

1-1-2017

Cancer-Related Fatigue Clinical Guideline and Protocol for Hospitalized Oncology Patients: A Quality Improvement Project

Sulotte Valcin Amilcar
Nova Southeastern University

This document is a product of extensive research conducted at the Nova Southeastern University [College of Nursing](#). For more information on research and degree programs at the NSU College of Nursing, please [click here](#).

Follow this and additional works at: https://nsuworks.nova.edu/hpd_con_stueta

 Part of the [Nursing Commons](#)

All rights reserved. This publication is intended for use solely by faculty, students, and staff of Nova Southeastern University. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, now known or later developed, including but not limited to photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author or the publisher.

NSUWorks Citation

Sulotte Valcin Amilcar. 2017. *Cancer-Related Fatigue Clinical Guideline and Protocol for Hospitalized Oncology Patients: A Quality Improvement Project*. Capstone. Nova Southeastern University. Retrieved from NSUWorks, College of Nursing. (36) https://nsuworks.nova.edu/hpd_con_stueta/36.

This Capstone is brought to you by the Ron and Kathy Assaf College of Nursing at NSUWorks. It has been accepted for inclusion in Ron and Kathy Assaf College of Nursing Student Theses, Dissertations and Capstones by an authorized administrator of NSUWorks. For more information, please contact nsuworks@nova.edu.

CANCER-RELATED FATIGUE CLINICAL GUIDELINE AND PROTOCOL
FOR HOSPITALIZED ONCOLOGY PATIENTS:
A QUALITY IMPROVEMENT PROJECT

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

Nova Southeastern University
Health Professions Division
College of Nursing

Sulotte Valcin Amilcar
2017

**NOVA SOUTHEASTERN UNIVERSITY
HEALTH PROFESSIONS DIVISION
COLLEGE OF NURSING**

This project, written by Sulotte Valcin Amilcar under direction of Dr. C. Christine Orton, Project Chair, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF NURSING PRACTICE

PROJECT COMMITTEE

C. Christine Orton, DNP, ARNP
Chair of DNP Project Committee

Date

Eglintine Rigaud, PhD, ARNP, WHNP-BC
Project Committee Member

Date

**NOVA SOUTHEASTERN UNIVERSITY
HEALTH PROFESSIONS DIVISION
COLLEGE OF NURSING**

Certification

We hereby certify that this DNP Project, submitted by Sulotte Valcin Amilcar, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Nursing Practice degree.

Approved:

Eglintine Rigaud, PhD, ARNP, WHNP-BC
Director, PhD and DNP Programs

Date

Marcella M. Rutherford, PhD, MBA, MSN
Dean, College of Nursing

Date

Copyright by Sulotte Valcin Amilcar, 2017

All Rights Reserved

Abstract

Background: Cancer-related fatigue is one of the most common symptom experienced by cancer patients throughout their cancer trajectory. However, very little effort has been made within many oncology practices to assess this clinical problem and to provide timely nursing interventions to reduce its impact. While there have been tremendous advancements in the treatments of the disease aspects of cancer in term of medicine and advanced technology, basic assessment of related physiological concerns, such as fatigue, have not seen the same progress.

Purpose: The purpose of this quality improvement project was to develop an evidence-based cancer-related fatigue assessment guideline and a screening protocol adopted from the National Comprehensive Cancer Network algorithm to assess cancer-related fatigue for oncology patients at their initial visit to the oncology unit toward timely intervention.

Theoretical Framework: The ADAPTE collaboration model was used. This is an international framework that provides guidance on guidelines development and modification for healthcare providers.

Method: This initiative began with a series of formal and informal conversations with major key stakeholders who were primarily the front-line oncology nurses at the practice unit. Based on the need of the unit, a consensus was reached to modify an existing clinical tool currently used to screen patients for emotional distress and to develop a clinical tool and guideline to screen cancer patient to reduce cancer-related fatigue as well.

Outcome and Result: A clinical assessment tool was developed based on the patient population needs and the nursing staff concerns to yield an outcome that met the needs of this patient population. An evidence-based assessment guideline was introduced to key stakeholders and recommendations were made to integrate the new revised guideline into practice. The research department, professional practice, and the performance leadership continue to revise the current protocol to include continuous assessment of cancer-related fatigue into policy and procedure.

Conclusion: This quality improvement project once implemented will benefit cancer patients as well as oncology practitioners by use of available resources and evidence-based guidelines to improve nursing practice and patient quality of life.

Acknowledgements

A cordial gratitude to all those who have helped make this project a reality, directly or indirectly. First and foremost, I would like to thank my family, especially my husband Wilfred Amilcar, who has always been there with me. He made me believe that the sky should be the limit and that I should always aim as high as possible. A special thanks to my children Kevin and Lauren for providing me with unconditional love and support. Thank you to my mother, who has inspired me so much with the value of hard work and perseverance.

Sincere thanks to my Six Carroll oncology colleagues and friends who have supported me for as long as I can remember and made me the star of the unit—thank you so very much. A sincere thanks to a person that I have spent almost every Saturday with for the past 2 years, my mentor, colleague, and friend Eileen Sheppard, to whom I will be forever grateful. Also a very special thanks to all the faculty at NSU who contributed to the success of this project.

And finally to all those impacted by cancer: Just know that there is hope and you are not alone fighting that battle.

Table of Contents

Title	
Page.....	
.....	
Signature Pages.....	
Copyright.....	
Abstract.....	v
Acknowledgements.....	vi
Table of Contents.....	vii
List of Tables.....	ix
List of Figures.....	x
Chapter 1: Nature of Project and Problem Identification.....	1
Problem Recognition and Definition.....	4
Purpose.....	5
Goal.....	6
Capstone Project Objectives.....	8
Theoretical Framework.....	9
Significance to Nursing Practice.....	11
Healthcare Outcomes.....	12
Significance to Healthcare Delivery and Healthcare Policy.....	13
Healthcare Delivery.....	13
Healthcare Policy.....	15
Summary.....	16
Chapter 2: Literature Review.....	18
Search Terms.....	18
Definition.....	18
Clinical Screening and Assessment Tools.....	19
Benefits of CRF Assessment and Self-Reporting.....	26
Physical, Psychosocial, and External Factors of CRF.....	26
Barriers to Development and Implementation of Effective Fatigue Assessment Tools Into Practice.....	28
Description of Psychosocial and Physical Screening.....	31
Summary.....	32
Chapter 3: Methods.....	34
Project Design.....	35
Setting.....	36

Participants and Ethical Considerations	37
Criteria for Exclusion and Inclusion.....	37
Project Phases and Objectives	38
Project Timeline	41
Resources/Budget and Benefit Analysis	42
Outcome Measures	44
Summary.....	46
 Chapter 4: Results and Discussion.....	 48
Results	48
Data Analysis	54
Findings of the Project	55
Discussion.....	56
Limitations.....	58
Strengths, Recommendations, and Implications for Practice	59
Summary.....	60
 References	 62
 Appendix A. NCCN Standards of Care and Distress Thermometer.....	 65
 Appendix B. Letter of Institutional Commitment.....	 68
 Appendix C. Permission to Conduct Capstone Practicum on Premises: Six Carroll Request	 69
 Appendix D. Oncology-Hematology Assessment Tool.....	 70
 Appendix E. Institution Policy and Procedures	 72

List of Tables

Table 1. Commonly Used Fatigue Measuring Tools and Guidelines.....22

Table 2. Fatigue Assessment Guide Recommended by the NCCN.....23

Table 3. Costs and Itemization.....44

List of Figures

Figure 1. Problem List55

Chapter 1: Nature of Project and Problem Identification

Cancer-related fatigue (CRF) is a very common and usually treatable side effect in cancer patients that profoundly affects every aspect of their quality of life. The overall prevalence of cancer-related fatigue ranges from 50% to 90% in patients (Campos, Hassan, Riechelmann, & Del Giglio, 2011). Cancer patients describe fatigue as one of the most distressing and depressing symptoms related to cancer and its treatment (National Comprehensive Cancer Network [NCCN], 2014). Patients describe fatigue in many ways. They may say they feel tired, weak, exhausted, weary, or lack stamina. They may say they have no energy and are unable to concentrate. Often these patients may appear moody, sad, irritable, or frustrated (Oh & Seo, 2011). However, they rarely label their symptoms and feelings as fatigue unless their healthcare providers suggest this term (Borneman, 2013). Thus, it is imperative for a screening tool to be in place so that healthcare providers can obtain such information at patients' initial visits.

CRF is also identified as a strong and independent predictor of decreased overall patient satisfaction and health-related quality of life. In order to ameliorate the burdens of CRF, many organizations concerned with the outcomes of cancer care have recommended a myriad of clinical guidelines for regular cancer-related fatigue assessment. Nonetheless, this condition remains consistently underreported and ultimately untreated (Scott, Lasch, Barsevick, & Piault-Louis, 2011).

This quality improvement project focused on the development of a clinical guideline and a screening tool adopted from the NCCN (2014) clinical practice algorithm to assess cancer patients at their initial visit to the oncology unit. Oncology practitioners will be able to utilize this tool as recommended by the Oncology Nursing Society (ONS) and the NCCN to assess cancer patients for psychosocial and physiological factors predisposing them to CRF. Findings may then be used to initiate referrals to the appropriate providers. Cancer-related fatigue is a problem that plagues cancer patients (Berger, Mitchell, Jacobsen, & Pirl, 2015; Borneman, 2013; Borneman et al., 2012) and should be screened, assessed, and managed according to institutional clinical practice guidelines so that appropriate care can be initiated in a timely manner.

For the past decade, the Institute of Medicine (IOM) has been instrumental in changing the landscape of cancer care. Since the release of the IOM (2013a) report *Crossing the Quality Chasm: A New Health System for the 21st Century*, emphasis has been placed on the way that healthcare providers can improve patient quality of life. This emphasis has challenged the healthcare community to consistently deliver patient care that not only treats illnesses but also enhances the quality of life for all patients. In 2013, the IOM produced the report entitled *Delivering High-Quality Cancer Care* (2013b). In this document, six specific components were identified for achievement of high-quality cancer care. These components coincide with the IOM quest to improve healthcare outcomes for cancer patients (Gilbert, Sherry, McGettigan, & Berkowitz, 2015).

According to the American Cancer Society (ACS, 2015), an estimated 13.7 million people in the United States currently live with cancer, and about 1.6 million new

cases will be diagnosed each year. In some of the reports, the IOM addressed the quality of cancer care across the continuum from diagnosis, through treatment, long-term survivorship, and care at the end of life. The incidence of cancer has been increasing at an alarming rate, with the cost of intervention to treat cancer. The quality of cancer care is a critical component in the growing concern about the future of the healthcare system (Ferrell, McCabe, & Levit, 2013).

This evidence-based practice initiative was undertaken to develop an approved guideline and protocol with a validated tool to reduce cancer-related fatigue. The platform for this quality improvement project was based on the IOM (2013a, 2013b) recommendation to provide patient care that is safe, effective, timely, efficient, equitable, and patient-centered.

The Nova Southeastern University doctorate of nursing practice (DNP) program is designed to facilitate practitioners with the ability to provide the highest quality of care. According to the American Association of Colleges of Nursing (AACN, 2015), the DNP program prepares graduates at an elevated level of nursing practice to demonstrate synthesis and application of all DNP essentials to improve health for all patients. Consequently, a large component of this promise to deliver high-quality treatment entails identifying clinical problems pertaining to practitioners' respective areas of expertise. They may then use these areas to develop an evidence-based quality improvement project to address specified clinical problems.

This purpose coincides with some of the recommendations outlined in the IOM report *Crossing the Quality Chasm* (Ferrell et al., 2013). Cope (2015) stated that a major goal in healthcare today is to improve patient care. Oncology nurses have been

instrumental in developing nursing interventions that improve care outcome for all cancer patients. Oncology nurses continue to play pivotal roles across the continuum of cancer care through timely interventions, health promotion, psychosocial education, support, and direct care. In this tradition, this capstone project identified barriers to cancer-related fatigue assessment. Plausible solutions were explored, and clinical guidelines were integrated into practice for oncology nursing professionals to adequately assess cancer patients for CRF.

Problem Recognition and Definition

The NCCN (2014) has described cancer-related fatigue as a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to patients' recent activity and interferes with activities of daily living. Yet this fatigue is rarely addressed in many oncology practices (NCCN, 2014). One study indicated that one-half to one-third of Americans with a cancer diagnosis will develop cancer-related fatigue before, during, and after their cancer trajectory (Campos et al., 2011).

