelly, J. P., Kearney, N., ... Zielinski, C. (2011). 2010 update of EORTC guidelines for the use of granulocyte-colony stimulating factor to reduce the incidence of chemotherapy-induced febril neutropenia in adult patients with lymphoproliferative disorders and solid tumors. *European Journal of Cancer*, *47*(1), 8-32.
<http://dx.doi.org/> <http://dx.doi.org/10.1016/j.ejca.2010.10.013>
- Wood, S. K., & Payne, J. K. (2012). Implementation of National Comprehensive Cancer Network evidence-based guidelines to prevent and treat cancer-related infections. *Clinical Journal of Oncology Nursing*, *16*(3), E111-E117.
<http://dx.doi.org/10.1188/12.CJON.E111-E117>

Approved by Institution Heather Dexter (CEO)
Signature

Date

Appendix I

Training Materials and Patient Brochure

STANDARDIZED NADIR EDUCATION THAT NURSES WILL PROVIDE TO PATIENTS				
Based on Oncology Nursing Society Guidelines and Recommendations for Patient Teaching				
Effective Date				
6/21/2017				

Purpose:

Provide patient and families with information to manage side effects of nadir in the home postchemotherapy. Teaching will begin on admission throughout discharge.

What is Nadir?

Nadir (low white blood cell count) is a common and potentially dangerous side effect in patients postchemotherapy treatments and may lead to higher risk of infection. Nadir occur depends on the specific drugs and dosage that was used. Nadir occurs within 7-10 days' postchemotherapy and resolved 21-28 days

Nadir Affects Blood Cell and Platelet Counts:

When chemotherapy is given it not only affects the rapidly dividing cancer cells but it also affects some of the normal cells of the body. These effects particularly occur on normal cells that divide rapidly such as, the hair, the lining of the mouth, the cells lining the intestinal tract and the blood cells (white and red blood cells as well as platelets).

Clinical manifestation and management

Monitor laboratory findings and take appropriate action.

Maintain a safe environment

- Avoid walking on nonskid rugs (i.e. rugs without backing).
- Avoid walking in the dark without the use of night lights;
- Avoid walking without support devices (i.e. cane, walker, etc.).
- Avoid public places when blood count is low.
- Increase hand washing with bathroom use, before meals, handling animals, playing with children, etc.
- Keep all follow up appointments

Skin integrity

Remember to:

- Use a soft toothbrush.
- Look into your mouth for sores and bleeding with each time you brush your teeth.
- Blow your nose gently.
- Use electric razors only.
- Use emery boards only.
- Use water-soluble lubricant for sexual intercourse.
- Avoid any sexual activity that may compromise skin integrity.
- Use laxatives or stool softeners to avoid constipation.
- Avoid using aggressive dental flossing.
- Avoid dental or other invasive procedures.

Reference

Polovich, M., Olsen, M., & LeFebvre, K. B. (2014). *Chemotherapy and biotherapy guidelines and recommendations for practice* (4th ed.). Pittsburgh, PA: Oncology Nursing Society.



What is Nadir?

A decrease in white blood cell count. It is likely that the decrease in white blood cells can cause dangerous side effects after chemotherapy treatment. Nadir can lead to a high risk of infection.

When Does Nadir Occur?

Nadir can be related to a type of chemotherapy medication and the amount of the medication.

Nadir occurs within 7-10 days after chemotherapy treatment.

Side effects are likely to go away 21-28 days after chemotherapy treatment.

“Your health and well-being is important to us. Let us help with your awareness of nadir side effects after chemotherapy.”

Your doctor will monitor weekly your blood work and take the right actions to increase your blood count after chemotherapy.

How to Maintain a Safe Environment?

The following information will help decrease possible injuries:

- Avoid walking on nonskid rugs (i.e. rugs without backing).
- Avoid walking in the dark without the use of night lights;
- Avoid walking without support devices (i.e. cane, walker, etc.).
- Avoid public places when blood count is low.
-

Most Common Myths

- **Myth: Chemotherapy can make me sick**

While that used to be the case, patients can now take medicines before chemotherapy to prevent side effects like nausea and vomiting.

