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# Use of a Telephone Triage Protocol to Support Nurses and Enhance Cancer Care Coordination

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Use of a Telephone Triage Protocol to Support Nurses  
and Enhance Cancer Care Coordination

Systems Change Project  
Submitted in Partial Fulfillment of the  
Requirements for the Degree of  
Doctor of Nursing Practice

St. Catherine University  
St. Paul, Minnesota

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February 2014

ST. CATHERINE UNIVERSITY  
ST. PAUL, MINNESOTA

This is to certify that I have examined this  
Doctor of Nursing Practice systems change project  
written by

*Meghann Rae Pierce*

and have found that it is complete and satisfactory in all respects,  
and that any and all revisions required by  
the final examining committee have been made.

Graduate Program Faculty

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DEPARTMENT OF NURSING



## EXECUTIVE SUMMARY

The United States is facing challenges in cancer care delivery due to aging population, growing demand for care, rising costs, shortage of adequately trained workforce, and increasing complexity of treatment. Given the complexity and costs of cancer care today, patients need considerable help navigating the course from diagnosis to survivorship or end of life. Efforts must be focused on means to produce quality care outcomes, conserve precious health care resources, and ensure positive patient experiences. Well-supported, well-designed cancer care coordination can improve outcomes for patients and providers alike. However, when unclear roles, scope of practice, and inefficient work processes are present within a system, provider satisfaction and patient outcomes can suffer.

This systems change project (SCP) was developed to evaluate and amend current care coordination practices at the University of Minnesota Masonic Cancer Center (MCC). The current telephone triage system in the MCC is inadequate due to inefficient and non-standardized practices that affect care coordinator and triage nurse role clarity, workflow, time management, and overall ability to deliver care. The purpose of this SCP was to support MCC nurses by identifying and addressing their barriers to delivering best quality care. This project consisted of an informal focus group with MCC nurses, collaboration with key clinic staff and providers, and development, implementation, and evaluation of a standardized clinic telephone triage protocol. It was intended that implementation of the protocol would improve triage workflow, time management, documentation, clarity of nurse scope of practice in this role, and comfort with performing triage care. Although this project was not statistically significant in its entirety, it did demonstrate some unique, interesting, and clinically relevant outcomes that provide insight into and implications for present and future practice, research, and social justice.

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**LIST OF ACRONYMS**

ACA: Affordable Care Act	IHI: Institute for Healthcare Improvement
ACS: American Cancer Society	IOM: Institute of Medicine
AHRQ: Agency for Healthcare Research & Quality	IRB: Institutional Review Board
ANA: American Nurses Association	LOS: Length of stay
AOSW: Association of Oncology Social Work	LPN: Licensed practical nurse
APN: Advanced practice nurse	MCC: Masonic Cancer Center
APP: Advanced practice provider	NASW: National Association of Social Workers
CCC: Cancer care coordinator	NCI: National Cancer Institute
CDC: Centers for Disease Control and Prevention	NIH: National Institutes of Health
CINV: Chemotherapy induced nausea and vomiting	NPP: National Priorities Partnership
CMS: Centers for Medicare & Medicaid Services	NQF: National Quality Forum
ED: Emergency department	ONS: Oncology Nursing Society
EHR: Electronic health record	PI: Primary investigator
FHS: Fairview Health Services	QOL: Quality of life
HOT: Hematology, Oncology, and Transplantation	RN: Registered nurse
	ROI: Return on investment
	SCP: Systems change project
	UMP: University of Minnesota Physicians
	US: United States
	WHO: World Health Organization

## CHAPTER I

The United States (US) is reaching a crisis in cancer care delivery due to aging population, growing demand for care, rising costs, shortage of adequately trained workforce, and increasing complexity of treatment. Cancer is the second leading cause of death and one of the most common chronic diseases in the US. The Centers for Disease Control and Prevention (CDC) and the Institute of Medicine (IOM) project that approximately 14 to 19 million Americans have had cancer, more than 1.6 million will be diagnosed with cancer in 2013, and more than 580,000 already diagnosed will die. By 2022, it is projected that there will be 18 million cancer survivors. By 2030, the number of new cancer diagnoses per year is expected to rise to 2.3 million, representing a 45 percent increase in incidence. As the cancer burden grows, caring for people with cancer is becoming more and more challenging. In large part, this is due to advances in the understanding of cancer biology and, subsequently, development of more effective screening and diagnostic tools, as well as highly specialized and targeted therapies. Additionally, people with cancer are living longer, with long-term side effects of cancer treatment, and with multiple comorbidities. Cancer care also spans multiple specialties, subspecialties, and disciplines often over an extended period of time, necessitating significant coordination efforts (ACS, 2013; CDC, 2012, 2013; IOM, 2013). Due to this complexity, acute and chronic cancer care is costly. In 2010, the US spent an estimated \$125 billion on direct medical costs of cancer; these costs are projected to reach at least \$173 billion by the year 2020, a 39 percent increase (IOM, 2013). When taking into account both direct medical costs, lost productivity, and other indirect and intangible costs to cancer patients, survivors, and their family, friends, and caregivers, the National Institutes of Health (NIH) estimate that the US in fact spent closer to \$263.8 billion on cancer care in 2010 (CDC, 2012, 2013).

As cancer care evolves, providers are charged with coordinating complex care activities, finding ways to use limited health care resources efficiently, and ensuring equal access to care and quality patient outcomes. The cancer care coordinator (CCC) role arose from the need to address these responsibilities and support patients through the experience of cancer diagnosis, treatment, survivorship, and end of life. The CCC provides holistic care by facilitating multidisciplinary collaboration, delivering direct care and education, and connecting patients with other support services (Aubin, Giguere, Verreault, Fitch, & Kazanjian, 2012; Cancer Institute NSW, 2011; Craig, Eby, & Whittington, 2011; Walsh et al., 2010a, 2010b). As a profession, nurses are well equipped to provide valuable coordination services and, in doing so, contribute to the health, wellbeing, and overall lived experience of the cancer patient, family, and caregivers. However, while nurses have the skills and potential to provide quality cancer care coordination, they often face substantial barriers to doing so. Barriers may include lack of role development, clarity, and consistency; inappropriate utilization; workload that is disproportionate to allotted time; burdens on time management and workflow; and lack of workplace support systems. Therefore, the purpose of this systems change project (SCP) is to support nurses who work in care coordination at the University of Minnesota Masonic Cancer Center (MCC) by identifying and addressing their barriers to delivering best quality care.

## **Background**

### **Care Coordination**

The fragmented US health care system is facing a crisis in which high demand for health care services is met with insufficient supply. With recent passage of the Patient Protection & Affordable Care Act (ACA), this system is bound to become even more stretched and strained. One proposed solution to enhancing health care delivery and cost containment is better

coordination of care. Care coordination has been on the rise for several decades with a particular focus in the last few years. Care coordination is identified by the ACA as a key strategy for improving the quality and cost effectiveness of health care. Prominent organizations such as the World Health Organization (WHO), National Priorities Partnership (NPP), IOM, Centers for Medicare & Medicaid Services (CMS), Institute for Healthcare Improvement (IHI), and American Nurses Association (ANA) have enthusiastically endorsed care coordination, ranking it among the top priorities in health care reform (AHRQ, 2007; ANA, 2012; Chen, Brown, Archibald, Aliotta, & Fox, 2000; CMS, 2011; Craig et al., 2011; IOM, 2001, 2003a; NPP, 2008; NQF, 2006; WHO, 2008).

The definition of care coordination has changed with time and context. A recent Agency for Healthcare Research and Quality (AHRQ) systematic review identified over 40 definitions of the term ‘care coordination’ and a number of other related concepts. From this review, the following broad, working definition of care coordination was generated:

Care coordination is the deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient’s care to facilitate the appropriate delivery of health care services. Organizing care involves the marshaling of personnel and other resources needed to carry out all required patient care activities and is often managed by the exchange of information among participants responsible for different aspects of care. (AHRQ, 2007, p. v).

Care coordination also varies widely with respect to details such as the activities involved, who should perform them, and the background and training required. Despite such differences in the structure and style of care coordination programs, the primary goal of improving disease

outcomes and care experiences while containing overall costs tends to be consistent across organizations. Most proponents of care coordination support a patient-centered model in which care is delivered by a unified, multidisciplinary team that includes at least one designated health professional who provides formal care coordination services. Care coordinators must be highly-trained professionals who are knowledgeable and proficient in many different aspects of health care. For this reason, nurses have taken on a central role in care coordination. Nurses are well equipped to provide quality care coordination services. Care coordination, in some capacity, is a core activity of nursing. (AHRQ, 2007; ANA, 2012; CMS, 2000, 2011; Craig et al., 2011; IOM, 2001, 2003a; NPP, 2008; NQF, 2006; WHO, 2008).

### **Cancer Care Coordination**

Legislation pertaining to the ACA provides opportunities and challenges specific to cancer care. Opportunities include the potential to expand cancer care to currently underserved populations, which can help to alleviate cancer disparities. However, increasing the number of patients being served has the potential to exacerbate the inability of patients to access, and institutions to deliver appropriate and timely cancer care. As such, formal care coordination has become increasingly popular in cancer care. Cancer care coordination is a specialized subset of care coordination with an overarching goal of increasing access to cancer care, contributing to better cancer outcomes, conserving precious resources, and helping patients navigate the cancer journey. Common activities of cancer care coordination include identifying at-risk or referred patients in the community, coordinating visits with specialists and subspecialists, arranging follow-up, planning treatment strategies, monitoring outcomes and resource use, organizing care to streamline the treatment process and avoid duplication of tests, sharing and disseminating information among health care providers, facilitating access to services and research, planning

hospital admissions and discharges, training caregivers and families, and developing and refining the care plan accordingly (Aubin et al., 2012; Cancer Institute NSW, 2011; Case, 2011; Craig et al., 2011; Gilbert et al., 2011; Walsh et al., 2010a, 2010b).

### **Telephone Consultation and Triage**

One fundamental way in which cancer care coordination is facilitated is through telephone consultation and triage. Telephone consultation is an umbrella term that incorporates various types of care delivered to patients over the phone. Telephone triage is a systematic process by which a health care provider, often a nurse, assesses a patient over the phone, screens his/her symptoms for urgency, and advises him/her when and where to seek medical attention. Telephone triage has been used in cancer care as a way to monitor patients who may not have adequate support (i.e. self-care deficits, lack of caregiver assistance, and/or limited access to primary cancer treatment center or local hospitals and clinics) or who require frequent close monitoring of symptoms and side effects of cancer and treatment. Telephone triage has grown in importance particularly as the treatment and supportive care of cancer patients moves from the inpatient to the outpatient/ambulatory setting (Anastasia & Blevins, 1997; Briggs, 2012; Hickey & Newton, 2012; Mooney, Beck, Friedman, & Farzanfar, 2002).