According to the American Cancer Society (2015), cancer-related fatigue is very different from everyday normal fatigue that individuals feel after a long day of work or school. Cancer-related fatigue is the worse type of fatigue, and it causes distress that impacts every aspect of the life of individuals diagnosed with cancer. Patients describe cancer-related fatigue as feeling weak, listless, drained, or washed out (National Cancer Institute, 2014). For many cancer patients, this kind of fatigue causes more distress than other symptoms of cancer, such as pain, nausea, vomiting, and depression. Nonetheless,

many oncology practices lack the standard protocol and guidelines to address CRF as well as strategies to tailor appropriate interventions according to the individual needs.

The American Cancer Society, the NCCN, and the National Cancer Institute (NCI) have developed evidence-based guidelines and protocol for practitioners to integrate into practice to enhance nursing care and improve patient cancer care. This project was based on these guidelines as well as on the recommendation by the IOM (2013b) for advanced practitioners to develop nursing initiatives which provide patient care that is timely, effective, efficient, equitable, and patient-centered. Despite the fact that fatigue among patients undergoing cancer treatment is prevalent, disabling, and manageable, it is neither properly addressed nor included in a full assessment or treatment plan by cancer care providers, in part because of lack of knowledge of mechanisms for targeted intervention (ACS, 2015).

This quality improvement project utilized the Cancer Distress Thermometer (NCCN, 2014) and Multidimensional Brief Fatigue Inventory (NCCN, 2014) to further assess cancer-related fatigue for patients who are identified to be at high risk for cancer-related fatigue. Most signs and symptoms of cancer-related fatigue, depression, and emotional distress are similar. Thus, use of these instruments in tool development may be helpful in preventing duplication and reducing the burden for nurses to in using several tools for the same purpose.

Purpose

The purpose of this performance improvement project was to identify an evidence-based screening tool for clinical guidelines and protocol adopted from the NCCN (2014) algorithm to reduce cancer-related fatigue and improve care outcomes.

Cancer patients admitted to the oncology unit were assessed and screened for signs and symptoms of cancer-related fatigue at their initial visit, at regular intervals, during and following cancer treatment, and as clinically indicated. The rationale for choosing this particular tool was that evidence indicates that psychosocial distress and untreated physiological problem related to cancer can lead to disruption of medical care and negatively influence all aspects of daily living and cancer care outcomes (Borneman, 2013). Fatigue, depression, and anxiety in cancer patients have been documented as concurrent symptoms. Studies indicate that fatigue in cancer patient seldom occurs as a single problem. Fatigue often clusters with pain, emotional distress, and depression (NCCN, 2014). Oncology practitioners and healthcare providers have the ability to address patient CRF needs through leadership, implementation quality improvement projects, and positive outcomes.

Goal

The overall goal of this quality improvement project was to provide information to key stakeholders in the oncology unit regarding factors that predispose cancer patients undergoing cancer treatment to cancer-related fatigue. With this information, appropriate practice guidelines and protocol can be implemented to address cancer-related fatigue in a timely manner to prevent further complication and chronic health-related problems. Oncology practice guidelines in cancer-related fatigue assessment were selected as the source of intended practice change. The guidelines were developed based on the NCCN (2014) algorithm for cancer care. The NCCN guidelines for cancer-related fatigue describe the procedure for the screening of fatigue in patients with cancer.

The target population includes adult cancer patients admitted to the oncology unit, and the guideline is intended to provide guidance for oncology practitioners as they implement the tool in their units. Oncology practitioners are in a prime position to follow the IOM (2013b) recommendation—to develop innovations for improving the delivery of care for cancer patients. A major goal of this initiative was improvement of patient care outcomes through an evidence-based intervention. Early identification of cancer-related fatigue by nurses before, during, and after treatments has been proven to be very effective. With this identification, nurses are able to tailor interventions to meet the needs of individual patients (NCCN, 2014).

Nursing has been defined by many scholars as the diagnosis and treatment of human response to actual or potential health problems (Scott, Matthew, & Kirwan, 2014). Within the discipline of healthcare, professional nurses are often a primary resource for oncology patients with actual or potential risks for cancer-related fatigue. Oncology nurses often collaborate with cancer patients to help them manage health issues before and after cancer treatments. The assessment of CRF is an integral part of providing quality patient care.

As oncology nurses remain at the epicenter in the continuum of cancer care, they often spend a significant amount of time with cancer patients and their families. Nurses therefore build high levels of trust and rapport with individuals whose lives have been impacted with cancer. Nurses are thus in an excellent position to develop quality improvement initiatives for improvement of healthcare outcome for cancer patients. Overall, oncology nurses have an important role to play in the future of nursing of the

21st century—improvement of the health of the population through evidence-based initiatives (NCCN, 2014).

Capstone Project Objectives

The following were the objectives for this capstone project:

1. Conduct a comprehensive literature review and research to identify the needs for cancer-related fatigue assessment and to identify effective evidence-based clinical guidelines to combat CRF toward creation of an effective cancer-related fatigue screening tool.
2. Obtain institutional support and permission to conduct the project in the oncology unit, general support from stakeholders, and academic support from Nova Southeastern University.
3. Develop an evidence-based fatigue assessment tool and protocol on cancer-related fatigue to assess cancer patients for factors predisposed to CRF, in accordance with the NCCN (2014) standards of care for CRF in adults.
4. Present the new guideline and protocol to major stakeholders, including bedside nurses, research department, unit nurse manager, nurse clinicians, and performance improvement personnel, for integration into practice.
5. Follow up with the unit to monitor the progress of the screening/assessment tool beyond completion of the project.

The abilities of individuals to fulfill simple life responsibilities and participate in everyday actions are basic principles of life. It is logical to believe that the intention of the Creator for the human race during existence in this earth was for every person up to a certain age to be able to fully engage as productive members of society. As such,

individuals must be able to work, play, socialize, be happy, and feel a sense of self-worth.

The ability to perform one's activity of daily living has been shown to have a positive impact on health and in every other aspect of life (Cope, 2015; Minton et al., 2013). Furthermore, the ability to complete basic chores and to attain life objectives is a basic human right essential to human existence and survival. However, when illnesses and other life issues interfere with the ability to perform daily activities, every aspect of an individual's life can be affected. This outcome can render the individual to be incapacitated and decline in function. Nurses must use the core values provided by the nursing professional structural framework to initiate quality improvement projects that will ultimately improve the quality of life for those who are unable to fulfill basic life functions because of an illness. These assertions concur with Zaccagnini and White's (2017) observation that advanced practitioners must bring analysis and critical thinking to identify critical problems that impact individuals' quality of life and make creative inferences to help these individuals.

Theoretical Framework

The goal of this quality improvement project was to develop a clinical guideline and screening to reduce cancer-related fatigue. The ADAPTE (2013) guideline development model was used as a framework. The ADAPTE collaboration is a group of project investigators who emphasize guideline development and implementation based on scientific evidence. Their aim is to promote the development and use of clinical practice guidelines through adaptation of existing guidelines (ADAPTE, 2013). This process has been effective in other oncology practices in which one or more quality

improvement guidelines from other organizations already exist on the same topic and example of that is cancer-related fatigue and distress in cancer patients that often documented concurrently (NCCN, 2014). This model is also helpful in reducing duplication and promoting the local uptake of quality guideline recommendations.

Zaccagnini and White (2017) asserted that theoretical frameworks can be constructed using concepts from fields that differ from nursing; such fields include motivational theory in business, adult education theory, social psychology, and theories of medicine. This observation coincided with the concept of collaboration to improve the health of an individual or the population (AACN, 2006). Even though the development of nursing practice from nursing theory is not fully understood, evidence shows that theory helps to provide the knowledge that are needed to improve nursing practice. It is imperative that the DNP invested more than one theories or theoretical frame work of change to effectively motivate and bring the collaborative team to the optimal goal which to improve nursing practice and client satisfaction (Zaccagnini & White, 2017). The holistic nursing focus in conjunction with clinical knowledge and skills puts advanced practitioners in a key position to coordinate high-quality, patient-centered care (Sun et al., 2015). The ADAPTE frame work is unique in that it facilitates a systematic approach to modifications of guidelines that encompass the core values and cultural needs to ensure acceptability in application to a hospital setting.

Significance to Nursing Practice

The landscape of cancer care in the United States has changed significantly over the past decades (AACN, 2015). These changes can be viewed as both positive and negative. A cancer diagnosis may be the worst possible news for any individual, but

because of the positive changes and increasing evidence-based practice, effective and timely nursing care can make treatment less stressful for patients. As the result of early intervention and evidence-based practice assessments and treatments, the survivor rate for all type of cancer is at its highest level (NCCN, 2014).

Oncology nurses play a critical role in implementing evidence-based practice guidelines to address issues impacting the nursing practice related to cancer care. The use of an oncology screening tool for cancer-related fatigue will be essential in bridging the medical and physiological needs of individuals with a traumatizing cancer diagnosis. Although a cancer diagnosis is no longer considered a death sentence, cancer is nevertheless both a serious life-threatening illness and a chronic condition. Modern medicine and cutting edge technologies have been instrumental in the management of the pharmacological aspects of cancer. However, management related to the physiological and psychosocial issues has not progressed or have been addressed at the same level (NCCN, 2014).

Limited information exists related to both assessment and management of cancer-related fatigue at many practice settings in which healthcare professionals provide treatment for cancer patients. The research site institution for this quality improvement project was one such setting. Evidence shows a myriad of appropriate evidence-based guidelines for the assessment and management of cancer-related fatigue; nonetheless, assessment of CRF is still not appropriately performed at many hospitals and oncology practices (Berger et al., 2015). The outcomes of this quality improvement project will enhance patient care by identification of barriers that may interfere with effective fatigue assessment and implementation. The development of the evidence-based fatigue

assessment tool helps assess and identify treatable risk factors so that oncology nurses can provide safe, timely, efficient, equitable, and patient-centered care, as recommended by the IOM (2013a, 2013b). Nursing practice and patient satisfaction will be improved.

When an individual is diagnosed with cancer, both the patient and family members are faced with difficult challenges, such as adapting to a new illness, uncertainties, life-changing issues, and many more adjustments associated with the new disease. It is important that healthcare providers initiate innovative healthcare models and treatment modalities that meet the needs of these individuals. Although no standard assessment methods presently exist for cancer-related fatigue, it is imperative that healthcare providers identify any underlying causes of cancer-related fatigue. The most effective methods for this identification is through effective screening that yields result toward implementation of appropriate treatment.

Healthcare Outcomes

As with any other symptoms associated with cancer treatments, CRF is not necessarily an unavoidable part of a client's cancer trajectory. If CRF is experienced, it can be ameliorated when identified on time. Effective cancer-related fatigue assessment and timely management can significantly improve the lives of patients who are living with the burden of cancer-related fatigue. The intended outcome of this project was to initiate nursing intervention that may help improve patients' energy levels and increase their abilities to perform their activities of daily living. These issues are some of the most reported concerns of cancer patients, based on the researcher's encounters with this population.

It is imperative, then, to identify and eliminate barriers preventing effective assessment to cancer-related fatigue. Education of patients and their family members about the importance of perceiving cancer-related fatigue as part of their assessment can emphasize the importance and significance of this symptom. Often patients believe that fatigue is an inevitable part of chemotherapy and radiation therapy and are reluctant to mention the fatigue to their healthcare providers (NCCN, 2014). With the implementation of a fatigue assessment tool, oncology nurses will be able to identify treatable risk factors that predispose patients to cancer-related fatigue and address these factors in a timely manner. Addressing will then have a positive impact in cancer care outcomes.

Significance to Healthcare Delivery and Healthcare Policy

Healthcare Delivery

The number of individuals who are currently living with and will be diagnosed with cancer and eventually develop cancer-related fatigue will have an impact the current healthcare delivery and healthcare policy system (NCCN, 2014). In the past, a cancer diagnosis was considered a diagnosis of an acute fatal disease. However, with today's advanced research and technology, cancer is becoming a chronic health issue that nevertheless affects healthcare delivery and policy. This new era in cancer has challenged oncology practitioners to develop evidence-based quality improvement projects tailored to address the need of this patient population.

On a larger scale, the impact of cancer-related fatigue can be considerable, both economically and in terms of family adjustment. At the local level, this capstone project can impact positively the healthcare delivery for oncology patients receiving treatment

at a busy oncology unit located in South Florida. Implementation of an innovative oncology distress screening protocol can quickly identify major factors predisposing cancer patient to cancer-related fatigue. Cancer-related fatigue is a critical ailment which must be addressed through early nursing intervention to improve the quality of life of those affected with this illness. This observation coincides with the DNP essential to empower practitioners to develop quality improvement projects that deliver high-quality care to all people. Oncology patients should be able to rely on a healthcare system that provides care based on the best scientific knowledge to meet their needs (Institute of Medicine [IOM], 2016).