- **Myth: I'll lose all my hair.**

Not every chemotherapy drug causes hair loss, and some only cause hair thinning. It depends on the type of chemo you get as well as the combination of drugs.

- **Myth: I won't be able to have children after chemo.**

Every effort is made to spare a patient's fertility; Men can bank and/or freeze their sperm. Women can freeze their eggs or take medications that suppress ovarian function during treatment. "

- **Myth: Chemo is an outdated treatment. These days, it's all about immunotherapy.**

Doctors prescribe chemotherapy to stop cancer cells from dividing. Immunotherapy, which is a relatively new form of treatment, uses a patient's immune system to fight his or her cancer. It holds exciting promise but has not yet been shown to work for all types of cancer.

Contact Us

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Reference: Polovich, M., Olsen, M., & LeFebvre, K. B. (2014).

Appendix J
Postquestionnaire SurveyMonkey

1. Do you provide information about NADIR (Neutropenia) upon discharge?

- Always
- Sometimes
 - Never

2. Do you assess the patients understanding of possible side effects that can occur postchemotherapy?

- Always
- Sometimes
- Never

3. How do you assist the patient with symptom management post discharge?

- Provide educational material on side effects and treatment postchemotherapy
- Tell patients to call provider and give the provider's telephone number
- Encourage patient to go to the nearest emergency room
- Other (please specify)

4. What are some of the resources you provide to patients to assist in the discharge postchemotherapy?

- Discharge instructions
- Educational material on how to treat side effects of chemotherapy
- Nothing

5. When do you provide discharge teaching?

- Upon admission
- Daily during patient care

- At discharge

6. Since nausea and vomiting is complex in nature and management can be very difficult how would you instruct the patient postchemotherapy?

- Educate patient on anti-nausea medications, Eat and drink slowly, Try having small meals throughout the day instead of a large breakfast, lunch and dinner, Rinse your mouth often to eliminate any bad taste.
- Make sure your anti-nausea medication is available at all times
- Be sure to take your medication as ordered
- All of the above
- None of the above

7. When do you assess the patient readiness to learn?

- Upon admission
- Before, during and after chemotherapy
- When patient is ready
 - Never

Editor Verification for Gwendolyn Saint-Clarke**Noelle Sterne, Ph.D.****P.O. Box 800616****Aventura, FL 33280****305 935-9307 Phone****graduatestudiescoach@yahoo.com Email**

September 6, 2017

By email:

To: Dr. Mary Mites Campbell

From: Dr. Noelle Sterne

Cc: Gwendolyn Saint-Clarke

Dear Dr. Campbell:

As an approved professional editor for Nova Southeastern University, I have reviewed, edited, and provided corrections on grammar, format, and style conventions consistent with the *Publication Manual of the American Psychological Association* (6th edition) for the DNP Quality Improvement Project which Gwendolyn Saint-Clarke has submitted to her committee at Nova Southeastern University College of Nursing.

Other than my editorial assistance to Ms. Saint-Clarke as described above, I did not participate in the rewriting of her original work. I trust her DNP Project will be a significant and important contribution to academic scholarship in the professional nursing community.

A pleasure to serve.

Sincerely,

/s/ Noelle Sterne, Ph.D.

****Where we are is where we give.****

Noelle Sterne, Ph.D.

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<https://rowman.com/ISBN/9781475815030/Challenges-in-Writing-Your-Dissertation-Coping-with-the-Emotional-Interpersonal-and-Spiritual-Struggles>

Author, *Trust Your Life: Forgive Yourself and Go After Your Dreams*. Unity Books, 2011.

https://www.amazon.com/Trust-Your-Life-Forgive-Yourself-ebook/dp/B005EN73MG/ref=sr_1_2?ie=UTF8&qid=1480446174&sr=8-2&keywords=noelle+sterne