Regardless of the method by which care coordination is provided, research overwhelmingly supports that better coordination of cancer care has the potential to improve patient experiences and outcomes (AHRQ, 2007; Boyd et al., 2009; Coleman, Parry, Chalmers, & Min, 2006; Craig et al., 2011; Freund et al., 2008; Naylor, Aiken, Kurtzman, Olds, & Hirschman, 2011; Naylor et al., 1999; Paskett, Harrop, & Wells, 2011; Peikes, Chen, Schore, & Brown, 2009; Robinson-White, Conroy, Slavish, & Rosenzweig, 2010; Wells et al., 2008). However, there are mixed findings in the literature regarding the cost effectiveness of cancer

care coordination (Aubin et al., 2012; Corner, 2003; Hobbs & Murray, 1999; Moore et al., 2002; Peikes et al., 2009; Ritz et al., 2000; Wells et al., 2008). Additionally, CCC role development and barriers to practice have not been well studied. Research also supports that nurse-provided telephone triage is an important element of safe, efficient care delivery (Anastasia & Blevins, 1997; Briggs, 2012; Hickey & Newton, 2012; Mooney et al., 2002). Yet, few studies have focused on telephone triage in cancer care, and fewer still have reported on the role of the CCC in providing telephone triage. Furthermore, research on use of standardized practices and protocols in cancer triage is sparse.

The potential for role underdevelopment, patient and provider misunderstanding, workflow inefficiency, strains on time management, and suboptimal outcomes is exacerbated when the CCC role lacks consistent scope and standards and when barriers to best practice are not examined. For nurses in cancer care coordination to be successful and for the services they provide to be of high quality and cost effective, the definition, structure, characteristics, and scope of practice of the role need to be refined. Additionally, the obstacles they face in care delivery need to be identified and addressed. Supporting the CCC in his/her role by providing clear, consistent expectations and streamlined work processes can result in improvements in cancer care delivery and outcomes.

### **Purpose of Systems Change Project**

The purpose of this SCP is to support nurses who work in care coordination at the University of Minnesota MCC by identifying and addressing their barriers to delivering best quality care. Often one of the most effective ways to assess the needs of a community is by talking with members of the community directly (Guba & Lincoln, 1989; Pavlish & Pharris, 2012). Engaging stakeholders in exploring opportunities to improve health care outcomes is



important to influence change. For these reasons, the primary investigator (PI) of this project held an informal focus group among CCCs during a MCC staff meeting. In this focus group, the CCCs identified problems in telephone triage as barriers to providing timely, efficient care coordination. Consequently, this project was designed to initiate a change in the system to begin to address the inadequacies identified. This SCP is intended to support nurses and enhance care coordination and, specifically, to improve workflow efficiency and time management and clarify roles through the standardization of triage practices.

### **Description of Site**

The MCC is a University of Minnesota-affiliated ambulatory care clinic within the Fairview-University health system that has both outpatient and urgent care/infusion center capabilities. More acute cases are routed to the University hospital emergency department (ED), inpatient service, or a local facility if indicated. Fifty-six oncology providers practice out of the MCC. In 2012, more than 35,000 patients received care at the MCC (an average of 96 patients per day). Year-to-date volume through July 2013 has reached an average of 103 patients per day (N. Weis, personal communication, September 5, 2013). The MCC is committed to providing patients with high quality, innovative, and informed care (University of Minnesota, 2013). Nurse care coordination is a vital component of this care and serves to optimize the patient experience and outcomes. Telephone consultation/triage is one essential service that the MCC care coordinators and triage nurses provide as part of a holistic care package.

### **Problem Statement**

The current telephone consultation/triage system at the MCC is inadequate due to inefficient and non-standardized practices that affect care coordinator and triage nurse role clarity, workflow, time management, and overall ability to deliver care.

### **Objective**

The objective of this SCP is to advocate for and support nurses who work in cancer care coordination at the University of Minnesota MCC. Upon completion of this SCP, it is intended that implementation of a standardized telephone triage protocol will improve triage workflow, time management, documentation, clarity of nurse scope of practice in this role, and comfort with performing triage care.

### **Implications for Social Justice**

This SCP is congruent with the MCC's mission to advance knowledge and enhance care through collaborative research and discovery. It is also in line with social justice principles in that it promotes just structures and processes that contribute to provider and patient wellbeing. This project is intended to support care coordinators who are valuable members of the multidisciplinary team, recognize their contributions to care delivery and outcomes, and provide evidence of nursing value in this role. In doing these things, this project also seeks to enable providers to deliver consistent, timely, and appropriate cancer care to all patients, which can in turn reduce disparities in cancer morbidity and mortality.

### **Summary**

Given the complexity and costs of cancer care today, patients need considerable help navigating the course from diagnosis to survivorship or end of life. Efforts must be focused on means to produce quality care outcomes and conserve precious health care resources while ensuring positive patient experiences. Well-supported, well-designed cancer care coordination that involves the right people at the right time can improve outcomes for patients and providers alike. However, when unclear roles and scope of practice and inefficient work processes are present within a system, provider satisfaction and patient outcomes can suffer. Thus, this SCP is

designed to evaluate current triage practices at the University of Minnesota MCC and to develop, implement, and evaluate a standardized clinic telephone triage protocol. This project will support the coordination of triage care and the nurses who provide it, which has the potential to translate into positive care outcomes. A description of the theoretical framework, review of the literature, and development and implementation of this SCP is reported in the following chapters. A thorough discussion of the results and implications will conclude this manuscript.

## CHAPTER II

This SCP was developed with the belief that nurses work in a variety of roles and settings to provide many valuable services that contribute to the health, wellbeing, and lived experiences of health and illness of the individuals and families for whom they care. The relationship between nurse and patient is special and complex; it nurtures both the giver and receiver of care. Coordination of care, both literally and in a more figurative sense, represents one element of this relationship. Furthermore, it is supposed that nurses must be supported personally and professionally to be able to provide the most optimal care and nurture that nurse-patient relationship. The following chapter will provide an overview of the theoretical frameworks that support these beliefs and are at the core of this SCP. Additionally, it will present a comprehensive literature review of care coordination, telephone triage, and nurse care coordinator role and scope as they pertain to this SCP.

### Theoretical Framework

This SCP is rooted in the theories of Jean Watson, Dorothea Orem, John Kotter, and Avedis Donabedian. A description of each theory is presented in the following paragraphs.

#### Caring Theory

In Jean Watson's Theory of Caring, caring is the essence of nursing. This theory is unique in that it considers the experiences of both the patient and the nurse; the focus is the *caring relationship* between the two. In an interview, Watson states: "The theory is about a different way of being present, attentive, conscious, and intentional as the nurse works with another person" (Fawcett, 2002, p. 215). Holistic caring occurs within this relationship in a caring-healing environment, both physical and non-physical. This theory includes ten carative factors or guidelines for putting caring into action. Among these carative factors are: "developing

and sustaining a helping-trusting, authentic caring relationship”; “engaging in a genuine teaching-learning experience that attends to wholeness and meaning, attempting to stay within other’s frame of reference”; “creating healing environments at all levels”; and “assisting with basic needs, with an intentional caring consciousness” (Watson Caring Science Institute, 2013). Watson’s theory is congruent with the concept of care coordination, which often manifests as a relationship between a nurse and a patient or family unit. In this relationship, caring and healing are generally more abstract. The coordinator provides guidance and education. He/she serves as a trusted adviser, helping the patient navigate the health care system through health and illness, creating healing environments at different points along the way. The relationship between a CCC and patient can be very deep and emotional. The CCC is often one of the first people a patient meets after diagnosis, and is often the first person a patient calls with questions or concerns during their treatment. CCCs get to know patients and families very well, become equally invested in the relationship, and experience the journey with their patients.

### **Self-care Theory**

In Dorothea Orem’s Self-Care Theory, self-care deficit is a state in which a patient (or family) is unable to provide care for him/herself. In this situation, the goal of nursing is to help that patient overcome his/her “human limitations” to meet self-care demands. Orem’s Self-Care Model describes a process by which the nurse assists the patient to maintain self-management. The degree of nursing care and intervention is matched with the patient’s degree of need. Nursing care helps enhance others’ self-care abilities, wellbeing, and quality of life. In Orem’s theory, she identifies five ways in which nurses provide care: acting for and doing for another, guiding and directing, providing physical or psychological support, providing and maintaining an environment that supports personal development, and teaching (Masters, 2011; Orem, 1959,

1990). Two potential and common patient self-care deficits in our current health care system are lack of knowledge about how the system operates and limited access to resources. Nurses aid in those limitations by providing care coordination services, which may include acting on a patient's behalf, guiding and directing, providing support, and teaching. In triage, patients present with acute or urgent self-care deficits. Triage nurses provide care to get patients to the right place at the right time to help restore health and patients' ability to once again care for themselves.

### **Change Model**

In John Kotter's Change Model, he introduces eight steps toward leading change: 1) Establishing a sense of urgency; 2) Forming a powerful guiding coalition; 3) Creating a vision; 4) Communicating the vision; 5) Empowering others to act on the vision; 6) Planning for and creating short-term wins; 7) Consolidating improvements and producing still more change; and 8) Institutionalizing new approaches (1995, p. 61). Kotter believes that change begins when someone identifies a problem or need within a system, is motivated to act, and communicates the need to act to others. "Without motivation," he says, "people won't help and the effort goes nowhere" (p. 60). Care coordinators drive change in the care of their patients. They assess individual needs, work with patients and families to set goals, work with other members of the health care team to create care plans, and access the resources they need to keep momentum in the system.

### **Quality of Care Model**

Avedis Donabedian's Quality of Care Model provides a framework for evaluating health services and quality of care (AHRQ, 2007). It introduces three concepts – structure, process, and outcome – that can be examined to glean information about quality of care. Structure refers to

the settings in which care occurs; it may include things like physical location, facilities, financing, staff, equipment, resources, and teamwork. Process refers to activities involved in giving and receiving care, relationships or transactions between patients and providers. Outcome refers to the effects of care on the health of its recipients (AHRQ, 2007; Donabedian, 1988; McQuestion, 2006; Mitchell, Ferketich, & Jennings, 1998). This approach to quality assessment is intuitive; good structure facilitates good process, which increases the probability of a good outcome. Application of this theory suggests that a supportive environment for both health care providers and recipients of care can result in improved processes and outcomes. It upholds the notion that providing nurses with a structure in which they can flourish and function to their maximum capabilities, and where they are happy and supported, will improve the nursing process and care outcomes.

In summary, the theories of Jean Watson, Dorothea Orem, John Kotter, and Avedis Donabedian contribute to our understanding of the role of nursing, the nurse as care coordinator and provider of triage care, care coordination in general, and support of nurses in their roles and work environment. The theories of caring, self-care, change, and quality of care reinforce the need for improved care coordination and support activities that aid nurses in providing quality care. These theories form the foundation of this SCP and contribute to its realization in practice.

### **Concept Definitions**

To assist the reader, descriptions of the main concepts used in this SCP and literature review follow. Concepts that will be defined are: care coordination; cancer care coordination, telephone consultation and triage; scope of practice; role development, enactment, and optimization; and workflow.

#### **Care Coordination**

Care coordination is a broad concept that has many different meanings for different people, professions, and organizations. The definition of care coordination used for this SCP was provided in Chapter I and is restated here:

Care coordination is the deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services. Organizing care involves the marshaling of personnel and other resources needed to carry out all required patient care activities and is often managed by the exchange of information among participants responsible for different aspects of care. (AHRQ, 2007, p. v).