Development of an evidence-based fatigue assessment tool in the unit will structure the front-line nurses to integrate the tool into practice to reduce CRF for patients admitted to the unit. Oncology nurses in the unit will have the opportunity to assess patients' CRF by asking them to report and rate their fatigue levels. The rationale was that fatigue is a subjective experience that is best assessed by the using patients' own words or perceptions. Patients will be asked about their fatigue levels at least twice or three times per day according to institution policy and protocol regarding fatigue assessment. Oncology nurses have the education and skill required to identify patients who are experiencing cancer-related fatigue and its impact on their quality of life. However, standard guidelines and protocols have been lacking.

Cancer-related fatigue is a major health issue that interferes with a person's ability to fulfill daily responsibilities and enjoy life. It is imperative that nurses perform assessments during their shifts on cancer patients receiving chemotherapy, radiation, and other biological therapies. As the result of this initiative, nurses will be an able to

assess as well any underlying psychosocial and physiological problems, such as depression and anxiety, and manage them accordingly to prevent patients' chronic conditions in these areas.

Healthcare Policy

This quality improvement project was unit-based, and therefore the results may alter institutional policies and protocol. It is anticipated that this capstone project may change the way that bedside nurses conduct their nursing shift assessments in the oncology unit, with possible revisions of the policy and protocol related to medication administrations and symptom management in the unit. All cancer patients admitted to the unit will be assessed for cancer-related fatigue, and treatment options should be implemented according to patient needs with simultaneous adherence to policy and protocol.

For example, a patient with CRF identified with anemia may be treated with blood transfusion or hematopoietic growth factors to increase production of red blood cells, as per the protocol set forth by the institution. Patients with emotional distress may benefit from support groups, counseling, and journal writing to gain support from others and express their concerns. Medication plays an important role in managing cancer-related fatigue, but proper guidelines must be followed to meet the individual needs of each patient to promote health and increase patient satisfaction.

The current trend is to include in clinical healthcare outcomes and also to include Medicare and Medicaid reimbursement for the management assessment (NCCN, 2014). Another trend in the cancer care continuum that may influence healthcare policy today is that cancer has been transformed into a chronic illness for many patients, and

the need to implement posttreatment intervention in the plan of care has become essential. Oncology nurses are at the forefront of care to implement evidence-based practice and policy for improvement of care of this population in regard to cancer-related fatigue.

The fact that CRF can have an impact on patients' lives years after the completion of chemotherapy indicates that healthcare providers are obligated to better understand, prevent, and care for long-term and late effects of cancer treatment. Early detection and prevention of CRF can decrease the severity of posttreatment effects. Advanced practice nurses play a pivotal role in the healthcare delivery policy process to ensure that patients are receiving appropriate care. With the evolution of evidence-based practice, nurses are able to identify major clinical problems and initiate evidence-based protocols to solve patients' problems and promote health for all patients.

Summary

Cancer-related fatigue is a problem that plagues cancer patients and was the focus of this quality improvement project. Cancer-related fatigue has been described as one of the most common symptoms affecting cancer patients during and after cancer treatment. Integration of evidence-based practice guidelines in the clinical setting has been proven to be very effective in combating cancer-related fatigue (NCCN, 2014). The purpose of this quality improvement project was to implement an evidence-based practice guideline and protocol to assess patients for risk factors that predispose them to cancer-related fatigue. This quality improvement project was implemented to improve nursing practice and increase patient satisfaction at an oncology practice located in South Florida.

Studies indicate that some of the most common barriers to effective cancer-related fatigue assessments are lack of awareness, fears, and lack of proven methods to assess and identify predictors of cancer-related fatigue (Berger et al., 2015; Borneman et al., 2012). Incorporation of a patient-reported outcome assessment tool in routine clinical care for patients with cancer will help front-line nurses track and address specific problems that predispose patients to cancer-related fatigue and initiate timely nursing interventions to address this clinical issue. For development of this tool, the Distress Thermometer (NCCN, 2014) was utilized as a guideline to implement a protocol to identify factors predisposing cancer patients to cancer-related fatigue. Cancer patients will be screened at their initial visit to the oncology practice for factors that predispose them for cancer-related fatigue and, based on the clinical finding, will be referred for further intervention.

Chapter 2: Literature Review

Search Terms

A systemic literature search was performed utilizing the Nova Southeastern University Cumulative Index to nursing and allied health literature (CINAHL). Also used were Complete, MEDLINE, Nursing and Allied Health complete databases, and professional and governmental agencies, as well as literature from the Oncology Nursing Society and the National Comprehensive Cancer Network, which supported the current arguments in the management of cancer-related fatigue. The search strategies were focused on research articles relevant to cancer-related fatigue.

The articles selected for this literature review were current and appropriate to the subject matter. For the purpose of this capstone project the search included only peer-reviewed articles written in English. The literature review was used to critically examine and summarize the available evidence regarding current guidelines and protocol for cancer-related fatigue. The following keywords and key terms were used in the literature review: *cancer patients; etiology of cancer-related fatigue; fatigue assessment tools; institutional, systemic, and practice barriers; chemotherapy side effect; radiation therapy side effect; evidence-based guidelines, and distress thermometer.*

Definition

Cancer-related fatigue as defined by the NCCN (2014) is a persistent, subjective sense of tiredness related to cancer treatments that interferes with individuals' abilities to perform simple activities of daily living. As such, CRF encompasses both physical

and psychological dimensions. Studies indicate that the majority of patients treated for cancer have experienced cancer-related fatigue (NCCN, 2014), which can be highly detrimental and disruptive to an individual's sense of well-being. Despite the fact that multiple studies indicate that CRF is the most common side effect of chemotherapy and radiation therapy, very few proposals and standardized treatment methods are available to address the emergence of CRF (Minton et al., 2013).

Many barriers exist to the performance of effective CRF assessments.

Furthermore, the very few fatigue assessment tools that are available today are complex and difficult to understand by clinicians as well as patients. This complexity hinders both the patients and the practitioners from introducing these tools into practice. In order to properly address the needs of patients who are currently affected and those who will be affected by CRF, oncology practitioners need to take into consideration the physical, moral, and psychosocial aspects of CRF on the clients. Mitchell et al. (2014) suggested that oncology practitioners must utilize the best available evidence, clinical judgment, and individual circumstances to determine appropriate interventions for specific patients.

Clinical Screening and Assessment Tools

A systematic review by Alcântara-Silva, Raquel, Freitas-Junior, Freitas, and Machado (2013) to assess the impact of cancer treatments in women with breast cancer and other gynecological cancer indicated that early intervention play a major role on identification of manageable risk factors in cancer patients. The goal of the review was to elucidate and understand the fatigue experienced by female clients with breast and/or

gynecological cancer who were receiving radiology, while taking into consideration evaluation criteria, treatments, predictors, and associated factors.

The Alcântara-Silva (2013) literature review included studies published between 2000 and 2010. The project investigators selected for examination 12 among 1,085 articles found on assessment and management of CRF in breast and other gynecological cancer. The studies yielded good results in relation to fatigue, physical and psychological aspects, and quality of life. The functional Assessment of Cancer Therapy-Fatigue was the most commonly used scale for assessment and evaluation of fatigue (Alcântara-Silva et al., 2013). The results showed that early detection of fatigue using the appropriate scale is imperative to propose suitable treatments and achieve better clinical results. This study indicated that early detection of fatigue with appropriate fatigue scales is relevant for suitable symptoms management and achievement of improved patient conditions.

In the last decade, substantiation of the need for an evidence-based approach to CRF has mounted significantly from major organizations concerned with evidence-based guidelines, such as the National Comprehensive Cancer Network, the Oncology Nursing Society, the Canadian Partnership Against Cancer/Canadian Association of Psychosocial Oncology, and the American Society of Clinical Oncology. Such organizations have recommended screening, evaluation, and management strategies to improve the management of CRF (Berger et al., 2015). In spite of these recommendations, cancer-related fatigue remains poorly and seldom managed in many oncology practices (Mitchell, 2010).

The phenomenon of cancer-related fatigue, although widely recognized and experienced, has not been elucidated, which prevents the development of mechanistically-driven interventions. However, significant progress has been made toward methods for screening and evaluating CRF with reliable and valid self-reporting fatigue measuring scales. Table 1 lists some of the most commonly used clinical measurement CRF tools that have been validated in patients with cancer.

The Multidimensional Brief Fatigue Inventory (BFI, NCCN, 2014) has been adequately validated. This tool had been used to assess cancer-related fatigue and pain. The Numeric Rating Scale or the Oncology Nursing Society Fatigue Scale has established reliability and validity for fatigue screening and it is easy to use. The Piper Fatigue Scale, which has been revised recently, has established reliability and validity for cancer screening. This tool is commonly used to assess behavioral, severity, effectiveness, sensory, and cognitive in cancer patients (Mitchell et al., 2014).

Table 2 shows the elements of the BFI used to assess, screen, and manage CRF. Because CRF is a subjective experience, it is best assessed by patients' self-reports. Information obtained from a clinical measurement tool is essential for monitoring CRF. The evidence indicates that fatigue may occur as an isolated symptom or as one element in a cluster of symptoms, such as those listed in Table 2.

Table 1

Commonly Used Fatigue Measuring Tools and Guidelines

Scale	Description
Unidimensional FACT-F	The functional assessment of cancer therapy, consisting of 28 questions regarding quality of life and tumor-specific queries in populations with mixed cancer types.
EORTC QLQ C30	A quality of life questionnaire with 30 items, independently assessed in lung cancer, bone marrow transplantation, and metastatic cancer.
Multidimensional Brief Fatigue Inventory	A brief fatigue inventory designed to measure the intensity and interference of cancer-related fatigue.
Chalder Fatigue Scale	This scale is validated to be use in general practice but also used for chronic fatigue syndrome. It is brief and simple.
Revised Piper Fatigue Scale	Scale containing 22 items that measure 4 dimensions of subjective CRF: cognitive mood, behavior, sensory and affective meaning.
Schwartz Cancer Fatigue	This measuring scale. Consisting of 28 single-word items, is validated in mixed cancer populations undergoing treatment.. It is the most commonly used scale because it is based on an extensive literature review and seems to be the most user- friendly. A major disadvantage is that this tool was designed with male patients in mind. It also requires test-retest reliability.
National Comprehensive Cancer Network Distress Thermometer	This is a brief easy-to use tool recommended by the NCCN and other experts to measure distress in cancer patients (Appendix A).

Table 2

Fatigue Assessment Guide Recommended by the NCCN

Assessment	Yes	No
Physical Assessment		
Shortness of breath		
Heart palpitations		
General lack of energy		
Risk and Contributing Factors		
Anemia		
Hypothyroidism		
Hypogonadism		
Adrenal insufficiency		
Cardiomyopathy		
Pulmonary dysfunction		
Fluid and electrolyte imbalances		
Nausea/vomiting		
Pain		
Depression		
Emotional distress		
Sleep disturbance		
Sedation secondary to specific medication classification		

Note. From NCCN (2014).

Cancer-related fatigue is a condition that incapacitates an individual's ability to function physically and mentally and eventually leads to rapid deterioration of health-related quality of life. The deleterious effects of CRF on quality of life may include dramatic and detrimental effects on the individual's personal relationships, ability to work and enjoy life, and hope of fighting the cancer. In a qualitative research by Scott et al. (2011) to identify individuals' perceptions about the effect of CRF in their own words, the results were intriguing. Scott et al. reviewed 154 articles in which 667 patient quotations were noted. In their own words, patients described the effect of fatigue on their everyday lives. They used the word *tired* 247 times to describe their fatigue. They also reported loss of energy, being weak, exhausted, worn out, listless, sluggish, feeling sleepy, and lethargic. Evidence in a study such as this indicated self-reporting is one of the best methods to assess cancer-related fatigue.

Despite the fact that many research studies concluded that the phenomenon of cancer-related fatigue is a major problem that can affect every aspect of individuals' lives for years after chemotherapy treatment (Minton, et al., 2013), very little research has been published to raise awareness of this emerging problem. CRF has been documented in many studies as a highly prevalent condition among cancer patients and will cost society substantially. Nonetheless, cancer-related fatigue remains primarily underreported and untreated because of its multidimensional characteristics.

CRF often has substantial and multidimensional impacts on individuals who have received chemotherapy and other biological agents. Many studies have reported that untreated cancer-related fatigue often results in the impairment of physiological, psychological, and functional well-being of the involved individual. In a review and

synthesis of qualitative research conducted by Scott et al. (2011), patients' own words were used to describe experiences of CRF. When patients were asked to describe their fatigue experiences using imagery and metaphors, their descriptions were as follows (all quotations as cited in Scott et al., 2011):

- My legs feel like spaghetti when I get up in the morning (Messias et al., 1997, p. 45).
- I can relate to a tire, that the rubber is wearing out and are unable to repair (Barsevick, Whitmer, & Walker, 2001, p. 1367).
- I feel like a car running out of gasoline and a dry battery (Porock & Juenger, 2004, p. 359).
- I was like a dismantled zombie (Porock & Juenger, 2004, p. 359).
- I am too tired to get out of bed Messias et al., 1997, p. 45.
- When I am tired I cannot even feed myself (Porter, 2004, p. 18).
- This type of fatigue means that you can hardly put one foot in front of the other (Westerman et al., 2007, p. 859).

Other factors that were reported in Scott et al. (2011) were side effects of certain chemotherapy regimens and the role that they play in cancer-related fatigue. Although the etiology and pathophysiology of cancer-related fatigue is difficult to understand because of the multifactorial aspects surrounding the causes of fatigue, many well-documented factors predispose cancer patients to fatigue, such as depression, emotional distress, and the cancer itself. The fact that the cancer itself as well cancer treatment and other predisposing factors contribute to the development CRF make it a challenging side effect to diagnose and treat.

Cancer-related fatigue and emotional distress have been documented as concurrent symptoms in cancer patients. Oh and Seo (2011) in a meta-analysis clarified this concept further. They provided documentation of 30 studies in which cancer-related fatigue was associated with emotional distress. The mean effect of depression on cancer-related fatigue was statistically significant, approximately 1.49.

Benefits of CRF Assessment and Self-Reporting

In a qualitative analysis of cancer-related fatigue, Borneman et al. (2012) described patients' perception of the causes, relief, related symptoms, meaning, and suffering associated with CRF. A total of 252 patients suffering from many different types of cancer were enrolled in a quasi-experimental study to identify the effects of a clinical intervention in reducing challenges to symptoms management in outpatient care (Borneman et al., 2012). Analysis of data reported in the literature was obtained from the Piper Fatigue Scale. Patients' comments were collected and reviewed for contents, and they reported that CRF did have an overall significant impact on every aspect of their lives. Cancer-related fatigue limited patients' abilities to function, socialize, and participate in enjoyable life activities. As these results indicate, the assessment of what suffering related to CRF means to different people is an essential element of the multidimensional assessment of CRF; such assessment will enable clinicians to better understand the suffering associated with CRF.

Physical, Psychosocial, and External Factors of CRF

According to Borneman (2013), scientists as well as clinicians have attempted to explain the cause of cancer-related fatigue for many years. To date, the closest they have come to understanding the pathophysiology of CRF is the discovery of a natural

chemical called cytokines. This is a substance released by dead cancer cells able to prolong inflammation and ultimately lead to fatigue. To further explain the pathophysiology of CRF, Mitchell (2010) constructed a model and organized it into four categories: energy balance/energy analysis, fatigue as a stress response, neuroendocrine-based regulatory fatigue, and hybrid models (Borneman, 2013).

The Mitchell (2010) model further explains the actions of each of the characteristics defined. Energy balance and energy analysis cause an imbalance of energy intake, metabolism, and expenditure, which facilitates the development of fatigue. Fatigue as a stress response suggests a continued adaptation along a continuum that is differentiated in both behavioral and symptoms characteristics. Neuroendocrine-based regulatory fatigue suggests that the multidimensionality of fatigue is due to a dysregulation of the neuroimmunoendocrine system, which is interrelated both anatomically and functionally with the hypothalamic-pituitary-adrenal axis, cytokines, circadian rhythms, and neurotransmitters (Mitchell, as cited in Borneman, 2013). The hybrid aspect includes those characteristics that suggest the stressors caused by cancer and cancer treatments affect four important areas including the cognitive function, nutrition, muscle endurance, and quality of sleep. Disturbances in these functions hinder the ability to adapt, as well as other models that propose that a combination of biological, psychological, and functional variables induce cancer-related fatigue (Borneman, 2013).

Studies indicate that chemotherapy treatments are a major contributing factor of fatigue in people with cancer (ACS, 2013). It has been known that certain types of chemotherapeutic agents affect patients' temporal lobes, which indicates the mechanism of fatigue because of the anatomical location of the temporal lobe. Many studies indicate

that most chemotherapy side effects usually begin a week following administration of chemotherapy, in which the nadir occurs. At this time, the white blood cells count decreases, and bone marrow suppression takes place, which predispose patients to many risk factors of cancer-related fatigue.

Most cancer treatments, such as chemotherapy, radiation, stem cell transplants, and other immunotherapy treatments, may predispose patients to fatigue by killing fast-growing cells. These treatment agents cannot distinguish between cancerous and noncancerous cells. Alternatively, in cancer treatments, the agents kill both normal cells and cancer cells, which often leads to a build-up cell waste. As the result, the body uses extra energy to “clean up” and repair affected cells damaged by the chemotherapeutic agents, thus causing fatigue (Hronek & Reed, 2015).

Barriers to Development and Implementation of Effective Fatigue Assessment Tools Into Practice

The literature has identified numerous challenges and barriers to guideline development implementation at the patient, clinician, and system levels (Berger et al., 2015). Cancer-related fatigue is reported by 80%-100% of cancer patients and has been described as one of the most significant quality of life and dose-limiting issues in cancer care. Similar to pain, numerous barriers to effective fatigue management at the patient, clinician, and system levels have been documented (NCCN, 2014). Studies have indicated that, despite the prevalence and intensity of fatigue, patients are skeptical to report this side effect and have little expectation that it can be relieved (NCI, 2015). Cancer patients who experience fatigue do not report it to their healthcare providers because they feel that it is part of their treatment, it is not important, or it is untreatable

(NCCN, 2014). One of the aims of this capstone project was to implement an assessment tool for nurses to use assess cancer-related fatigue.

Evidence shows that healthcare providers place more emphasis on treating pain and nausea than on fatigue, even though fatigue has a similar impact on quality of life (Scott et al., 2011). Cancer-related fatigue is a symptom that is seldom assessed in a clinical setting by healthcare providers. This results in underreported, underdiagnosed, and untreated of CRF. Even when patients report their fatigue, healthcare providers may not respond appropriately. Studies have indicated that few patients ever receive treatment or counseling from providers on how to manage their fatigue (NCCN, 2014). One of the provisions of this capstone project was to utilize an evidence-based standard of care for CRF in children/adolescents and adults to adequately screen, assess, and manage CRF, according to units' respective clinical practice guidelines (NCCN, 2014).

According to current hospital guidelines, all patients are admitted to the hospital as medical-surgical patients, but with a diagnosis of cancer, chemotherapy and radiation treatment is initiated (NCCN, 2015). Often, medical staff members continue care under the medical- surgical standards of care as opposed to the appropriate oncology guidelines. This practice has become a major clinical practice gap, creating another barrier to implementation of CRF treatment. This capstone project was aimed at improving this gap. The project emphasized the importance of utilizing evidence-based protocols to educate front-line nurses caring for cancer patients how to screen, assess, and manage cancer-related fatigue according to clinical guidelines.

Other barriers indicated in the literature are system barriers (NCCN, 2014). Institutional and system limitations exist that are related to fatigue assessment and

management. Documentation of fatigue assessment and management are not often recorded on patients' medical records, primarily because this documentation is not a requirement for institution accreditation by the ACOSCO (2012). As the result, assessment and management of fatigue are often not considered a priority. Healthcare providers are not obligated to assess and document fatigue on their daily shift assessments. Often cancer patients are denied the opportunities of much needed interventions that might have improved their quality of life because of such system barriers (NCCN, 2014).

More systemic approaches to treating cancer-related fatigue are needed to overcome these barriers. Effective oncology leaders are critical to the overcoming of challenges and barriers in integrating fatigue guidelines and protocol into practice. Evidence indicates that the values that oncology clinicians place on symptom management and supportive care services influence progress (Bower et al., 2014; Eaton & Tipton, 2010). Oncology practitioners are faced with daily challenges in prioritizing and balancing the resources devoted to screening, assessing, and managing fatigue (Berger et al., 2015).

It is imperative that practitioners use evidence-based practice assessment to improve practice and enhance patient care. An integrative review by Wright, Hammer and Melkus (2014) focused on CRF awareness. The purpose of the study was to identify the link between multiple chronic illness and cancer-related fatigue. As Wright et al. pointed out, for practitioners, it is essential to know the patients and any predisposing factors that may cause complications. This concept concurs well with what nurses do to improve the care of those they treat. The harsh reality of cancer care is that side effects,

such as fatigue, nausea, vomiting, pain, and alteration in nutrition are almost certain to be a part of most cancer treatments (Wright et al., 2014).

Regardless of these potentially gruesome side effects, cancer patients must adhere to their cancer treatments. According to the oncology nursing society treatment guidelines, the goals of chemotherapeutic agents are cure, control, or palliation. Thus, treatment is a matter of survival for many cancer patients. Understanding chemotherapy modalities is essential to make the treatment process as efficient as possible for patients. Also an understanding the mechanism of the guidelines surrounding chemotherapy administration is paramount and can make a significant difference for cancer patients in their daily lives (Wright et al., 2014).

Description of Psychosocial and Physical Screening

The Distress Thermometer (NCCN, 2014) is a screening tool designed to quickly identify cancer patients' experiences of psychosocial and physical issues. The registered nurse (RN) completes psychosocial and physical problem assessment related to cancer for all new cancer patients admitted to the oncology unit, radiation oncology, department, and outpatient infusion at a "pivotal time" in their diagnosis and treatment. Examples of pivotal times are initial cancer diagnosis, start of treatment, end of treatment, posttreatment or transition to survivorship, presurgical or postsurgical visits, and first visit to discuss chemotherapy and radiation therapy (Zebrack et al., 2016).

The NCCN (2014) Distress Thermometer for patients is a tool that has been used as a guide to screen patient for psychosocial concerns and was also used to reduce cancer-related fatigue. This tool contains a 34-items problem list. The 34 problems

include the following areas (number and percentages of items in each category are in parentheses; Appendix A):

- Practical problems, which include child care, housing, insurance/financial, work/school, and treatment decisions (6, 18%);
- Family problems, such as dealing with children, dealing with partner, ability to have children, and family health (4, 12%);
- Emotional problems, such as depression, fears, nervousness, sadness, worry, loss of interest in usual activities (6, 18%); and
- Physical problems, such as bathing/dressing, breathing, fatigue, getting around, pain, and poor appetite (18, 53%).

In this study, the Distress Thermometer (NCCN, 2014) served as a guideline to screen cancer patients. Although the tool was originally intended to screen patients for psychosocial concerns, approximately 54% of the items in other areas are very common in patients with cancer-related fatigue.

Summary

Fatigue is highly prevalent in cancer patients before, during, and even years after treatment, so it is imperative to identify and address patients in this population to prevent chronic conditions which may impact their lives long after cancer and treatment. It is estimated that 80% to 100% of patients with cancer will experience CRF (Eaton & Tipton, 2010). Despite its prevalence, CRF remains underreported and untreated (Scott et al., 2011). Major barriers to effective management by both healthcare providers and patients include lack of awareness, limited knowledge of the pathophysiology of fatigue, institutional and systems limitations, and lack of proven methods to assess and manage

CRF. Oncology nurses are in a unique position to identify clinical problems such as CRF and utilize evidence-based methods to address these issues and promote health and maintain quality of life for all patients.

Regardless of the current challenges surrounding CRF, today's medical and related breakthroughs are very promising and encouraging for oncology practitioners as well as cancer patients. Cancer is no longer considered a death sentence (NCCN, 2014), an accepted idea that gives hope to many patients. New cutting edge treatments and screening have resulted in cancer patients living longer than ever. The American Cancer Society estimated that, as of 2012, 13 million people were cancer survivors in the United States, and this number is predicted to increase to nearly 18 million by 2022 (Bower et al., 2014). All statistics indicate that at least half of that 18 million will experience cancer-related fatigue at some point in their cancer journey. Therefore, it is essential for healthcare providers to utilize appropriate conceptual models and theoretical frameworks to guide the development of effective assessment tools and protocols to improve nursing practice that will enhance the quality of life for these patients throughout their cancer trajectory.

Chapter 3: Methods

This quality improvement project was conducted to develop a guideline and protocol to assess cancer patients at their initial visits to the oncology unit for psychosocial and physiological factors predisposing them to cancer-related fatigue. Evidence indicates that cancer-related fatigue, a major health impairment associated with cancer and cancer treatments, is often underassessed and undertreated (Campos et al., 2011). Cancer-related fatigue has been described by the NCCN (2014) as an ongoing subjective sense of tiredness resulting from the cancer itself or cancer treatments that impact patients' activities of daily functioning.