This definition has been adopted by other leading organizations, such as the ANA (2012).

### **Cancer Care Coordination**

Cancer care coordination, also often referred to as patient navigation, is a more specialized type of care coordination. Patient navigation is defined by the Oncology Nursing Society (ONS), Association of Oncology Social Work (AOSW), and National Association of Social Workers (NASW) as “individualized assistance offered to patients, families, and caregivers to help overcome healthcare system barriers and facilitate timely access to quality health and psychosocial care from pre-diagnosis through all phases of the cancer experience” (2010, p. 1). Cancer care coordination involves activities similar to that of general care coordination with a focus on cancer and requires enhanced knowledge of the unique care needs of cancer patients and their significant others.

### **Telephone Consultation and Triage**



Telephone consultation nursing is application of the nursing process (assessment, diagnosis, planning, intervention, and evaluation) over the phone in order to provide continuity of care and/or attend to a patient's physical, psychological, and social health-related needs (Hickey & Newton, 2012; Omery, 2003; Wheeler, 2009). Telephone triage is a similar concept with a focus on addressing a specific inquiry, giving advice, and referring a patient to the most appropriate health care resource or setting. Triage disposition is the conclusion at which the provider and patient arrive over the course of the call. Triage nurses use professional knowledge, patients' health information if available to them, and often decision support systems such as algorithms and protocols to formulate the best plan of care (Hickey & Newton, 2012; O'Connell, Stanley, & Malakar, 2001; Wheeler, 2009).

### **Scope of Practice**

The ANA defines nursing as the “protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations” (ANA, 2004, p. 7). This definition was inspired by the work of many nurses and theorists over the years, as well as the evolution of professional nursing in the past century. The art and science of nursing is manifested professionally within a set boundary termed *scope of practice*. Oelke et al. (2008) define scope of practice as “predefined expectations of the role that all nurses are educated and legislated to perform at entry to practice” (p. 59). Nursing scope of practice is determined by education and training, competence, governing or regulatory bodies, and institution or workplace. Nurses are educated by knowledgeable, trained nurses and other health professionals. Curricula are developed via their own standards and regulations. There are a number of entry levels into nursing, which culminate in varying degrees and licenses or

certifications. Nurses build on formal education in practice and collaboration with other professionals. Competence comes with education and experience and, like education, also affects nurses' ability to practice to full scope. Activities or tasks that nurses are allowed to perform are determined by state and national legislation, which in turn is translated by regulatory bodies. At the regulatory level, policies, principles or codes, and formal standards all contribute to the definition and interpretation, and facilitation or limitation of scope of practice. Employers also impact scope of practice both intentionally and unintentionally by way of policies, regulations, and work environment (ANA, 2004; Baranek, 2005; Basford, 2003).

### **Role Development**

Role development in nursing occurs through education in the classroom and clinical settings, licensure, intra- and interdisciplinary collaboration, research, work experience, socialization, and continuing education. The nurse's role is grounded in theory and developed in practice by federal and state regulations, codes of ethics, professional scope and standards, workplace mandates, and personal experience and interpretation.

### **Role Enactment**

Role enactment, as defined by Oelke et al. (2008), is "actual performance of tasks and activities associated with nurses' roles, as delimited by legislation, employer policies, experience, context of practice, competence, etc." (p. 59). Role enactment is the practice of nursing and is affected by role development and role optimization.

### **Role Optimization**

Role optimization is enrichment of current nursing functions and practice. It involves activities that allow nurses to heighten and enhance role enactment – that is, perform to the fullest of their education, experience, and competence – within their defined scope of practice.

**Workflow**

Cain and Haque (2008) define workflow as “the set of tasks – grouped chronologically into processes – and the set of people or resources needed for those tasks, that are necessary to accomplish a given goal” (p. 1). An organization’s workflow is a progression of steps comprised of interactions between tasks and those who perform them.

**Literature Review**

This review of the literature is not intended to reflect an exhaustive systematic review. Rather, it is intended to present an overview and highlight the diversity of available information on care coordination and telephone triage. Studies and results presented here are similar in nature to others not specifically noted. The data herein is consistent with and representative of the body of literature on this subject. This review seeks to describe generally what is known about care coordination and telephone triage and outcomes associated with these services. It will emphasize how care coordination and telephone triage are manifested in cancer care. Furthermore, this review will highlight gaps in the literature that underscore the relevance of this SCP.

**Database Search**

For this review, the electronic databases CINAHL, PubMed, Medline/EBSCO, Science Direct, AHRQ, and The Cochrane Library were used to conduct the literature search using various Boolean combinations of the following keywords: care coordination, care/case/disease management, nurse/care coordinator, nurse/telephone triage, telephone consultation/advice/assessment, nurse/patient navigator, navigation, cancer telephone triage, symptom management, triage protocol, clinical decision support, cancer, oncology, scope of practice, workflow, time management, perceptions, and outcomes. Parameters were set to limit the search to all languages, all journal subsets, all publication types, and published from 1950 to

2013. The search was initially limited to adult subjects only (ages 18+), but further investigation revealed that many studies on telephone triage were conducted in pediatric practices so the search was expanded to include all ages. Titles and abstracts of resulting articles were then reviewed for relevance to the focus and scope of this review. Additionally, reference lists were reviewed to identify other relevant work and frequently cited titles. Studies selected for this review were chosen based on perceived relevance and quality of data. Studies were excluded if they did not support their results with appropriate and sufficient data or full text could not be obtained. Attempt was made to include a variety of studies to reflect the breadth of available information. The studies described below are representative of other literature appraised in terms of patient populations, research designs, outcome measures, and results.

### **Care Coordination**

**History.** The exact origin of care coordination is unknown. Health care providers have been engaging in formal and informal care coordination activities for years without much focus on care coordination as a concept. Nurses in particular “have been performing care coordination as a core part of the nursing discipline since the turn of the last century” (ANA, 2012, p. 1). Over the years, care coordination as a distinct concept emerged insidiously as health care grew in complexity and providers and researchers began contemplating strategies for better management of care. The IOM (2001, 2003a) has identified care coordination as a key strategy to improve the effectiveness, safety, and efficiency of health care delivery in the US. With passage of the ACA in 2010, care coordination was catapulted into the spotlight. Care coordination has now been and continues to be studied from a variety of angles and through many different lenses.

**Findings.** There is a wealth of literature on care coordination in its many manifestations. For the purpose of this SCP, only studies that incorporated a distinct and identifiable component

of care coordination, preferably as performed by a nurse or other designated professional or multidisciplinary team, were examined. This review highlighted two main ways in which care coordination is studied: across settings and among populations. Care coordination has been studied and demonstrated to be a critical component of comprehensive patient care in a wide array of settings, including acute/hospital-based (ANA, 2012; Berry, Rock, Houskamp, Brueggeman, & Tucker, 2013; CMS, 2011; Douglas, Daly, Kelley, O'Toole, & Montenegro, 2007; Kligler et al., 2011; McCarthy & Klein, 2010; Robles et al., 2011), sub-acute/community-based (Atherly & Thorpe, 2011; Coleman et al., 2006; Laughlin & Biesel, 2010; Marek, Popejoy, Petroski, & Rantz, 2006), and care transitions (Coleman et al., 2006; Naylor et al., 2004; Robles et al., 2011). Studies in these settings are particularly appropriate to this SCP as cancer patients often find themselves traveling between locations. For some, the acute setting is the place of initial diagnosis and treatment. For others, it is an occasional stop during the course of treatment or at the end of life. Much of cancer care is delivered in the ambulatory setting, which is generally where patients receive screening, diagnosis, treatment, follow-up, and survivorship care. Finally, cancer patients frequently are found at transitions of care, such as from primary to specialty care, inpatient to outpatient, and active treatment to survivorship or end of life. Multidisciplinary communication, medication reconciliation, discharge instruction, and follow-up are important domains of care coordination for cancer patients at such transitions.

Care coordination has also been studied and demonstrated to be a critical component of comprehensive patient care in a wide variety of populations, especially the mentally ill (AHRQ, 2007; Bass, Clark, Looman, McCarthy, & Eckert, 2003; Christensen et al., 2008; Dietrich et al., 2004; Judge et al., 2011; Neumeyer-Gromen, Lampert, Stark, & Kallischnigg, 2004; Oxman, Dietrich, Williams, & Kroenke, 2002; Smelson et al., 2012), vulnerable adults (Boyd et al., 2009;

Wenger & Young, 2007), homeless (Karper et al., 2008), terminally ill (AHRQ, 2007; Aiken et al., 2006; Engelhardt et al., 2009), and minorities and underserved (Bachman, Tobias, Master, Scavron, & Tierney, 2008; Kinnevy & Sununu, 2010; Wohl et al., 2011). Additionally, research has shown that care coordination is a significant intervention when studied in the context of specific complex and chronic diseases, such as diabetes (AHRQ, 2007; Norris et al., 2002), heart disease (AHRQ, 2007; Beswick et al., 2005; Roccaforte, Demers, Baldassarre, Teo, & Yusuf, 2005; Windham, Bennett, & Gottlieb, 2003; Yu, Thompson, & Lee, 2006), and stroke (AHRQ, 2007; Langhorne et al., 2005).

Many of the care coordination programs that were evaluated in the aforementioned studies aimed to reduce costs associated with disease and health care. Some studies reported decreased Medicare and/or mean hospital stay costs (e.g. Atherly & Thorpe, 2011; Berry et al., 2013; Klein & McCarthy, 2009; Sander, Elliot-Gibson, Beaton, Bogoch, & Maetzel, 2008; Schore, Peikes, Peterson, Gerolamo, & Brown, 2011). Others found that care coordination interventions were cost-neutral or slightly more expensive than usual care (e.g. Bachman et al., 2008; Douglas et al., 2007; Langhorne et al., 2005; Neumeyer-Gromen et al., 2004). However, in a majority of the studies reviewed, overall program cost effectiveness and return on investment (ROI) were not well examined (e.g. costs were not incorporated into the analysis), not consistently reported, and/or results were mixed.

While the cost benefits are not always clear or consistently measured and reported, what is clear is that care coordination results in clinically relevant patient outcomes and quality indicators across varied settings and patient populations that have implied cost savings. Some of the most relevant findings on care coordination are further outlined in Table 1 below.