Patients admitted to the unit with a cancer diagnosis will be asked to complete a paper version of the screening tool. Once the tool is completed, the admitting nurses will review the form and initiate the appropriate intervention that meets the individual patient's needs. The guideline will be interprofessional in focus—care will be provided based on gravity of the fatigue level, which may range from mild to moderate to severe.

The initial step of this project was to adopt the definition of CRF by means of the literature review and other resources available. The purpose was to implement an effective assessment guideline and protocol to assess patients for risk factors that predispose them to cancer-related fatigue. CRF has been shown to impact every aspect of individuals' lives throughout their cancer trajectory. These aspects range from financial and other practical problems to family, emotional, physical, and spiritual problems (Borneman, 2013). Limitations of a person's ability to perform activities of

daily living as the result of cancer treatments, and any financial stress that may be associated with cancer treatments, as well as emotional distress as the result of cancer diagnosis and prognosis, are some of the main contributing factors to cancer-related fatigue. CRF is a serious health issue that can affect a person's body, mind, and spirit.

Cancer-related fatigue can also have a profound negative impact not only on a patient's quality of life but also treatment compliance. Often healthcare providers may be forced to reduce or stop patient treatments entirely because of side effects, most often severe fatigue (Borneman, 2013). This quality improvement project consisted of suggested ideas that could assist oncology practitioner to reduce cancer-related fatigue. Despite the fact that cancer-related fatigue is a major obstacle and impacts every aspect of cancer patients' lives, this side effect is seldom assessed and treated in many clinical practices. Oncology nurses need to have a comprehensive understanding of this problem, such as treatable contributing factors, onset, pattern, and alleviation in order to assess properly and manage cancer patients and ultimately improve care outcome (Oh & Seo, 2011).

Project Design

A 48-bed oncology unit located in South Florida was the focus of this quality improvement project. The target population was registered nurses, licensed practical nurses, the nurse manager, nurse director, and research department oncologists working with oncology patients. As part of a quality improvement project supported by oncology nurses in the unit and other stakeholders, a screening tool as a guideline was developed for healthcare professionals to assess cancer patients on their initial visits to the unit and as clinically indicated. This tool was designed to translate the NCCN (2014) cancer-

related fatigue guidelines into practice. Despite the growing body of evidence on the impact of fatigue on cancer patients' quality of life while undergoing chemotherapy and thereafter, it is seldom assessed and addressed at many oncology practices (Berger et al., 2015).

For the purpose of this quality improvement project an evidence-based guideline and protocol were developed to reduce cancer-related fatigue in patients in a busy oncology practice. Once implemented, nurses will utilize the guideline as a tool to screen cancer patients admitted to the unit. Each patient on initial visit to the oncology unit will be assessed and screened with the assessment as per protocol. After nurses identify reversible or treatable contributing factors, such as poor nutrition, emotional distress, depression, pain, and sleep disturbance, patients will be assessed regularly for cancer-related fatigue. Patients who demonstrate moderate to severe fatigue may benefit from both pharmacological and nonpharmacological interventions. Patients with mild fatigue that does not interfere with their quality of life can be treated with nonpharmacological measures alone. These recommendations are based on the systematic database searches that were conducted for the literature review to determine which interventions for fatigue have been evaluated empirically, and empirical evidence was examined systematically and critically.

Setting

The setting for this project was a 48-bed inpatient oncology/medical unit, a small outpatient infusion center, and an oncology radiation center. This facility is located in South Florida. On average, 2,500 newly diagnosed cancer patients are treated annually at this institution.

Participants and Ethical Considerations

Participants in this project were the major stakeholders who supported the project from its inception. Participants included the oncology unit director, front-line nurses, research coordinator, and performance improvement chair. Participation was strictly voluntary. Other participants were staff nurses, who will be utilizing the tool to assess patients admitted to the oncology unit. Those who agreed to participate were given a brief educational review by the project investigator that is based on the National Comprehensive Cancer Network (NCCN, 2014) clinical guideline algorithm. Articulation of the project was conducted via the following means of communication: formal and informal meetings with major stakeholders, poster board, and PowerPoint presentation. Approval from the Nova Southeastern University Institutional Review Board (IRB) was not necessary for this project because it did not directly involve patients. An institutional letter of approval was obtained (Appendix B).

Criteria for Exclusion and Inclusion

Non nursing personnel and unlicensed assistive personnel were not eligible to participate in this project. In addition, nurses who failed to renew their chemotherapy provider cards were not eligible to participate.

Eligible participants were oncology nurses who provided care to oncology patients, as well as nurse managers, directors, nurse practitioners, oncology nurse navigators, quality improvement personnel, and social workers with access to the oncology patients. All these groups were eligible to participate in this quality improvement project because the guidelines are interprofessional in focus.

On completion, this project was recommended by the project investigator for integration into clinical practice at the oncology unit to reduce patients' cancer-related fatigue. As such, all oncology nurses and other personnel involved in providing care for this patient population were asked to consider participating in the project. Those agreeing to participate who met the criteria for participation were asked to sign an informed consent but were not obligated to do so. Participants were not coerced or obligated to participate in this project.

Although there were no known risks to participants, protection of personal information was addressed accordingly under the Nova Southeastern University IRB ethical research guidelines. After providing informed consent, participants were provided with informal education related to the project. Nurses and others agreeing to participate in the project were educated in the use of the NCCN guideline to assess cancer-related fatigue in patients admitted to their unit.

International regulatory boards of nursing have provided guidance for nurses on the ethical conduct of research and important measures to protect participants' rights in the study process. The practice of such ethical research coincides with the Belmont Report commissioned by the U.S. Department of Health, Education and Welfare in response to certain unethical research practices, particularly the Tuskegee syphilis research practice in the mid-1900s (Greaney et al., 2012).

Project Phases and Objectives

This capstone project was accomplished according to the following five objectives set forth for the development of the project. Objectives are specific statements concerning the potential impact of a project's implementation stated in terms

that meet the goals and objectives of the project (Cope, 2015). The requirements are that the objectives need be relevant to the intended clinical problem and the expected outcomes.. The objectives also need to be specific, measurable, achievable, and realistic. The objectives must be keyed to a specific time frame in order to meet the goals of the project. The objectives for this capstone were clearly stated and were used to guide the implementation and evaluation of the project. The population, outcome criteria, and timeframe were specified. The following five objectives were used as a guide for the development of this practicum project.

Objective1: Conduct an intensive literature review and research to identify the needs for cancer-related fatigue assessment and to identify evidence-based clinical guidelines to combat CRF toward creation of an effective cancer-related fatigue screening tool. The first step was to conduct an in-depth literature review to analyze the prevalence of cancer-related fatigue on cancer patients while receiving chemotherapy and radiation therapy. Additionally, the purpose of the literature review was to identify the need for an evidence-based tool to assess patients with cancer so that appropriate intervention could be initiated.

A number of peer review articles supported the need for quality improvement to improve care outcome for cancer patients. Despite the growing body of evidence on the impact of cancer-related fatigue on cancer patients, the majority of oncology practices do not have an established fatigue assessment protocol to assess cancer patients undergoing chemotherapy. The literature review was used to support this objective of the project.

Objective 2: Obtain institutional support and permission to conduct the project in the oncology unit and generate support from stakeholders. Through open communication and coordinated meetings, the project investigator articulated the benefits, goals, and objectives of the quality improvement project. According to Zaccagnini and White (2017), the clinical issue must be articulated clearly to those working with the investigator of the quality improvement project.

Working in collaboration with practitioners in other disciplines was also imperative in meeting this objective. Evidence indicates that implementation of protocols for fatigue assessment is best accomplished by the involvement of interdisciplinary teams who are able to tailor interventions that meet the needs of individual patients and also concur with the organizational mission in which the project will be developed and implemented (NCCN, 2014). The project investigator's articulation of the need for the project to help obtain institutional support and permission to conduct the project was also an attainable goal.

Objective 3: Develop an evidence-based fatigue assessment tool and protocol on cancer-related fatigue to assess cancer patients for factors predisposing them to cancer-related fatigue accordance with the NCCN (2014) standards of care for cancer-related fatigue in adults. This initiative was adopted from the NCCN cancer-related fatigue assessment guidelines algorithm (NCCN, 2014). According to the NCCN guidelines, fatigue should be screened, assessed, and managed according to institutional clinical practice protocol and guidelines.

The nursing staff was educated on how to use the guidelines. Educational and training programs should be implemented to ensure that health professional have the

knowledge and skills in the assessment of cancer-related fatigue. Since this was a unit-based project, the staff had access to a questionnaire, handouts, flyers, and PowerPoint slides containing educational materials about the current guidelines and the criteria for use in cancer-related fatigue. These types of teaching and learning methods were used so that participants could access them in their free time that would not interfere with their work schedules.

Objective 4: Present the new guideline and protocol to the stakeholders, including bedside nurses, research department, unit nurse manager, nurse clinicians, and performance improvement personnel, for integration into practice. The guideline was the oncology-hematology screening tool designed to quickly identify patients experiencing cancer-related fatigue. The RN was to complete cancer-related fatigue assessment for new cancer patients admitted to the oncology unit at a pivotal time in their initial diagnosis and treatment, as defined above.

Objective 5: Continue to monitor the progress of screening tool beyond completion of the project.

Project Timeline

Objective 1: This objective, the literature review phase, was completed in the fall 2015 with Capstone I. This phase was accomplished in approximately 12 weeks.

Objective 2: This objective was completed in the summer 2015 in Capstone II. The phase included obtaining institutional permission for project development and implementation (Appendix B).

Objective 3: This objective was accomplished in summer 2016 in Capstone III. This was the implementation phase of the project. The project was approved by the

institution (Appendix C). The timeline for this phase was approximately 8 weeks. During this time, based on the clinical guideline and protocol, an evidence-based practice tool was developed to screen patients for CRF on initial assessment to the hospital, on regular visits, during treatments, and as clinically indicated.

Objective 4: This objective was completed in the fall 2016 in Capstone IV, in approximately 12 weeks, following development of the tool and guidelines for nurses to assess and manage cancer patients. The nursing staff expressed the need for the tool, and the project investigator presented it to all stakeholders, who acknowledged its benefits in the oncology unit. The unit implemented the project in paper form as part of the patient assessment process, with plans to add the tool to the unit electronic system (Meditech).

Objective 5: This objective began at the end of Capstone IV in the winter 2017, after project completion, the project investigator began follow-up with the unit to monitor the progress of the screening/assessment tool. This objective is ongoing.

Resources/Budget and Benefit Analysis

A budget is defined as the means for planning a project, with inclusion of tools for communicating the essential aspects of the project. The budget includes applicable resources, time, cost, and expenses, as well as revenues (Cope, 2015). By projecting the time and financial responsibilities in advance of the project implementation, the project investigator is able to assess the feasibility of the project. This practicum project was projected to be low budget and a project which would benefit cancer patients by assessments that could be translated into treatment to enhance the quality of their lives. The project may also benefit the practice setting with revenue. The development of this

project budget and cost in terms of time, tools, and revenues to the institution as well as potential benefits to the client population was carefully examined to warrant the merit of this project.

As Table 3 shows, costs related to this capstone project included parking meters at Nova Southeastern University, a new printer with scanner, printing materials, a new desktop computer to expedite course assignments for the Oncology Nursing Society course on symptoms management, and a gift basket to thank the nursing staff and preceptor for cooperation in the clinical rotation.

This project also has potential to yield revenues for the practice setting as well as potential benefits for clients upon implementation in the unit. Once the project is fully implemented, the quality of fatigue management will be included in hospital quality improvement projects and as such will meet the criteria for Medicaid and Medicare reimbursements for the management of cancer-related fatigue. The benefits to patients, although without monetary value, will nevertheless have qualitative values by enhancing their quality of life.

The initial step of this project was to conduct an in-depth literature review on cancer-related fatigue and evidence-based protocol assessment and management of cancer-related fatigue. Evidence indicated that implementation and effective management for cancer-related fatigue is best accomplished by interdisciplinary teams that are able to tailor interventions to meet the needs of individual patients. Ethical consideration and human protection for patients was not be necessary because of the nature of this project. This project was completed in approximately 18 months, and the cost was less than \$1,000.

Table 3

Costs and Itemization

Item	Cost
Transportation: Nova Southeastern University parking meters	7.00
Computer Information System: Cannon printer with scanner	100.00
Copying, printing supplies/Ink for project	85.00
New desktop for project purposes	500.00
Supplemental project education: Oncology Nursing Society Symptoms Management Course	99.00
Gift: Thank you gift to the unit staff/preceptor	55.00
Total Cost	\$ 846.00

Outcome Measures

Zaccagnini and White (2017) asserted that benchmarking is beneficial for comparison of clinical outcomes and quality indicators. The benchmarking target for screening and intervention in cancer-related fatigue is to screen patients at their initial visit and at subsequent visits (NCCN, 2014). At each visit, the provider will have the opportunity to screen patients for CRF, implement interventions, and evaluate and re-evaluate the interventions. Outcome criteria often contain state-of-the-art information that is helpful in the implementation of acceptable quality improvement methods to improve nursing practice. These outcomes must be measured after implementation (Eaton &

Tipton, 2010). The outcome criteria of this capstone project were measured based on the five objectives set forth for the development of the project.