Table 1: Review of the Literature on Care Coordination

Reference	Intervention	Outcome: Costs
Anderson et al., 2005	Comprehensive care coordination	Average total cost savings for each patient in

	program including inpatient education, discharge planning, and outpatient support	intervention group was \$1541 (P-value NR)
Atherly & Thorpe, 2011	Healthways program consisting of disease management, intensive case management, and long-term care management	Reduced total Medicare costs (P <0.001)
Berry et al., 2013	Gundersen Lutheran integrated care coordination program	Unplanned charges for ED visits and hospitalizations decreased 64% in 24 months among coordinated patients (P-value NR)
Coleman et al., 2006	Tools to promote cross-site communication, encouragement to take a more active role in care, and guidance from a "transition coach"	Reduced mean hospital costs at 180 days (P=0.049)
Daly et al., 2005	Care coordination, family support, teaching, and monitoring of therapies from a team of APNs, a geriatrician, and a pulmonologist for 2 months post-hospital discharge	Total cost savings associated with intervention were approximately \$481,811 (P-value NR)
Douglas et al., 2007	Implementation of a disease management program that included APN-provided care and care coordination	Average cost savings of \$19,205 per patient and overall reduction of readmission-related charges by \$2 million (P-values NR)
Naylor et al., 1999	Comprehensive discharge planning and home follow-up intervention	Reduced total Medicare costs (P <0.001)
Naylor et al., 2004	A 3-month APN directed discharge planning and home follow-up program	Reduced total costs (P=0.002)
Sander et al., 2008	Implementation of an osteoporosis coordinator to coordinate patient education, assessment, referral, and treatment of underlying disease	Potential net hospital cost savings of \$48,950 (P-value NR); 90% probability that coordinator costs less than \$25,000 per hip fracture avoided, which results in overall cost savings (P-value NR)
Schore et al., 2011	15 CMS-funded large-scale care coordination projects in disease management, hospitals, and a hospice center	Reduced Medicare expenditures among high-risk subgroup (P=0.05)
<b>Reference</b>	<b>Intervention</b>	<b>Outcome: ED visits, hospital admissions, readmissions, and LOS</b>
Anderson et al., 2005	Comprehensive care coordination program including inpatient education, discharge planning, and outpatient support	Reduced 6-month readmission rates (P=0.01)
Berry et al., 2013	Gundersen Lutheran integrated care coordination program	Reduced unplanned ED visits, hospital admissions, and LOS (P-values NR)
Caplan et al., 2004	Comprehensive geriatric assessment and multidisciplinary outreach intervention including post-ED home follow-up and care coordination	Reduced hospital admissions first 30 days after initial ED visit (P=0.048) and during 18-month follow-up (P=0.007); Reduced time between initial ED visit and hospital admission (P=0.011)
Coleman et al., 2006	Tools to promote cross-site communication, encouragement to take a more active role in care, and guidance from a "transition coach"	Reduced readmission rates at 30 days (P=0.048), 90 days (P=0.04), and 180 days (P=0.046)
Courtney et al., 2009	Hospital and in-home care program involving comprehensive nursing	Reduced hospital readmissions (P=0.007)

	and physiotherapy assessment, exercise program, nurse home visit, and telephone follow-up	
Daly et al., 2005	Care coordination, family support, teaching, and monitoring of therapies from a team of APNs, a geriatrician, and a pulmonologist for 2 months post-hospital discharge	Reduced readmission LOS (P=0.03)
Douglas et al., 2007	Implementation of a disease management program that included APN-provided care and care coordination	Reduced readmission LOS (P-value NR)
Engelhardt et al., 2009	Advanced Illness Coordinated Care Program consisting of health counseling, education, and care coordination	Reduced hospital admissions (P=0.045)
Naylor et al., 1999	Comprehensive discharge planning and home follow-up intervention	Control group patients more likely to be readmitted (P <0.001); Intervention group patients had fewer multiple readmissions (P=0.01), shorter LOS (P <0.001), and increased time to first readmission (P <0.001)
Naylor et al., 2004	A 3-month APN directed discharge planning and home follow-up program	Reduced time to first readmission or death (P=0.026); Reduced total readmissions (P=0.047)
Roccaforte et al., 2005	Various disease management programs, most with focus on care coordination or case management	Reduced hospital admission rates (P <0.000001)
Rytter et al., 2010	Post-hospital discharge follow-up program consisting of structured home visit and scheduled nurse follow-up	Control group patients more likely to be readmitted (P=0.03)
Schore et al., 2011	15 CMS-funded large-scale care coordination projects in disease management, hospitals, and a hospice center	Reduced annual hospital admissions among high-risk subgroup (P <=0.01); Reduced ED visits (P=0.05)
Sinclair et al., 2005	Home-based care program consisting of post-hospital discharge nurse home visits, support, and care coordination	Reduced hospital readmissions (P <0.05) and subsequent LOS after initial discharge (P <0.05)
<b>Reference</b>	<b>Intervention</b>	<b>Outcome: Patient care and/or outcomes</b>
Aiken et al., 2006	PhoenixCare demonstration program of palliative care and coordinated care/case management	Increased physical functioning and general health (P <0.05)
Boyd et al., 2009	Guided Care program that integrates a nurse trained in chronic care into a primary care practice	Improved reports of receiving high quality chronic care (P=0.003)
Caplan et al., 2004	Comprehensive geriatric assessment and multidisciplinary outreach intervention including post-ED home follow-up and care coordination	Maintained greater degree physical and mental function at 6 months (P <0.001) and 12 months (P <0.001)
Courtney et al., 2009	Hospital and in-home care program involving comprehensive nursing and physiotherapy assessment, exercise program, nurse home visit,	Improved reports of QOL (P <0.001) and Mental Component Summary scores (P <0.001)



	and telephone follow-up	
Dietrich et al., 2004	Depression management program involving clinician and care manager support and telephone follow-up	More intervention patients responded to treatment (P=0.02), showed remission (P=0.014), and rated their care as good or excellent (P=0.0003) at 6 months
Douglas et al., 2007	Implementation of a disease management program that included APN-provided care and care coordination	Improved physical health-related QOL (P=0.02)
Engelhardt et al., 2009	Advanced Illness Coordinated Care Program consisting of health counseling, education, and care coordination	Improved communication and care concerning symptoms (P=0.02), support in understanding and coping with illness (P=0.01), and help in accessing spiritual support (P <0.001)
Guttman et al., 2004	Implementation of an ED-based nurse discharge plan coordinator	Increased patient satisfaction with and clarity of discharge information (P <0.001), feelings of preparedness for discharge (P <0.001), and feelings of wellbeing post-discharge (P <0.05)
Karper et al., 2008	Care coordination service consisting of coordinated treatment plan, crisis triage, transportation coordination, and a treatment liaison	Improved scores for relation to self and others (P=0.004), depression and anxiety (P=0.005), daily living and role functioning (P=0.001), impulsive and addictive behavior (P <0.001), and a number of other QOL factors
Marek et al., 2006	Community-based long-term care program with nurse care coordination services	Improved clinical outcomes of pain (P=0.00), dyspnea (P=0.03), and ADLs (P=0.01)
Naylor et al., 2004	A 3-month APN directed discharge planning and home follow-up program	Improved overall QOL (P <0.05), physical dimension of QOL (P <0.05), and patient satisfaction (P <0.001)
Petereit et al., 2008	Cancer Disparity Research Partnership program with emphasis on patient navigation	Reduced days of radiation treatment interruptions (P=0.002)
Preen et al., 2005	Hospital-coordinated discharge care plan involving a multidisciplinary team of primary care providers	Increased mental QOL post-discharge (P=0.003) and satisfaction with discharge care planning (P=0.02); Improved discharge process from prior to intervention (P=0.004)
Roccaforte et al., 2005	Various disease management programs, most with focus on care coordination or case management	Reduced mortality (P=0.003)
Sander et al., 2008	Implementation of an osteoporosis coordinator to coordinate patient education, assessment, referral, and treatment of underlying disease	Potential to reduce number of subsequent hip fractures (P-value NR)
Schore et al., 2011	15 CMS-funded large-scale care coordination projects in disease management, hospitals, and a hospice center	Reduced mortality (P=0.02)
Wohl et al., 2011	Youth-focused case management program consisting of case management, treatment education/adherence support, and HIV risk reduction counseling	Dose-response trend observed between retention in HIV care and increasing number of hours in the intervention (P=0.02) and increasing number of intervention appointments (P=0.05)
<b>Reference</b>	<b>Intervention</b>	<b>Outcome: Caregiver outcomes</b>
Bass et al., 2003	Care consultation service with health care services offered by a large managed care system	Increased satisfaction among caregivers of severely impaired (P=0.05); Improved depression and strain outcomes among non-spouse

		caregivers (P=0.02); Reduced feelings of health deterioration (P=0.03) and role captivity (P=0.02)
Engelhardt et al., 2009	Advanced Illness Coordinated Care Program consisting of health counseling, education, and care coordination	Received more attention for emotional and spiritual needs (P=0.02)
<b>Reference</b>	<b>Intervention</b>	<b>Outcome: Miscellaneous</b>
Aiken et al., 2006	PhoenixCare demonstration program of palliative care and coordinated care/case management	More intervention patients reported they received education re: community resources (P <0.05), had information about to whom to speak concerning medical problems (P <0.05), and had sufficient information to handle illness emergencies (P <0.05); Increased rate of having living will or advanced directive (P <0.05)
Courtney et al., 2009	Hospital and in-home care program involving comprehensive nursing and physiotherapy assessment, exercise program, nurse home visit, and telephone follow-up	Reduced GP visits (P <0.001)
Engelhardt et al., 2009	Advanced Illness Coordinated Care Program consisting of health counseling, education, and care coordination	Improved advanced planning (P <0.001) and support in managing family decision making (P=0.002); Intervention patients more likely to formulate an advanced directive (P <0.001) and more likely to agree to a DNR or DNI order (P=0.04)
Karper et al., 2008	Care coordination service consisting of coordinated treatment plan, crisis triage, transportation coordination, and a treatment liaison	Improved housing stability (P=0.024)
Preen et al., 2005	Hospital-coordinated discharge care plan involving a multidisciplinary team of primary care providers	Reduced time it took for discharging hospitals to contact GP (P=0.002)
Rytter et al., 2010	Post-hospital discharge follow-up program consisting of structured home visit and scheduled nurse follow-up	Decreased number of patients who used medications of which the GP was unaware (P=0.02) and who did not take medications as prescribed by the GP (p=0.05)
Sinclair et al., 2005	Home-based care program consisting of post-hospital discharge nurse home visits, support, and care coordination	Increased number of patients driving after discharge (P <0.05)
Smelson et al., 2012	Time Limited Care Coordination program consisting of dual recovery therapy, assertive community treatment, and peer support all facilitated by a case manager	Increased number of patients who attended an outpatient appointment within 14 days of hospital discharge (P <0.01) and who were engaged in outpatient services at end of study period (P <0.01)
Wohl et al., 2011	Youth-focused case management program consisting of case management, treatment education/adherence support, and HIV risk reduction counseling	Increased number of HIV care visits scheduled (P <0.0001) and number of care visits attended (P <0.0001); Increased substance abuse services (P=0.03), housing (P <0.0001), transportation (P <0.0001), risk reduction education (P=0.007), and support groups (P=0.03)

ADL=activity of daily living, APN=advanced practice provider, DNR/DNI=do not resuscitate/intubate, GP=general practitioner, NR=not reported

To summarize, when studied across varied settings and among diverse patient populations, care coordination programs have been found to: potentially reduce costs; reduce ED visits, hospital admissions and readmissions, and length of stay (LOS); improve patient care, quality of life (QOL), and disease outcomes; improve caregiver outcomes; and increase retention in care, access to and use of ancillary services, and advanced care planning.