Objective 1: Conduct a comprehensive literature review and research to identify the needs for cancer-related fatigue assessment and to identify effective evidence-based clinical guidelines to combat CRF.

This objective was evaluated by the development of a new protocol for nurses to assess patients for signs and symptoms of cancer-related fatigue while they underwent chemotherapy and radiation and thereafter. This initiative is embedded in many evidence-based research and peer review articles supporting the notion that CRF is subjective in nature, and the best way to assess fatigue is to ask the patients. Generally fatigue level is rated on a scale of 0 (*no fatigue*) to 10 (*highest level of fatigue*) (NCCN, 2014).

Objective 2: Obtain institutional support and permission to conduct the project in the oncology unit and obtain general support from stakeholders.

This objective was measured by appropriate documentation obtained from the academic and institutional organization to conduct the project in accordance with IRB guidelines (Appendices B and C).

Objective 3: Develop an evidence-based fatigue assessment tool and protocol on cancer-related fatigue to assess cancer patients for factors predisposed to CRF, in accordance with the NCCN (2014) standards of care for CRF in adults..

This objective was accomplished and measured by creation of a screening guideline and protocol, Oncology-Hematology Assessment Tool, adapted from the NCCN (2014) *Clinical Practice Guidelines in Oncology* that reflected the needs of this patient population (Appendix D).

Objective 4: Present the new guideline and protocol to major stakeholders, including bedside nurses, research department, unit nurse manager, nurse clinicians, and performance improvement personnel, for integration into practice.

This objective was accomplished on presented to the stakeholders to integrate the tool into practice. Numerous formal and informal meetings were conducted with the staff and the research coordinator. The purpose of these meetings was to evaluate the staff perception, as well as the opportunity to articulate the project to the hospital leadership. The unit is considering implementing the guideline and protocol into policy and procedures, as per the institution bylaws (Appendix E).

Objective 5: Follow up with the unit to monitor the progress of the screening/assessment tool beyond completion of the project.

Recommendation for integration of the project into practice or further revision of the project will be ongoing. The project investigator will maintain close ties with the unit beyond project completion. She will continue to monitor implementation of the guidelines and tool.

Summary

Cancer-related fatigue is a health issue that affects an individual's quality of life and needs to be assessed similar to the way other pervasive symptoms that cause discomfort and diminish quality of life are assess in the clinical setting. This project used a descriptive design for the collection of enough scientific evidence-based practice assessment data to implement an effective fatigue assessment protocol to improve nursing practice and cancer patients' satisfaction. Effective cancer-related fatigue assessment and management is essential to improving the health of cancer patients. The

NCCN recommended a number of educational resources for nurses to educate themselves and to enhance their practice to improve patient satisfaction. By utilizing these resources, oncology nurses can play a vital role in the translation of the NCCN's evidence-based practice guidelines for CRF into their practice settings.

The aims of this quality improvement project were to use the NCCN evidence-based methods and guidelines to implement a fatigue assessment protocol on an oncology practice to improve nursing practice. This project utilized different phases of development to meet its goal for a successful implementation. The time frame for this project was approximately 2 years, and the project budget was low (under \$1,000.).

Chapter 4: Results and Discussion

Results

After numerous meetings with major stakeholders, a screening tool was identified to integrate into practice as a guideline and protocol to reduce cancer-related fatigue in cancer patients at the unit. The psychosocial distress screening was identified as tool that could be modified as a guideline to screen cancer-related fatigue and refer them for appropriate care to reduce fatigue. Two instruments were initiated in this process. The NCCN (2014) Distress Thermometer (Appendix A) paired with a newly developed oncology-hematology assessment tool (Appendix D) by the project investigator were put in place to assess patients on initial visit to unit and subsequently as clinically indicated in pivotal time. These tools were selected because of their ability to measure cancer-related fatigue as well as emotional distress and also as tools that could be measured.

This project was conducted based on the following five objectives set forth by the project investigator. These objectives are discussed here in greater detail:

Objective 1: Conduct a comprehensive literature review and research to identify an effective cancer-related fatigue screening tool.

This goal was accomplished by conducting of a comprehensive literature and research on current peer review articles and other effective methods used elsewhere to address similar clinical issues. A systematic literature search was conducted of the

databases PubMed, CINAHL, Cochrane, and ProQuest. Dissertations and theses for primary nursing research from 2011 to 2016 that examined factors predisposing cancer patients to cancer-related fatigue were also reviewed. The timeframe was chosen for two reasons. First, it was chosen to meet the academic dissertation writing requirement that articles should be less than 6 years old. Second, the timeframe was selected to reflect studies of the increased nursing involvement in cancer-related fatigue.

After the project investigator's series of meetings with the front-line nurses, unit director, unit nurse coordinator, and research department, the search was extended to examine a current guideline that already exists in the unit to address psychosocial distress and the association between distress and cancer-related fatigue. Evidence indicated that fatigue and depression have been documented as concurrent symptoms in cancer patients. In addition, because of the nature of this improvement project and the needs of the unit in which the project was implemented, it was imperative to include *distress* in the search terms. The current unit guideline to address the psychosocial distress issues experienced by cancer patients was revised and modified to address cancer-related fatigue and limited the number of items in the screening tool to make it more effective and user-friendly.

Objective 2: Obtain institutional support to conduct the project in the oncology unit, general support from stakeholders, and academic support from Nova Southeastern University.

This goal was accomplished as follows. A letter of request was submitted to the unit nursing and research department. Following the investigator's series of meetings and discussions with the research coordinator and the Chief Nursing Officer (CNO) of

the hospital, permission was granted to conduct the project in the unit (Appendix B). This project was welcomed by the nursing administration for a number of reasons. The hospital the project investigator currently works at and through which this quality improvement has been implemented is currently a magnet designation. The unit on which the project was implemented is not a full oncology unit, but in the past year has admitted many more oncology patients than formerly. An evidence-based practice can be utilized as a motivation tool for new nurses.

When permission was requested to implement this project, the unit was in the process of implementing a protocol to address psychosocial concerns of patients, as required by the American College of Surgeons Commission on Cancer (ACOSCO, 2012). This requirement states that that all certified oncology programs must have in place a tool that addresses psychosocial concerns for every patient admitted to the unit. A salutary aspect of this requirement concept is that the institution reserves the right to develop a guideline based on the need of the specific patient population. When the project investigator met with the CNO after reviewing all the objectives for the cancer-related fatigue screening tool, a clear similarity became evident between the objective and the clinical manifestation. That is, the investigator was requesting development of a guideline and protocol that addressed both cancer-related fatigue and emotional distress in cancer patients.

Objective 3: Develop an evidence-based fatigue assessment tool from the guideline and protocol adopted from an accredited healthcare organization's clinical practice guidelines (NCCN, 2014). The tool developed would meet the needs of the patient population in this oncology unit.

This objective was accomplished by identification of a tool with a twofold purpose: the Distress Thermometer that measures distress as well as level of cancer-related fatigue and their impact on patient quality of life. This tool was chosen in part because it has been validated to assess and screen for both cancer-related fatigue and emotional distress. The tool was modified for effectiveness pertaining to the patient population.

This tool contains 34 items, with most of the items repetitive (Appendix A). This tool was chosen because it can be used to address both cancer-related fatigue and psychosocial fatigue. The tool is essential to integrate into practice to screen and monitor onsite patients' physical and psychosocial concerns and provide patients affected with referral for the provision of psychosocial and physical care.

Key strategies incorporating the screening process into the current assessment process for admission were employed in the project design to align with the theoretical framework. To evaluate the impact of the practice change on staff workload, satisfaction, perceived benefit, a posttest was administered to the project participants and supporters 1 week after the project conclusion. The project was summarized via a 38" by 48" poster board, with a PowerPoint presentation sent to the key stakeholders.

This quality improvement project was implemented as a protocol to screen and assess cancer patients for cancer-related fatigue and develop a plan of care to treat these patients based on their assessments. The front-line nurses were educated regarding the rationale for routine cancer patient assessment to reduce cancer-related fatigue and enhance the delivery of quality of care. The director and coordinator of the research

department and nurse clinician were engaged in the data collection and auditing of the study to ensure that the project met the institutional core values and philosophy.

Objective 4: Present the new guideline and protocol to the nursing staff for practice integration.

This goal was accomplished with the development of the tool to screen patients for cancer-related fatigue in their initial visit to the oncology unit (Appendix D). This tool is currently in paper form but steps are in progress for incorporation into patients' electronic health records. The screening tool was adopted and modified from the Distress Thermometer (NCCN, 2014, Appendix A) with the NCCN algorithm on cancer care.

The selection of this tool was based on the ADAPTE (2013) methodology. According to this model, adaptation of guidelines is considered by the project investigators in selected circumstance, especially in cases in which one or more quality guidelines already exist on the same topic. The rationale for this process includes use of existing guidelines to enhance efficient production, reduce duplication, and promote quality of patient care through guideline recommendation (Bower et al., 2014).

Oncology providers in the unit were educated on the evidence-based practice guideline as part of the preparation for this quality improvement project. As discussed above, a poster board that outlined the project was displayed in the unit quality improvement section to educate the staff about the project. A PowerPoint was developed and sent to all major stakeholders. To reduce cancer-related fatigue for patients diagnosed with cancer who are undergoing treatment, the evidence-based screening guideline and best practice method were incorporated consistently among

providers. Although beyond the scope of this quality improvement project, ongoing data tracking has continued in the unit for the identification of additional practice improvement.

Objective 5: The project investigator will continue to monitor the progress of the initiative in the oncology unit after the project completion. This objective is ongoing.

After the project investigator's thoughtful consideration and stakeholders' consensus, it was clear that cancer-related fatigue can be addressed under the same guideline and protocol that addresses cancer patients. This notion was supported by a problem checklist associated with the Distress Thermometer. The problem checklist is arranged into five categories: practical, physical, family, emotional, and spiritual issues.

This particular tool was chosen because of the similarities between cancer-related fatigue and distress symptoms in cancer patients as well as because of the previously demonstrated excellent association of the tool with clinical status and quality measures. This tool is simple and cost-effective. The Distress Thermometer is a free resource with no copyright or distribution restrictions. This 34-item screening tool has been endorsed as a component of quality cancer care by the NCCN (2014), ACOSCO, IOM, and the American Society of Clinical Oncology (ASCO).

The Distress Thermometer has been utilized by oncologists on an as-needed basis, but in 2015 the ACOSCO required every cancer center to implement programs for psychosocial distress screening as a criterion for accreditation. A distress screening program must systematically address several fundamental issues in order to meet current quality care standards. One of these is the methods used to address this performance improvement project, a combined approach to cancer-related fatigue.

A mixed-method approach was used in the evaluation of this quality improvement project, focusing on impact of cancer-related fatigue in order to permit a parallel mixed analysis. This mixed-method approach allowed for the concurrent analysis of both quantitative and qualitative data (Kellar & Kelvin, 2013). This method also permits the investigator to purposely integrate or combine the qualitative and quantitative data rather than separating them, with the intention that such integration leads to maximizing the strengths of both quantitative and qualitative data and minimizes their weaknesses (Kellar & Kelvin, 2013).

According to the literature, a mixed-method approach to data analysis involves more than collecting of qualitative data from interviews or collecting qualitative evidence, such as survey responses and observations. The mixed-method approach involves the intentional collection of both quantitative and qualitative data and the combination of the strengths of each to incorporate into the data analysis of a quality improvement project focused on examining standards of care (Kellar & Kelvin, 2013).

Data Analysis

The final step of the capstone project was to analyze the data and to make recommendations to major stakeholders. This was informal process between the project investigator and some of the major stakeholders. No paper test were involved but this step was accomplished by verbal questions and answers base on the flyers that were distributed and the poster on display in the unit to adescribe the project. All participants were encouraged to give voluntary oral feedback.

Figure 1 depicts the number of items identified in the current clinical guidelines to assess cancer patients in the unit for psychosocial concerns. This information is

important because it meets the criteria of the ADAPTE (2013) methodology for clinical guideline development. This methodology has been taken into consideration by some major oncology organizations when more than one clinical guideline exists to address the same topic because the guideline reduces duplication and additional work for practitioners. As demonstrated, physical problems, a major indication of cancer-related fatigue, account for the largest segment of the figure (47%). This statistic reaffirms the need for a cancer-related fatigue screening tool in the oncology unit.