Based on this literature review, there is reason to believe that care coordination can benefit all populations and individuals, particularly those with complex, chronic health and social needs. For the purpose of this SCP, the following data presented will focus specifically on the complex and chronically ill cancer population, including outcomes of cancer care coordination and how telephone consultation/triage (“telephone triage”) facilitates care coordination in this group. Additionally, findings on nurse perception of the care coordinator role, scope of practice, and barriers and facilitators of care will be presented.

### **Cancer Care Coordination**

**History.** In 1989, the American Cancer Society (ACS) held the National Hearings on Cancer in the Poor to better understand barriers to cancer care of the poor, vulnerable, and underserved. Afterward, the ACS released *Cancer in the Poor: A Report to the Nation*. Key messages in this report include that the poor face unique and substantial barriers to cancer care; often avoid care or make sacrifices to obtain and pay for care; view cancer differently, often more fatalistically, than others; experience more cancer pain and suffering than others; and that cancer education is often not geared and/or irrelevant to the poor. Findings from the hearings led to development of the concept of patient navigation, a form of care coordination unique to cancer care (Freeman, 2013). In collaboration with the ACS, Dr. Harold Freeman and colleagues developed the first patient navigation program at Harlem Hospital in New York. The main goal

of this program was to eliminate barriers and improve care of a population of poor black women with breast cancer. Outcomes of this program, especially in screening and diagnosis, were encouraging. Later, in 2005, President George Bush signed the Patient Navigator and Chronic Disease Prevention Act, which provided funding for patient navigation research. After this act was passed, the National Cancer Institute (NCI) Center to Reduce Health Disparities gave \$25 million to the Patient Navigator Research Program, which was designed to expand and test the original Harlem patient navigation model; this research is ongoing. In 2012, the American College of Surgeons, motivated by research outcomes in support of patient navigation, mandated that cancer programs be required to have a patient navigation program in place by 2015. Since Dr. Freeman's pilot program, hundreds of navigator programs have cropped up all over the country and abroad as well. The nurse navigator role is one attempt to address the need for more consistency in cancer care coordination. Patient navigation has been expanded and applied across the entire cancer care continuum including at screening/detection, diagnosis, treatment – and to a lesser extent prevention, survivorship, and end of life – among both underserved and general populations (ACS, 1989; Cantril & Haylock, 2013; Freeman, 2013; Freeman, Muth, & Kerner, 1995; Freeman & Rodriguez, 2011; Paskett et al., 2011).

**Findings.** The purpose of this literature review was to provide evidence of the efficacy of care coordination in cancer care. Studies reviewed evaluated the effect of care coordination services—at times in combination with other interventions, such as educational programs or collaboration with other members of the multidisciplinary team—on various outcomes among adult cancer patients along the continuum of care from prevention to survivorship or end of life. The literature suggests that care coordination is associated with improvements in cancer screening/detection, diagnosis, treatment, QOL, and patient satisfaction. Few studies have

addressed care coordination in cancer prevention and survivorship. Further, studies that evaluate care coordination in end of life are often not cancer-specific.

**Screening/detection.** Care coordination is associated with significantly improved rates of cancer screening, especially in breast, cervical, and colorectal cancer (Paskett et al., 2011; Wells et al., 2008). Improved rates of screening are also seen in specific minority groups, such as American Indian women (Dignan et al., 2005), Korean women (Fang, Ma, Tan, & Chi, 2007), and non-specific inner city/urban and low-income or uninsured populations (Battaglia, Roloff, Posner, & Freund, 2007; Christie et al., 2008; Nash, Azeez, Vlahov, & Schori, 2006).

**Diagnosis.** Care coordination is associated with improved cancer stage at diagnosis (Gabram et al., 2008; Paskett et al., 2011; Wells et al., 2008). Alsamarai et al. (2013) evaluated the effect of a lung cancer care coordination program on timeliness of care. The authors found that care coordination was associated with significantly earlier stage of cancer on diagnosis ( $P=0.006$ ) and resulted in a mean reduction of 25 days between first abnormal image and the initiation of treatment ( $P=0.015$ ). Care coordination is also associated with better adherence to follow-up visits after abnormal and suspicious screening and reduction in time from abnormality to follow-up and diagnostic resolution (Clark et al., 2009; Fouad, Wynn, Martin, & Partridge, 2010; Palmieri et al., 2009, Wells et al., 2008). Furthermore, in the study by Donelan et al. (2010), patients who received navigation services were more likely to feel prepared, receive a reminder letter or phone call, and feel welcome at their follow-up visit.

**Treatment.** In general, few studies have measured care coordination and adherence to cancer treatment and treatment outcomes in terms of morbidity and mortality. Of those that have, results are mixed and not often statistically significant (Paskett et al., 2011). One study did demonstrate fewer mean number of hospitalizations during treatment (Fillion et al., 2009), and

another demonstrated an average three fewer days of treatment interruptions during radiation therapy (Petereit et al., 2008). As with screening and detection, treatment outcomes are generally more significant among minority patients. One study demonstrated that care coordination was associated with higher than average rates of guideline-indicated care among underserved patients diagnosed with breast cancer (Raj, Ko, Battaglia, Chabner, & Moy, 2012). Additionally, several studies have shown that care coordination improves minority enrollment in clinical trials (Dohan & Schrag, 2005; Holmes, Major, Lyonga, Alleyne, & Clayton, 2012; Steinberg et al., 2006).

More consistently, studies have shown that care coordination is associated with improved adherence to adjuvant therapies, such as treatment of depression and counseling. For example, Ell et al. (2008) demonstrated that significantly more women received depression treatment with a patient navigation and collaborative care management intervention ( $P < 0.0001$ ). Additionally, studies indicate that anxiety, QOL, feelings of preparedness and understanding of the treatment plan, and satisfaction throughout the treatment process are all improved with care coordination (Crane-Okada, 2013; Ell et al., 2008; Fillion et al., 2009; Paskett et al., 2011; Wells et al., 2008).

***Quality of life, wellbeing, and satisfaction.*** Quantitative measures of anxiety, QOL, emotional and psychosocial wellbeing, and satisfaction with almost all aspects of cancer care measured are consistently increased both significantly and non-significantly with care coordination services (Ell et al., 2008; McMullen, 2013; Paskett et al., 2011; Swanson & Koch, 2010). Fang et al. (2007) reported that more Korean women in a patient navigation intervention group stated that Pap smear screening would reduce their worries about cervical cancer, and more felt capable of arranging to have a screen done. Patients with head and neck cancer who received care and consultation from an oncology pivot nurse had improved overall satisfaction with treatment, better emotional functioning, and improved psychosocial wellbeing scores

(Fillion et al., 2009). Furthermore, financial issues/barriers, anxiety about finances, and education about and access to financial resources are consistently improved with care coordination (Campbell, Craig, Eggert, & Bailey-Dorton, 2010; Fang et al., 2007).

Some of the most relevant findings on cancer care coordination are further outlined in

Table 2 below.

Table 2: Review of the Literature on Cancer Care Coordination

Reference	Purpose	Population/ Sample	Research Design	Intervention	Comparison	Outcome Measures/ Scales	Results
Battaglia et al., 2007	Evaluate effect of patient navigator on diagnosis and follow up among inner city women with breast abnormalities	Women >18 y.o. with abnormal breast screening Pre-intervention N=1332	Quasi-experimental, Retrospective comparison	Patient navigator	Women seen before and women seen after intervention	Timely follow-up from referral to diagnostic resolution (defined as $\leq 120$ days)	More timely follow-up ( $P < 0.0001$ )
Dignan et al., 2005	Evaluate effect of Navigator on adherence to breast cancer screening guidelines among American Indian women	American Indian women $\geq 40$ y.o. N=157	Experimental, Prospective randomized controlled trial	Navigator + face-to-face follow-up Navigator + telephone follow-up	Group 1: Control, no intervention Group 2: Navigator + face-to-face follow-up Group 3: Navigator + telephone follow-up	Adherence to mammography screening guidelines	More adherence to mammography screening guidelines with either intervention ( $P=0.013$ )  Telephone intervention more effective than face-to-face intervention ( $P=0.029$ )
Donelan et al., 2010	Evaluate effect of patient navigator on patient experience after abnormal mammography	Men and women with abnormal mammography N=253, RR=53.6%	Experimental, Randomized controlled trial	Patient navigator	Navigation vs. no navigation	Questionnaire used to measure: timely appointments, appointment reminders, preparation for visit, treatment with dignity and respect, etc.	More likely to "definitely understand" what to expect at their visit ( $P=0.003$ ); more likely to receive a reminder letter or telephone call ( $P=0.029$ ); and more likely to feel welcome ( $P=0.012$ ).  All other measures were NS
Fang et al., 2007	Evaluate effect of patient navigator and psychoeducational counseling on Pap smear screening rates among Korean women	Korean women >18 y.o. N=102	Quasi-experimental, Prospective comparison	2h psychosocial education class + Patient navigator	Class only (control) vs. Class + Patient navigator	Post-intervention Pap smear screening rate, and questionnaire used to measure patient health beliefs	More Pap smears completed ( $P < 0.001$ )  Patients reported: Pap would reduce worry about cancer ( $P < 0.05$ ); perceived fewer financial barriers to screening ( $P$

							<0.05); feeling more capable of arranging to have Pap test (P <0.05)
Nash et al., 2006	Assess the impact of patient navigator on timely colorectal cancer screening in urban public hospital setting	Patients who received diagnostic or screening colonoscopies either before or after intervention N=1767	Quasi-experimental, Retrospective comparison	2 patient navigators hired for GI/colorectal clinic	Patients who received care before and patients who received care after intervention	Rate of colonoscopies and rate of broken appointments	More colonoscopies among uninsured persons (P <0.001)  Broken colonoscopy appointment rate declined from 67.2% before intervention to 5.3% after intervention (P-value NR)
Psooy et al., 2004	Determine the impact of patient navigation on timeliness in the diagnosis of breast abnormalities	Women who underwent core needle biopsy procedure N=536	Quasi-experimental, Retrospective comparison	Patient navigation program	Patients who received care before and patients who received care after intervention	Time from screening abnormality to diagnostic resolution	Less time from screening abnormality to biopsy (P <0.001)
Ell, et al., 2007	Test the effectiveness of a structured counseling and patient navigation for improving follow-up rates after abnormal mammogram	Women with abnormal mammograms N=204	Experimental, Prospective randomized controlled trial	Patient navigator + counseling	Usual care vs. Patient navigation + counseling	Adherence to diagnostic follow-up; Timely adherence from index screen to diagnostic resolution; Timely entry rate for cancer patients	More likely to adhere to diagnostic follow-up through diagnostic resolution (P <0.001)  More timely adherence from index screen to diagnostic resolution (P=0.001)  Timely entry rate NS
Fillion et al., 2009	Evaluate effect of pivot nurse in oncology (PNO) on outcomes in head and neck cancer	Patients with head and neck cancer followed for first time at oncology clinic  N=158  RR (historical cohort)=62.4%  RR(exposed cohort)=63.6%	Quasi-experimental, Retrospective cohort comparison	Pivot nurse in oncology	Patients who received care before and patients who received care after intervention	Questionnaire (EORTC-SAT32, IRLE-C, EORTC-QLC-C30, HNRQ) used to measure: Satisfaction; Cancer adjustment; Quality of life  MED-ECHO used to measure hospitalization	Improved overall satisfaction (P=0.03)  Lower future concerns (P=0.03), social problems (P=0.01), body image concerns (P=0.0005), and sex-related problems (P <0.0001)  Better emotional functioning (P=0.045)  Fewer mean number of hospitalizations (P=0.003)  All other



							measures were NS
Campbell et al., 2010	Determine whether patient navigation in a comprehensive community cancer center affects patient and staff perceptions of patient preparation for treatment, access to care, and overall satisfaction.	Cancer patients N=48 RR=(intervention) 58% RR (no intervention)=42%	Experimental, Randomized controlled trial	Patient navigator	Navigation vs. No navigation	10-item Likert scale survey (patients)	Improved ratings on resources (P=0.0001), timeliness of information (P=0.0011), financial issues (P=0.0336), informed of financial assistance (P=0.0085), and gained access to financial assistance (P=0.0075)  All other measures were NS
Ell et al., 2008	Determine the effectiveness of the Alleviating Depression Among Patients With Cancer (ADAPt-C) collaborative care management for major depression or dysthymia.	Low-income, predominantly female Hispanic patients with cancer >=18 y.o. with major depression, dysthymia, or both N=472	Experimental, Randomized controlled trial, comparison	Enhanced usual care (=usual care + educational pamphlets) + ADAPt-C program which included patient navigator services (among other things)	Enhanced usual care only (control) vs. Enhanced usual care + ADAPt-C program	Depression and severity score using PHQ-9; Health-related quality of life using FACT-G scale; Medical Outcomes Study SF-12	More received depression treatment (P <0.0001)  More achieved 5-point decrease in PHQ-9 scores at 12 months (P=0.02)  Improved FACT-G emotional and social well-being and mental components of SF-12 (P <0.01)  At 12 months, better social/family (P <0.001), emotional (P=0.01), and functional well-being (P=0.04) FACT-G scores, and SF-12 physical component scores (P=0.02)  All other measures were NS

NR=not reported, NS=not significant

### Telephone Triage

Care coordination is modeled in many different ways depending on setting, specialty, patient population, and desired outcomes. Cancer care coordination is facilitated by an extensive network of resources and activities. One way in which CCCs provide coordination services is

through telephone triage (Anderson, Hilaire, & Flinter, 2012; Cancer Institute NSW, 2011; Preston, 2000; Shaw et al., 2013). In addition to highlighting the benefits of cancer care coordination, another purpose of this literature review was to examine the importance of telephone triage in cancer care coordination. Specific and meaningful information about cancer telephone triage in relation to cancer care coordination is hard to come by. However, the literature that is available on this topic supports that telephone triage is a foundational component of cancer care and should be guided by standardized practices to elicit the best outcomes.

**History.** Nurse triage first emerged in the early 1800s as a systematic way of attending to wounded soldiers during wartime. From there, it moved into emergency sectors of hospitals, urgent care clinics, pediatric care facilities and, finally, into other outpatient/ambulatory settings. The first nurse triage call center in the US was established by Kaiser Permanente in the late 1960s as a way of providing faster, more efficient care and medical assistance. Nurses were hired to screen calls to distinguish between emergent and non-emergent needs of callers, and to encourage self-care at home when possible. Other health maintenance organizations followed suit, employing nurse telephone advice lines as part of cost containment and management strategies. Nurse telephone triage has now become common practice in today's health care delivery system (Hickey & Newton, 2012; Wheeler, 2009, 2011). In fact, more than 75 million people in the US have access to nurse telephone advice services (O'Connell, Stanley, et al., 2001).

Telephone triage developed in oncology for slightly different reasons than in emergency and other settings. More than a cost-saving measure, telephone triage has been employed in oncology as a way to maintain continuity of care. As cancer treatments increasingly were delivered outside the hospital and instead in ambulatory clinics or even at home, patients were

left to manage their care and treatment side effects on their own. Thus, they began to seek advice and support over the phone. Demand for telephone care increased and now telephone nursing has become a customary part of the cancer care package (Chobanuk, Pituskin, Kashuba, & Bates, 1999; Hickey & Newton, 2012). CCCs who provide triage care have a unique advantage over triage nurses in EDs or call centers in that their patients are often known to them, and they have knowledge of disease- and treatment-specific side effects that may aid in providing triage care (Wilson & Hubert, 2002).

**Findings.** Telephone triage has been studied in a variety of care settings. Most commonly measured outcomes of telephone triage are medical service utilization, general practitioner workload, patient safety and satisfaction, adherence to advice, and costs. Telephone triage has been associated with more appropriate referral to the ED (Barber, King, Monroe, & Nichols, 2000; Bogden, Green, Swanson, Gabow, & Dart, 2004; Bunik et al., 2007; Bunn, Byrne, & Kendall, 2005; Dent & Armstead, n.d.), a decrease in the average amount of time between entering the ED and seeing a provider (Dent & Armstead, n.d.), a reduction in general practitioner workload (Bunn et al., 2005; Gallagher, Huddart, & Henderson, 1998; James, Guerrero, & Brada, 1994; Lattimer et al., 1998; Leibowitz, Day, & Dunt, 2003), and increased patient satisfaction with care (Bunn et al., 2005; Dent & Armstead, n.d.; Gallagher et al., 1998; O'Connell, Johnson, Stallmeyer, & Cokingtin, 2001; O'Connell, Stanley, et al., 2001).

Studies have demonstrated the safety and efficacy of telephone triage in a variety of settings such as emergency and ambulatory care (Bunn et al., 2005; Huibers, Smits, Renaud, Giesen, & Wensing, 2011; Lattimer et al., 1998; Marklund, Koritz, Bjorkander, & Bengtsson, 1991). Studies have also determined that patients generally adhere to telephone advice and triage

recommendations, especially with regard to accessing the ED, making a clinic appointment, and administering self-care (Bogden et al., 2004; O'Connell, Towles, Yin, & Malakar, 2002).

Telephone triage has been found to be cost effective by eliciting more appropriate patient disposition and level of care (e.g. local clinic rather than ED or urgent care), which generally saves money (Bunik et al., 2007; Bunn et al., 2005; O'Connell, Johnson, et al., 2001). In one study, estimated ROI was approximately \$1.70 for every dollar spent on the telephone triage service (O'Connell, Johnson, et al., 2001).

Wasson et al. (1992) reported a number of significant outcomes of a RCT using telephone care as a substitute for routine clinic follow-up. Compared to patients who received usual care, those who received telephone care had: fewer total clinic visits (both scheduled and unscheduled,  $P < 0.001$ ); less medication use ( $P = 0.006$ ); fewer hospital admissions and shorter stays when hospitalized ( $P = 0.005$ ); and fewer days spent in the intensive care unit ( $P = 0.03$ ). Estimated total expenditures for telephone care were 28% less than the control group ( $P = 0.004$ ). A subgroup of patients with fair to poor overall health experienced additional benefits from telephone care, including greater cost savings ( $P = 0.01$ ), improved physical function from baseline ( $P = 0.02$ ), and possible reduction in mortality ( $P = 0.06$ ).

While evidence for the benefits of telephone triage in general is robust, there is a lack of data on telephone triage specific to oncology. The handful of studies that are available suggest that telephone consultation is an integral and important part of cancer care and is foundational to most practices. Telephone triage contributes to effective use of health care resources by directing callers to a range of cancer support services and appropriate care settings. Common reasons that cancer patients seek telephone consultation are for treatment information, symptom management, prescription information and refills, and test or labs results. Telephone triage allows cancer

patients to connect with a nurse quickly, from a distance, and who otherwise may have limited support or resources. It can help the treatment team to evaluate the effectiveness of therapies, monitor side effects of treatment, reinforce patient education, and improve patient satisfaction (Cox & Wilson, 2003; Dietrich et al., 2004; Flannery, Phillips, & Lyons, 2009; Lucia, Decker, Israel, & Decker, 2007; Preston-Jones, 2005; Singh & Warnock, 2013; Wilson & Hubert, 2002).

One study conducted in a private oncology practice reported that triage nurses were able to assist callers without any further intervention for 87% of calls. The telephone triage service was proposed to be cost effective based on estimated costs if care had been received elsewhere (Lucia et al., 2007). In another study, nurse-led telephone follow-up was demonstrated to be an effective intervention for symptom management in patients who were undergoing radiation therapy. In this study, nurses independently managed 95% of the calls (Rose, Shrader-Bogen, Korlath, Priem, & Larson, 1996). Similarly, Elfrink et al. (2002) demonstrated that a nurse telephone service and use of a predetermined assessment tool in a palliative care center enabled nurses to solve 97% of patient problems without hospital admission. The ability of triage nurses to handle a large volume of calls independently and satisfactorily allows other providers to focus on other aspects of care, saves time and resources, and aids in smooth workflow.

As the benefits of telephone triage have been well-documented, so, too, have its shortcomings. In their study on patient safety and telephone medicine, Katz, Kaltsounis, Halloran, and Mondor (2008) highlighted three main telephone medicine errors: poor documentation, faulty triage decisions, and dysfunctional office systems, including lack of policies and protocols for managing telephone calls. All the cases they reviewed had resulted in malpractice claims. They concluded that “the most effective risk management strategy is to improve the quality of telephone care and service to patients,” and that this can be done through

“a more disciplined approach to documentation, improved office systems, and increased training in the skills of telephone medicine” (p. 520). Other works have identified both lack of appropriate triage protocols and failure of nurses to adhere to protocols as reasons for triage failure (Barnett et al., 2009; Briggs, 2012; Hickey & Newton, 2012; Robinson, Anderson, & Acheson, 1996; Wheeler, 2011). What is more, telephone triage requires staff resources that are often limited and the demand on workload can be unpredictable. Flannery et al. (2009) remarked that the workload involved in managing triage calls in oncology is “clinically and administratively significant, complex, and highly variable” (p.60), implying that workflow and time management in this setting is worthy of further investigation.

Research suggests that triage tools can help to provide a structure within which experienced triage nurses can practice to ensure safe and consistent triage care. Many authors, nursing organizations such as the ANA and Emergency Nurses Association, and state boards of nursing emphasize the importance of using approved clinical decision support systems (e.g. guidelines, protocols, algorithms) for telephone triage and symptom management. Standard protocols are designed to guide nurses in eliciting the most critical information from patients and providing the safest and most appropriate advice about care and disposition (Briggs, 2012; Briggs & Grossman, 2006; Hickey & Newton, 2012; Wheeler, 2011). However, the use of these tools in clinical practice needs more study. Moreover, the use of telephone triage protocols specific to oncology has not been well studied (Elfrink et al., 2002; Flannery et al., 2009; Singh & Warnock, 2013). It should also be noted that protocols do not replace nursing judgment. Education, training, experience, and scope of practice must guide nurses’ decision-making as well (Briggs, 2012; Briggs & Grossman, 2006; Hickey & Newton, 2012; Wheeler, 2011).