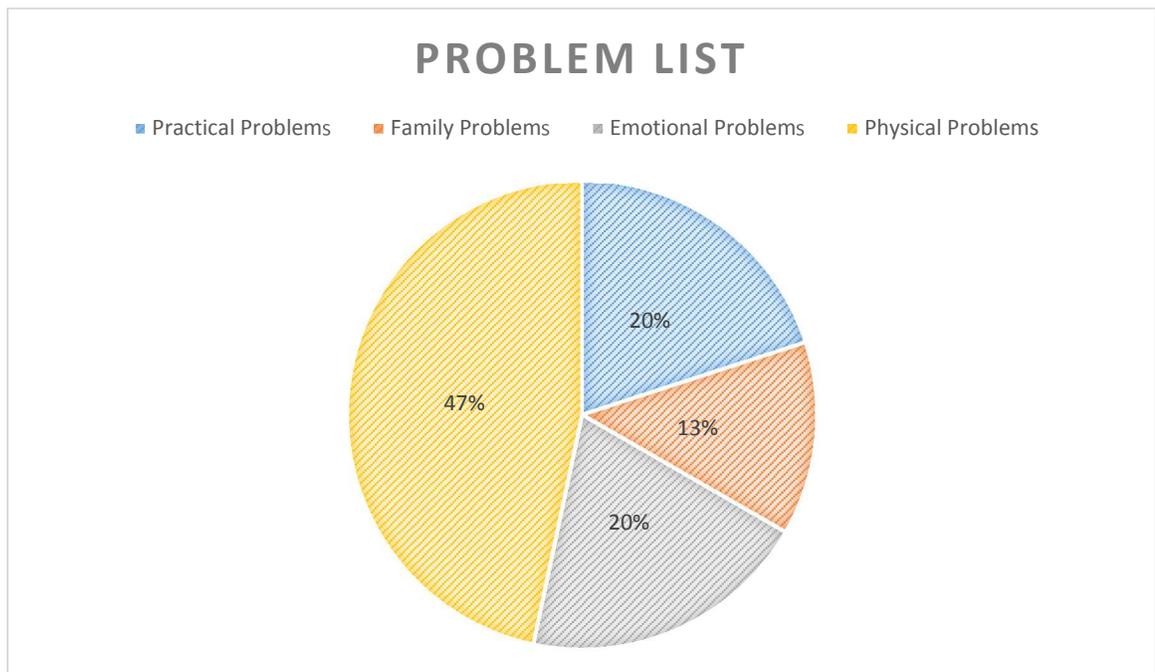


Figure 1. Problem list (National Comprehensive Cancer Network [NCCN], 2015).

Findings of the Project

Data were analyzed based on the current clinical guideline in the unit as well as staff perception and verbal feedback. The purpose of this existing guideline was to screen patients for psychosocial distress; however, the most common symptoms reported by patients since the implementation of this protocol were physical in nature,

such as fatigue, lack of energy, lack of appetite, and sleep alteration, as reported by more than 60% of patients. Psychosocial problems were not as heavily reported. This finding reinforced the need for screening of all cancer patients for cancer-related fatigue as well as emotional distress at their initial visit. Such screening would prevent the symptoms from becoming a chronic problem which could impact every aspect of the patients' lives from treatment outcomes to quality of life.

This finding additionally highlights the physical aspect of cancer symptomology in patients with a cancer diagnosis. Because the primary focus on cancer almost always is on the medical aspect and factors such as fatigue have been largely ignored, Both oncologist and patients often underestimate the components underlying frequent or multiple or multiply reported symptoms. Neither healthcare provider nor patient consider the potential benefits of the use of appropriate approaches to help reduce the symptoms. It is clear that there is a need to assess patients with cancer diagnoses for cancer-related fatigue at the initial visit to a cancer center.

Discussion

Cancer-related fatigue has been described as a distressing and pervasive problem for cancer patients (NCCN, 2014). The patient population affected includes those who are newly diagnosed with cancer, undergoing chemotherapy, and cancer survivors. This population has been the focus of this project. Studies indicate that early screening intervention to reduce or eliminate cancer-related fatigue have a positive impact on several patient outcomes, such as symptoms of distress, normal functioning, psychological distress, family well-being, and other health-related quality of life issues (NCCN, 2014). The purpose of this quality improvement project was to identify an

effective screening tool to implement a clinical guideline and protocol to reduce cancer-related fatigue. This tool was meant for use by healthcare personnel at a local oncology practice in South Florida at patients' initial visits to the oncology unit and subsequent visits throughout their cancer trajectories.

Tremendous progress has been made in cancer treatment in term of medicine, research, and cutting-edge technology (NCCN, 2014). However, certain basic areas of cancer care, such as assessment and screening of cancer-related fatigue, have seen less progress. Limited screening guidelines to assess CRF during patients' initial visits to the hospital constituted the problem identified for this quality improvement project. Thus, to ameliorate the problem, the investigator of this quality improvement project sought to improve patients' outcomes by critically analyzing and summarizing the literature for the available empirical evidence regarding interventions to reduce cancer-related fatigue. These data served as the structural framework to facilitate effective assessment of cancer-related fatigue symptoms, as well as to review and identify gaps in oncology practice in regard to CRF.

The path that led to this quality improvement project was focused on (a) conducting of a comprehensive literature review to identify a cancer-related fatigue assessment tool, (b) to obtain institutional consent, (c) to implement guidelines and a protocol to assess patients for fatigue at their initial visits to the oncology unit, (d) to review the protocol with stakeholders, and (e) to seek opportunity for integration of the screening guideline and protocol into the unit.

An evidence-based screening tool was identified and developed to be implemented into practice as a guideline, with use of the NCCN (2014) clinical

guideline and algorithm for cancer-related fatigue. The selection of this tool was based on the ADAPTE (2013) methodology. Adaptation of guidelines is considered by project investigators in selected circumstance, when one or more quality guideline instruments already exist on the same topic (Bower et al., 2014). This process takes advantage of existing guidelines to enhance efficient production, reduce duplication, and promote quality of patient care through guideline recommendation (Bower et al., 2014).

Oncology providers in the unit were educated on the evidence-based practice guideline as part of the preparation for implementation of this quality improvement project. In an effort to reduce cancer-related fatigue for patient diagnoses with cancer who are undergoing treatment, evidence-based screening guideline and best practice method were incorporated consistently among providers. As noted above, although beyond the scope of this quality improvement project, ongoing data tracking has continued on the unit for the identification of additional practice improvement.

Limitations

This quality improvement project had several limitations related to the screening tool, the targeted patient population, and generalizability of the findings. The implementation of this quality improvement project was modified as the result of time constraints. Instead of the original implementation plan, a clinical guideline and tool were developed and the final results were presented to the intended unit and research personnel for practice integration.

In addition, most of the nurses in the unit were fairly new and had not yet taken the courses for chemotherapy providers or oncology certification. The unit is not exclusively staffed by oncology personnel, and nurses in the unit are not required to be

oncology certified. In addition, newly hired personnel must wait for at least 12 to 18 months to be certified if they wish to do so. However, all personnel were able to participate at some point, because it is essential for new nurses to understand the concept of evidence-based practice. This concept will motivate them to continue developing their nursing careers, which may help resolve some of the limitations in the practice setting.

Strengths, Recommendations, and Implications for Practice

The project investigator was given the opportunity to utilize the oncology unit for this quality improvement project. The organization endorsed the project and recognized that it would help address unmet psychosocial and physiological needs of cancer patients and significantly improve their cancer care. The American Psychosocial Oncology Society has supported implementation of assessment screening tools that are brief, nonstigmatizing, easy to administer, score, and interpret for this patient population. In 2008, the Institute of Medicine (IOM) published the report *Cancer Care for the Whole Patient: Meeting the Psychosocial and Physical Needs of All Cancer Patients*. This report alerted many oncology practices to establish screening mechanisms to identify psychosocial needs in cancer patient (Kendall, Hamann, & Clayton, 2012). In order to meet the need of this capstone project, the investigator modified the NCCN (2014) instrument with the permission of this organization.

In 2012, the ACOSCOG published the *Cancer Program Standards Ensuring Patient-Centered Care*. With this publication, new standards were designed to help accredited programs focus on patient-centered care with the goal of improving the quality of cancer care across the continuum of care throughout the United States (ACOSCOG, 2012). One of the new standards adopted to meet these requirement was

Standard 3.2: Psychosocial distress screening: “The cancer committee develops and implements a process to integrate and monitor on-site psychosocial distress screening and referral for the provision of psychosocial care” (p. 78).

The recommendation was that a protocol be implemented to screen every patient with a cancer diagnosis at least once during the patient’s course of treatment, and that this screening should occur during a pivotal medical visit. However, nursing administrators of cancer units have the final say in their facilities for determining the mechanism used to screen for distress. Some of the most common methods currently using by oncology practices range from self-reported patient questionnaires to clinician-administered questionnaires to clinical interviews (ACOSCOG, 2012). The preferred method by the ACOSCOG is that patients are screened with standardized, validated instruments with established clinical cutoffs. However, cancer programs are not penalized for development of their own instruments and construction of their own cutoff score. For this capstone project, the guideline and tool designed for the unit appear in Appendix D.

Summary

Cancer-related fatigue is the most common symptom experienced by patients with cancer before, during, and after cancer treatments. CRF is multidimensional and multicausal; therefore, practitioners need to assess and readjust the management of fatigue throughout patients’ cancer trajectories. Management of cancer-related fatigue begins with the primary oncology practitioner, who performs the initial screening and either provides basic education and counseling or expands the initial screening to a more focused evaluation for moderate or higher levels of fatigue. These levels are based on

and determined by scores obtaining from the screening process. An evidence-based assessment tool was developed and presented to the oncology unit for that purpose to help relieve the cancer-related fatigue of the cancer patients through appropriate and individual interventions.

References

- ADAPTE. (2013). *Collaboration: The ADAPTE process—Resource toolkit for guideline adaptation* (Version 2.0). Retrieved from <http://www.adapte.org>
- Alcântara-Silva, M., Raquel, T., Freitas-Junior, R., Freitas, N., & Machado, G. D. (2013). Fatigue related to radiotherapy for breast and/or gynaecological cancer: A systematic review. *Journal of Clinical Nursing*, *22*(19-20), 2679-2686.
- American Association of Colleges of Nursing. (AACN). (2006). *Essentials of doctoral education for advanced nursing practice*. Retrieved from www.aacn.nche.edu/DNP/pdf/essentials.pdf.
- American Association of Colleges of Nursing. (AACN). (2015). *The doctor of nursing practice current issues and clarifying recommendations*. Retrieved from www.aacn.nche.edu/DNP/pdf/essentials.pdf
- American Cancer Society. (ACS). (2015). *Cancer facts and figures 2015*. Retrieved From ACS.com
- American College of Surgeons Commission on Cancer (ACOSCOG). (2012). *Cancer program standards ensuring patient-centered care*. Chicago, IL: Author.
- Berger, M. A., Mitchell, A. S., Jacobsen, B. P., & Pirl, F. W. (2015). Screening, evaluation, and management of cancer-related fatigue: Ready for implementation to practice. *CA: A Cancer Journal for Clinicians*. *65*(3), 190-211.
- Borneman, T. (2013). Assessment and management of cancer-related fatigue. *Journal of Hospice & Palliative Nursing*, *15*(2), 77-86. doi:10.097/NjHo13e31286dc19
- Borneman, T., Piper, F. B., Koczywas, M., Munevar, M. C., Sun, V., Ulman, C. G., & Ferrell, R. B. (2012). A qualitative analysis of cancer-related fatigue in ambulatory oncology. *Clinical Journal of Oncology Nursing*, *16*(1), E26-E32. doi:10.1188/12.CJON.E26-E32
- Bower, E. J., Bak, K., Berger, A., Breitbart, W., Escalante, P. C., Ganz, A. P., . . . Jacobsen, B. P. (2014). Screening, assessment, and management of fatigue in adult survivors of cancer: An American society of clinical oncology clinical practice guideline adaptation. *Journal of Clinical Oncology*, *32*(17), 1840-1850. doi:101200/JCO.2013.53.4495
- Campos, M.P.O., Hassan, B. J., Riechelmann, R., & Del Giglio, A. (2011). Cancer-related fatigue: A practical review. *Annals of Oncology*, *22*(6), 1273-1279.
- Cope, G. D. (2015). Nursing intervention research. *Oncology Nursing Forum*, *42*(4), 409-411. doi:101188/15.ONF.409-411