### **Nurse Care Coordinator Role**

As evidenced above, the importance of care coordination and telephone triage within the health care system has been well established, and their application in cancer care has resulted in significant outcomes. Likewise, the value of nurses in care coordination roles has been demonstrated in diverse settings and patient populations in numerous studies (ANA, 2012; Boyd et al., 2009; Coleman, 2006; Fralic, 1992; Naylor, Aiken, Kurtzman, & Olds, 2010; Naylor et al., 2011; Naylor et al., 1999; Seek & Hogle, 2007). Policies and programs designed to promote nurse care coordination stand to have substantial impact on the health care system. However, these policies and programs rely on an ample supply of knowledgeable, skilled nursing professionals. Currently, the US is facing a nursing shortage in which 1.2 million jobs will be unfilled by 2020 (AACN, 2014). Ensuring that nurses are well-educated, knowledgeable, supported in their role and work environment, and are able to work to their full scope of practice is an important strategy to combat workforce shortages, enhance existing workforce performance, improve productivity, and generate positive patient outcomes (IOM, 2004). Respecting and advocating for this valuable member of the multidisciplinary health care team is also an ethical and social justice issue. To do this, it is essential to understand nurse and care coordinator role development, enactment, and optimization in terms of role clarity, role strain, and job satisfaction; environmental factors; and personal perceptions. Additionally, a review of the effect of clinical decision support systems on nurse and coordinator role development underscores the importance of this SCP.

**Role clarity.** Role clarity, the transparency and comprehensibility of a given position and its responsibilities, is important to the persons who assume the role and others who come in contact with it. In health care, role clarity assists in developing evidence based models of care coordination. It assists health care professionals and patients to better understand their

relationship with coordinators, minimizes role confusion, and makes the expectations of the care coordinator more realistic and attainable (Yates, 2004). Nurse role ambiguity has been identified as contributing to feelings of disrespect, lack of recognition for their contribution to health care, and as a barrier to delivering quality care coordination. Absence of clear job description and boundaries has resulted in misunderstanding regarding expectations (Jamison, Ross, Hornberger, & Morse, 1999). Role ambiguity is potentially serious and costly in that it can contribute to tension in the workplace and can lead to underutilization of providers in said role (White et al., 2008). AHRQ (2007) and Yates (2004) contend that there is a general lack of definition and scope of the care coordinator.

**Role strain.** Numerous studies have evaluated the phenomenon of nurse role strain, the stress associated with the profession. Some factors that have been strongly associated with role strain and are aligned with this SCP include: low or perceived lack of job control; high demand; low supportive work relationships; being short of essential resources; work overload; inability to deliver quality nursing care; time demands; pressure resulting from problems concerning comfort and competence in the role; interruptions within the office; dealing with death and dying; and working with cancer patients (Lambert & Lambert, 2001; Van Bogaert, Kowalski, Weeks, Van Heusden, & Clarke, 2013). Similarly, care coordinators in particular have identified lack of time, poor delineation of roles, and lack of data collection tools as barriers to providing care (Cancer Institute NSW, 2011).

**Job satisfaction.** Like role strain, factors that contribute to nurse job satisfaction and dissatisfaction have been well studied. Satisfaction has been linked to concrete things like salary and benefits, as well as more intangible concepts such as autonomy, greater decision-making authority, and ability to establish a routine. Work overload and role conflict are among the



factors most consistently associated with job dissatisfaction (Collins et al., 2000; McGlynn, Griffin, Donahue, & Fitzpatrick, 2012). Studies have shown that poor job satisfaction can lead to nurse turnover. Additionally, research suggests that there is a strong correlation between nurses' job satisfaction and patients' satisfaction with nursing care (Collins et al., 2000; Lambert & Lambert, 2001; McGlynn et al., 2012).

**Nurse perceptions of care coordinator role.** AHRQ (2010) notes that care coordination perspectives vary between patients, health care providers, and system representatives. They define care coordination from the health care professional standpoint as a “patient- and family-centered, team-based activity designed to assess and meet the needs of patients, while helping them navigate effectively and efficiently through the health care system” (p. 5). While a number of studies comment on patients' and other providers' concept of the care coordinator role, few have evaluated it from the nurse perspective. In one of these few studies, nurses in a lung cancer specialist role that included a substantial care coordination component admitted that the role was personally and professionally challenging in that it was intense, not well defined, and broad (Moore et al., 2006). Similarly, in another study coordinators reported they felt the role and value of the position were not well understood. In this study, however, analysis of patient and coordinator interviews did reveal seven agreed-upon components of effective care coordination: organization of patient care; access to and navigation through the health care system; allocation of a key contact person; effective communication and cooperation among the multidisciplinary team and other health service providers; delivery of services in a complementary and timely manner; delivery of sufficient and timely information to the patient; and needs assessment (Walsh et al., 2010a, 2010b). Nurse coordinators have also discovered that the role continues to evolve. On one hand, they feel empowered in that they are able to play a part in how the role

develops. On the other hand, they are faced with challenges in this development, such as how big a role to carve out for themselves to protect both their credibility and time management (Jamison et al., 1999).

**Clinical decision support.** The relationship between clinical decision support, role development, and scope of practice has not been well studied. Some researchers suggest that clinical decision support tools can provide role clarity and boundaries that enhance job satisfaction. Additionally, these tools may be effective in changing the processes and outcomes of nursing care and aligning practice with evidence based guidelines. Economic evaluations have had equivocal findings (Cain & Haique, 2008; Collins et al., 2000). There is even less data on the use of clinical decision support and the CCC role. In one study, CCCs commented that uniform tools to assist in screening and assessing their patients would improve their ability to provide care (Cancer Institute NSW, 2011).

### Summary

Research on quality measures, costs, and understanding of best practices of care coordination is needed. Research should aim to clearly define the role of the care coordinator, including role development, enactment, and optimization from the nurse perspective. To date, the facilitators and inhibitors of achieving a safe, effective, and productive work environment in this role have not been well studied.

Like care coordination, telephone triage care has been proposed as a strategy to more efficient and cost-effective health care delivery. However, there is a need for more rigorous study on the benefits for patients, care coordinators, and health care systems.

Telephone triage is an important component of cancer care coordination, particularly in the ambulatory oncology practice setting. Therefore, oncology practices must have systems in

place to expedite the telephone triage process and ensure that patients receive safe, appropriate, evidence-based, and timely responses to their calls. While the majority of researchers agree on the use of telephone triage protocols for safe, efficient, and consistent triage care in general, there is little information on oncology-specific triage tools and outcomes in clinical practice.

It is thus the aim of this SCP to evaluate and transform current care coordination practices, specifically telephone triage, at the MCC. Grounded in the theories of Watson, Orem, Kotter, and Donabedian, and based on existing data that supports CCC and telephone triage, as well as support of the nurse in his/her role and work environment for improved care outcomes, it will propose a solution to triage care deficiencies and track progress during a pilot study.

### **CHAPTER III**

The following chapter will provide an overview of the background/setting, design, methodology, and implementation of this SCP. The timeline, resources utilized, and ethical considerations for this project will also be discussed.

#### **Background/Setting**

For approximately the last three years, Fairview Health Services (FHS) and University of Minnesota Physicians (UMP) have been working deliberately to transform their health care system to better serve patients. The decision for this remodel stemmed from shifting trends in health care planning and delivery, such as passage of the ACA and national reform that has followed, as well as internal need for change. The oncology service line was chosen to be one of the pilots on which redesign of other service lines will be based. Prior to this redesign, Fairview-University cancer patients and families reported that they did not know who to contact for what service, that advice came from many different sources, and that they were receiving mixed messages and disparate information. Additionally, numbers of ED visits, hospital admissions, and readmissions within the oncology service line indicated that cancer patients needed more proactive management and direction of care. The vision for the renovated oncology service line is that the Fairview-University system will be recognized as a national leader in cancer care, focused on patient experience, clinical outcomes, and innovation through multidisciplinary, team-based care. It is intended that this system provide patients with access to timely, coordinated, best-practice care; exceptional patient experience; best value for cancer care in the regional market; and be at the forefront of innovation.

One proposed way to achieve the above goals is by enhancing care coordination. Thus, FHS and UMP are redesigning care coordination in multiple settings across the cancer

continuum. To do this, they are focused on improving the electronic health record (EHR) and its use, inpatient rounding and communication, and outpatient care and organization. The location of this SCP, the MCC, is an ambulatory care clinic within the Fairview-University system that serves more than 35,000 patients each year. The MCC currently employs fifty-six practicing oncology providers. Due to the large volume of patients serviced in this facility, effective and efficient care coordination is essential. Because the MCC is one of the main cancer treatment centers within the Fairview-University system, its practices can inform and affect practices at satellite clinics as well. Disorganized practices have the potential to negatively impact care outcomes throughout the entire Fairview-University system.

At the MCC, nurses provide formal care coordination in a variety of ways. Telephone triage is one important component of the comprehensive care coordination model. Currently, there are eight registered nurse (RN) care coordinators, one RN, and one licensed practical nurse (LPN) who are appointed to respond to incoming triage phone calls. The RN and LPN are designated to triage care, while the eight coordinators perform an array of other duties in addition to triage. The triage line operates 24 hours a day, seven days a week. During normal business hours, calls that come through the triage line are answered by or routed to one of the ten coordinators/triage nurses, depending on who is available. Patients who have developed close relationships with their care coordinators often ask to speak directly with that person when calling the triage line, or may even leave a voice mail on the coordinator's personal work line. Outside normal business hours, triage calls are routed to a hospital operator and physician resident or fellow on call.

Currently, the telephone triage system operates on provider knowledge and training alone. There are no formal guidelines, including algorithms or protocols, in use. The EHR is

used mainly for accessing patient information and documenting the phone call. While documentation is required, there are no specific documentation standards. Since anyone can pick up the triage line depending on the day and time of the call, and quality of documentation in the EHR varies among providers, there is no consistent way to know what advice was given and interventions taken during a previous call if a patient calls again with the same complaint. For these reasons, a tool was needed to improve telephone triage workflow, including consistency and efficiency, documentation, and transition from one provider to another. Therefore, this SCP was created to contribute to the vision of the Fairview-University oncology service line redesign by addressing organizational issues in telephone triage to support CCCs and improve care outcomes.