- Eaton, H. L., & Tipton, M. J. (2010). *Putting evidence into practice: Improving oncology patient outcomes*. Pittsburgh, PA: Oncology Nursing Society.
- Ferrell, B., McCabe, M. S., & Levit, L. (2013). The institute of medicine report on high-quality cancer care: Implications for oncology nursing. *Oncology Nursing Forum*, 40(6), 603-609.
- Gilbert, E., Sherry, V., McGettigan, S., & Berkowitz, A. (2015). Health-care metrics in oncology. *Journal of Advanced Practitioner in Oncology*, 6(1), 57-61.
- Greaney, M. A., Sheehy, A., Heffernan, C., Murphy, J., Mhaolrunaigh, S. N., Heffernan, E., & Brown, G. (2012). Research ethics application: A guide for the novice researcher. *British Journal of Nursing*, 21(1), 38-40, 42-43.
- Hroneck, W. J., & Reed, L. M. (2015). Nursing implications of chemotherapy agents and their associated side effects in patients with pancreatic cancer. *Clinical Journal of Oncology Nursing*, 19(6), 751-757.
- Institute of Medicine. (IOM). (2008). *Cancer care for the whole patient: Meeting the psychosocial and physical needs of all cancer patients*. Washington, DC: National Academies Press.
- Institute of Medicine. (IOM). (2013a). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academies Press.
- Institute of Medicine. (IOM). (2013b). *Delivering high-quality cancer care*. Washington, DC: National Academies Press.
- Institute of Medicine (IOM). (2016). *Assessing progress on the Institute of Medicine report: The future of nursing*. Washington, DC: National Academies Press.
- Kellar, S., & Kelvin, E. A. (2013). *Organizing, displaying, and describing data*. Philadelphia, PA: Lippincott Williams & Wilkins.
- Kendall, J., Hamann, H. A., & Clayton, S. (2012). Oncology distress screening: Distress prevalence, new standards, and implementation. *Oncology Issues*, 27(6), 22-28.
- Minton, O., Berger, A., Barsevick, A., Cramp, F., Goedendorp, M., M., Mitchell, S.A., & Stone, P.C. (2013). Cancer-related fatigue and its impact on functioning. *Cancer*, 119(Suppl.11), 2124-2130. doi:10.1002/cncr.28058
- Mitchell, S. A. (2010). Cancer-related fatigue: State of the science. *American Academy of Physical Medicine and Rehabilitation*, 2, 264-383. doi:10.1016/j.pmrj.2010.03.024

- Mitchell, S. A., Hoffman, J. A., Clark, C. J., DeGennaro, M. R., Poirier, P., Robinson, B. C., & Weisbrod L. B. (2014). Putting evidence into practice: An update of Evidence-based interventions for cancer-related fatigue during and following treatment. *Clinical Journal of Oncology Nursing*, 18(6), 38-58. doi:10.1188/14.CJON.S3.38-58.
- National Cancer Institute. (NCI). (2015). *Fatigue for health professionals*. Retrieved from www.cancer.gov/about_cancer/treatment/side-effects/fatigue
- National Comprehensive Cancer Network. (NCCN). (2014). *Clinical practice guidelines in oncology: Cancer-related fatigue* (Version 1.2014). Fort Washington, PA: Author.
- National Comprehensive Cancer Network. (NCCN). (2015). *Recent updates to NCCN clinical practice guidelines in oncology* (Version 2.2015). Fort Washington, PA: Author.
- Oh, S. H., & Seo, S. W. (2011). Systematic review and meta-analysis of the correlates meta-analysis of the cancer-related fatigue. *Worldviews on Evidence-Based Nursing*, 8(4), 191-201. doi:10.1111/j.1741.6787.2011.00214X
- Scott, A. J., Lasch, E. K., Barsevick, M. A., & Piau-Louis, E. (2011). Patients' experiences with cancer-related fatigue: A review and synthesis of qualitative research. *Oncology Nursing Forum*, 38(3), 191-203.
- Scott, P. A., Matthew, A., & Kirwan, M. (2014). What is nursing in the 21st century and what does the 21st century health system require of nursing? *Nursing Philosophy*. 15, 23-34.
- Sun, V., Olausson, M. J., Fujinami, R., Chong, C., Dunham, R., Tittelfitz, T., . . . Grant, M. (2015). The role of the advanced practitioner nurse in survivorship care planning. *Journal of the Advance Practitioner in Oncology*. 6, 64-70.
- Wright, F., Hammer, J. M., & Melkus, D. G. (2014). Associations between multiple chronic conditions, and cancer-related fatigue: An integrative review. *Oncology Nursing Forum*, 41(4), 399-410. doi:10.1188/14.ONF.41-04AP
- Zaccagnini, M., & White, K. (2017). *The doctor of nursing practice essentials* (3rd ed.). Burlington, MA: Jones & Bartlett Learning.
- Zebrack, B., Kayser, Sunstrum, L., Savas, S., Henrickson, C., Acquati, & Tamas, L. R. (2016). Psychosocial distress screening implementation in cancer care: An analysis of adherence, responsiveness, and acceptability. *American Society of Clinical Oncology*, 33(10), 1165-1170.

Appendix A

NCCN Standards of Care and Distress Thermometer

National Comprehensive Cancer Network, NCCN Guidelines, Version 2014

Cancer-Related Fatigue

Standards of Care for Cancer-Related Fatigue in Children/Adolescents and Adults

- Fatigue often is not an isolated symptom and most commonly occurs in symptom clusters such as pain, distress, anemia, nutritional imbalance, and sleep disturbances, thus individuals receiving cancer treatments should be screened for multiple symptoms that may vary based on diagnosis, treatment, and stage of the disease.
- Fatigue is subjective thus should be assessed using the person's own words and other objective data.
- Fatigue should be screened, assessed, and managed according to the institution clinical practice guideline.
- At-risk population should be screened for fatigue and factors leading to fatigue at their initial visit, at regular intervals during and following cancer treatment, and as clinically indicated.
- Healthcare professionals experienced in fatigue evaluation and management must be made available for consultation in a timely manner.
- Implementation of guidelines for fatigue management is best accomplished by interdisciplinary teams who are able to tailor intervention to the needs of those involved.
- Cancer-related fatigue should be included in clinical health outcome studies.
- Quality of fatigue management should be part of the institutional continuous quality improvement.
- Medical care contracts should include reimbursement for management of cancer-related fatigue.
- Rehabilitation should initiate with the cancer diagnosis (NCCN Guidelines, Version 2014).



FATIGUE AND DISTRESS SCREENING INSTRUMENT

Patient Name: _____ Date _____

We want to help with your emotional, physical, social and financial needs. Please tell us how you are doing today by completing this screening tool.

Step 1: Please circle the number (0-10) that best describes how you have been feeling in the past week, including today.

Emotional Problem

Depression	0	1	2	3	4	5	6	7	8	9	10
Fear	0	1	2	3	4	5	6	7	8	9	10
Sadness	0	1	2	3	4	5	6	7	8	9	10
Worry	0	1	2	3	4	5	6	7	8	9	10

Practical Problem

Treatment Decision	0	1	2	3	4	5	6	7	8	9	10
--------------------	---	---	---	---	---	---	---	---	---	---	----

Physical Problem

Fatigue Bathing/	0	1	2	3	4	5	6	7	8	9	10
------------------	---	---	---	---	---	---	---	---	---	---	----

Dressing	0	1	2	3	4	5	6	7	8	9	10
Loss of Interest	0	1	2	3	4	5	6	7	8	9	10
Lack of sleep	0	1	2	3	4	5	6	7	8	9	10

Oncology & Hematology Screening

PCP

Patient Identification/Label

CRF Plan of Care

Score _____

Referral to counseling _____

Note. Adapted from original Distress Thermometer (NCCN, 2014).

Appendix B

Letter of Institutional Commitment

Institution/Agency letterhead

To: Patricia Dittman, PhD, MSN, CDE
Director for Graduate Programs
Nova Southeastern University
College of Nursing

*Assessment of Contributing Factors
of Concomitant Postoperative
Elevated Serum Lactate
Concentration in Patients
Undergoing Total Hip
Replacement Surgery*

I have read and approve the DNP project entitled, Sublette American (name of the DNP student) and give consent for the study to
be conducted at or through Mersey Hospital (name of institution).

Rebecca Hampton MSN, RN 12/10/15
Signature Date
Title of person signing (representing the authority to give institutional permission)

The institution may add any other appropriate requirements, such as: so long as information regarding the study is shared with staff of the agency after the completion of the study, etc.

9/25/12, Rev 6/10/13, Rev 11/13/13, 5/7/14, Rev, 3/24/15, Rev. 7/13/15

Appendix C

Permission to Conduct Capstone Practicum on Premises: Six Carroll Request

Sulotte Valcin Amilcar

Phone # (305) 542-5365 sulottea@bellsouth.net

To: Nursing Administration

RE: Request for Approval: Permission to conduct a capstone project on cancer-related fatigue on Six Carroll for the completion of a doctoral capstone project.

I am a doctoral student at Nova Southeastern University currently in the process of submitting my capstone proposal entitled: **Assessment and Management of Treatable Contributing Factors of Cancer-Related Fatigue: An Evidence-Based Initiative**. I would appreciate your approval to conduct this project in Six Carroll oncology. The purpose of this capstone project is to implement an evidence-based educational training intervention to educate oncology nurses with current clinical guidelines on cancer care to improve nursing practice and increase patients' satisfactions.

In the initial phase of this project there will be no identifiable or discernible risk to participants' privacy. My project will not require any intervention directly with patients, but with the nursing staff and it is a quality improvement project. This project will utilize existing evidence-based fatigue assessment tools, distress thermometer, and other educational interventions to educate and assess nursing knowledge of current fatigue assessment tools and guidelines. The aim is to help close any knowledge-to practice gap relating to fatigue assessment and management. Although there are no known risks to participation, protection of personal information will be addressed. Those who provided consents may choose to end their participation at any time without any fear of retaliation. To ensure the protection of the participants, the investigator of this project will incorporate broad ethical principles to attain participation consent from subjects so that there is no obligation or perceived coercion to participate in this project.

The result of the project may be beneficial to the intended population considering the fact that cancer-related fatigue is one of the most common symptoms in individuals receiving cancer treatments and is nearly universal in those receiving cytotoxic chemotherapy, radiation therapy, and treatment with biological response modifiers. It is essential that oncology nurses are educated and stay abreast with current assessment guidelines involving assessing and managing of cancer-related fatigue. If you have any questions, please do not hesitate to contact me at the information provided above or my mentor Aileen Sheppard RN ARNP at aileen.sherppard@hcahealthcare.com. At the completion of this project I will present the unit with a copy of the final project.

Thank you for your consideration.

Sincerely,

Sulotte Valcin Amilcar MSN, RN-BC

Please identify a daily activity in your life that you consider to be very important, for example, caring for your family members, going to work, cooking, driving, shopping, or any other hobbies.

Were you able to do of these activities listed above?

Please circle: Yes No

Appendix E

Institution Policy and Procedures

Policy Description: Administration of Cancer-Related Fatigue Screening

Manual: Clinical Practice	Effective Date	Revised Date
---------------------------	----------------	--------------

SCOPE: In the campus of a South Florida Hospital: Apply to Registered Nurses

working in the oncology unit

PURPOSE:

- To ensure the hospital cancer patients are offered screening for cancer-related fatigue as a critical step in providing high-quality cancer care during their cancer trajectory
 - To utilize a multidisciplinary approach to assist the oncology treatment team in recognizing specific etiologies of cancer-related fatigue and offer referral to appropriate supportive services as needed
-

DEFINITION:

The National Comprehensive Cancer Network (NCCN) has defines cancer related-fatigue as a “distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning.

POLICY

The oncology-hematology tool is a screening tool designed to quickly identify cancer-related fatigue in cancer patients. The oncology nurses in the unit will utilize the tool to screen cancer patients admitted to the unit for the first time and at “essential times” in their cancer trajectory. Examples of essential times are initial cancer diagnosis, start of treatment, end of treatment, post-treatment or transition to survivorship, pre-surgical or post-surgical, and at first visit to discuss chemotherapy and radiation therapy and expected side effect and care outcomes.

PROCEDURES:

- A. The registered nurse will administer the screening tool to oncology patients at the initial time of admission and as clinically indicated.
- B. The patient will be instructed to circle a number from 0-5 or that best describe their fatigue level or other psychosocial problem such as distress.

- C. Patients will instructed to circle a number from 0-10 that best distress the amount of their distress a score of (0-4 indicating mild distress) 5-up indicating moderate to severe distress.
- D. A score of 0-2 indicating mild fatigue patient will provide education on energy conservation.
- E. A score 3 or greater indicating moderate to severe fatigue the nurse will conduct a focus assessment and also notify the patient primary care providers for further intervention.