### **Project Design and Methodology**

The PI of this SCP is an advanced practice RN and certified nurse practitioner with more than three years of oncology nursing experience. She joined the Fairview-University Hematology/Oncology/Transplantation (HOT) Division in April 2011. Since then, she has been involved in varying capacities in promoting the Fairview-University vision for the oncology service line by supporting inpatient collaboration, communication, effective use of the EHR, and care coordination particularly at hospital discharge. In seeing how inpatient and outpatient practices and outcomes are intertwined, the PI became interested in the outpatient approach to cancer care coordination within the MCC. To begin development of this SCP, the PI met with the MCC clinic manager and care coordinators in an informal focus group during their monthly meeting in May 2012. The coordinators were informed of the PI's interest in examining care coordination practices within the MCC. They were told that the goal of this SCP would be to support them in providing excellent care to their patients. The coordinators were asked: "What

would help you do your job better?” and “How can we support you in your role?” A discussion about ways that these nurses could be supported as providers of triage care ensued. At that time, the coordinators described what they perceived as some of their greatest needs regarding telephone triage, and some of the barriers to delivering quality, efficient care. Perceived barriers included: time spent tracking down clinicians (physicians, nurse practitioners, and physician assistants) for instruction, orders, or permission to make suggestions for symptom management; time spent routing questions and prescriptions to clinicians to approve or sign; and time spent documenting triage phone calls including patient education and outcomes. The coordinators felt that their valuable time and skills were not being well utilized, that they were practicing both beneath and at times outside their scope of practice, and that the triage process could be more streamlined. The care coordinators specifically identified the need for standardized protocols for some of the more commonly triaged patient-reported symptoms, including nausea and vomiting, diarrhea, constipation, dehydration, dermatologic issues, and fever. They indicated they felt that triage protocols could improve their workflow and time management.

After the informal focus group, the PI met with the clinic manager, lead nurse practitioner, and pharmacist to discuss development of a telephone triage protocol. This group decided first to conduct a pilot study using a triage protocol for management of nausea and vomiting (“N/V protocol”) on which subsequent research and protocols could be based. The symptoms of nausea and vomiting were chosen for the pilot because they are among the most commonly triaged patient-reported symptoms in the MCC. The PI consulted various triage texts (Briggs, 2012; Cancer Care Ontario, 2013; Hickey & Newton, 2012; Wheeler, 2009) to get a sense of the variety of styles and content in existing triage protocols. Guided by these resources, as well as personal professional knowledge, the PI then developed the N/V protocol. The

protocol was reviewed with the clinic lead nurse practitioner and pharmacist to confirm appropriate content. Finally, it was reviewed and approved for use on all patients in the MCC during the pilot study by the clinic executive medical director.

In addition to the N/V protocol, the PI created a pre/post-intervention survey – i.e. “pretest” (Appendix A) and “posttest” (Appendix B) – to elicit information from the care coordinators/triage nurses about the weight of the triage workload (e.g. average number of patients triaged per week and time spent on triage care); triage workflow, including time management and documentation; clarity of triage roles, responsibilities, and scope of practice; and provider comfort level with triage care. Additionally, two short-answer questions were added to the posttest to get a more in-depth look at the experience of using the triage protocol, suggestions for improvement or future study, and themes surrounding how care coordinators/triage nurses view their role in the MCC. Results were analyzed using a quasi-experimental, one-group before-after design and are reported in Chapter IV.

### **The Protocol**

The N/V protocol consists of three distinct components: intake form, home care guidelines, and EHR note outline (Appendices C, D, and E). The paper-based intake form was designed to allow for documentation of patients’ current diseases, treatments, and medications; characteristics of the nausea/vomiting symptoms; and steps already taken to relieve symptoms in order to better tailor nursing advice. From there, a flow sheet advising emergent, urgent, same-day (i.e. semi-urgent), or home care disposition corresponds to characteristics of the nausea/vomiting, severity, and concurrent symptoms. The intake form is concise enough that a provider can complete it without asking the caller a long list of questions, but detailed enough to elicit an accurate picture of the patient’s status and avoid missing red flags.



The paper-based home care guidelines were created to provide a standardized, evidence-based, and consistent set of options for managing nausea/vomiting at home. Included in the guidelines are instructions for symptom management consisting of three steps of pharmacologic treatments and associated advice, alternative therapies such as dietary modifications, and other antiemetic options that should be discussed with a clinician before being recommended. The intake form and home care guidelines fit on one double-sided sheet of paper for ease of use. There is room to take notes on the paper and it can be kept for future reference and/or documentation. It is intended that the intake form and home care guidelines be housed within the current EHR for quick access and convenience, and that advice and interventions automatically populate into a note. However, due to restrictions on time and available resources for this pilot study, building these components of the N/V protocol into the EHR was not feasible at this time. Thus, an electronic EHR note outline was created to fulfill legal documentation requirements and so that communication between caregivers was possible.

The EHR note outline is concise and allows for documentation of pertinent patient demographic information, symptoms and advice given or actions taken for management, and at what stage of the protocol the call ended so that subsequent providers can pick up where the last call left off if necessary. The initial provider can sign the note when his/her contribution is done, and other providers can add and add to the note as indicated.

### **Project Implementation**

In September 2013, the PI met with potential participants during their monthly staff meeting to update them on the status of the care coordination project and instruct them on the following: how to take and submit pretests, the plan for implementation of the pilot study and triage protocol, use of the EHR standardized note for documentation, and where paper protocols

could be obtained and returned in the clinic. Instruction was given in the form of a brief oral presentation, paper handouts, and question-and-answer session. After this meeting, an email was sent to potential participants to recap the discussion and introduce the pretest (Appendix F). Pretests were administered and collected anonymously via SurveyMonkey, a web-based survey development program. After the pretests were returned, an envelope of blank paper protocols was left in the triage office in the MCC. A designated locked box with top slot (“drop box”) was also placed in the triage office for secure return of used/completed triage protocols. Blank triage protocols were replaced as needed, and contents of the drop box were retrieved by the PI once weekly during the study period. Reminder emails about use of the protocol were sent to all ten potential participants once weekly during the pilot period (Appendix G). At the end of the 8-week study period, the blank protocols and drop box were removed from the triage office and an email was sent to participants notifying them of the end of the study period (Appendix H). The email notification of the pilot study completion was sent concurrently with a request for participants to complete a posttest using the same process as the pretest.

### **Utilization of Resources**

Resources for this SCP were relatively limited. The PI’s time was the main resource employed. Time spent on this project fulfilled both course requirements and requirements for completion of the SCP and graduation from the DNP program. Other resources included time contributed by the clinic manager, lead nurse practitioner, pharmacist, and executive medical director. The PI also communicated briefly with the MCC Epic EHR information technologist regarding electronic formatting of the protocol, which was not pursued for purposes of the pilot study. A professional statistician from the University of Minnesota HOT Division was consulted

for assistance with statistical analysis. Other resources were integral to the structure and composition of the MCC.

There was no designated budget for this project and no money or physical items of monetary value were exchanged. Likewise, there were no identifiable direct costs of implementing the triage protocol because much of the telephone triage structure was already in place (e.g. costs of running and maintaining the clinic) and these components were not affected. However, there were indirect costs that were considered. The most substantial indirect cost of this project was time spent on the pilot study. The PI, DNP advisor, site mentor, coordinators/triage nurses, and others involved in the development, implementation, and evaluation of the project all donated their time and knowledge.

### **Ethical Considerations**

Institutional Review Board (IRB) applications were submitted to and approved by St. Catherine University (Appendix I) and the University of Minnesota (Appendix J). Initiation of the pilot study began only after IRB approval. All data collected, including pretests, posttests, and completed triage protocols, were anonymous and free of provider and patient identifying data.

### **Summary**

This chapter provided an overview of the SCP background/setting, design, methodology, implementation, resources utilized, and ethical considerations. The following chapter will present results of the pilot study and statistical analysis of the data. Discussion of findings, study limitations, implications for practice, and social justice issues will be presented in Chapter V.

## CHAPTER IV

This SCP was developed to address care coordinator role ambiguity, workflow inefficiencies, and non-standardized practices in the MCC telephone triage system. It was intended that upon completion of this SCP, implementation of a standardized telephone triage protocol for management of nausea and vomiting would improve triage workflow, time management, documentation, clarity of nurse scope of practice in this role, and comfort with performing triage care. The analysis of data collected in this SCP is presented below.

### Data Analysis

Pretests and posttests were developed and used to evaluate outcomes of implementation of a telephone triage protocol for management of nausea and vomiting. A total of ten participants were included in this project. All ten participants responded to the pretest. Nine participants responded to the posttest.

### Pretest Results

The 15-item pretest (Appendix A) elicited baseline information from participants about the weight of the triage workload (e.g. average number of patients triaged per week and time spent on triage care); triage workflow, including time management and documentation; clarity of triage roles, responsibilities, and scope of practice; and provider comfort level with triage care. All ten participants (N=10) responded to the pretest. Half of the participants responded that they triage more than 20 patients in any given week (N=5) and spend 6 to 10 minutes documenting each phone call (N=5). More than half responded that they spend 16 to 20 minutes on each triage phone call overall (N=7). All participants agreed or strongly agreed that a telephone triage protocol would improve workflow consistency and efficiency (N=10). Items 4 through 15 related to triage provider perception of workflow, time management, scope of practice, and comfort

level with triage care. In general, most participants agreed they have enough time to address each triage phone call thoroughly and adequately. At the same time, most participants indicated that a triage protocol would reduce time spent addressing and documenting each call, improve the quality of documentation, and allow them to spend time on other job activities. Finally, most participants agreed they understand their role and responsibilities regarding telephone triage, feel able to practice to the fullest of their education and training, feel adequately prepared for and comfortable with the patient issues they encounter, and feel able to work within their scope of practice. There were three items identified as outliers; these included items 5, 6, and 7. In item 5, participants were neutral, neither agreeing nor disagreeing that they have enough time to document each triage phone call thoroughly and adequately throughout the workday. For item 6, participants tended to either agree or feel neutral regarding whether or not time spent on telephone triage negatively impacts or detracts from time that should be spent on other job activities. Interestingly, item 7 was the only item for which the majority of participants selected strongly agree; this item referred to the use of a telephone triage protocol to improve workflow consistency and efficiency. These results are summarized in Tables 3 and 4 below.

Table 3: Pretest Items 1-3

Item #	0-5 patients	6-10 patients	11-15 patients	16-20 patients	>20 patients		
1	10%	30%	10%	0%	<b>50%</b>		
2	0-5 minutes	6-10 minutes	11-15 minutes	16-20 minutes	21-25 minutes	26-30 minutes	>30 minutes
	10%	0%	10%	<b>70%</b>	10%	0%	0%
3	0-5 minutes	6-10 minutes	11-15 minutes	16-20 minutes	>20 minutes		
	20%	<b>50%</b>	30%	0%	0%		

Bold, italicized font indicates the most selected answer

Table 4: Pretest Items 4-15

Item #	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
4	0%	<b>50%</b>	40%	10%	0%
5	0%	30%	<b>50%</b>	20%	0%
6	20%	<b>40%</b>	<b>40%</b>	0%	0%
7	<b>60%</b>	40%	0%	0%	0%
8	40%	<b>50%</b>	10%	0%	0%
9	30%	<b>60%</b>	10%	0%	0%
10	40%	<b>50%</b>	10%	0%	0%
11	40%	<b>60%</b>	0%	0%	0%
12	20%	<b>60%</b>	20%	0%	0%
13	10%	<b>60%</b>	20%	10%	0%
14	20%	<b>70%</b>	0%	10%	0%
15	10%	<b>50%</b>	10%	30%	0%

Bold, italicized font indicates the most selected answer

### Posttest Results

Following implementation and use of the N/V protocol for eight weeks, participants were asked to complete a posttest (Appendix B). The posttest was a survey that included the same questions as the pretest modified to reflect post implementation language, as well as two additional qualitative questions to elicit further understanding of the effect of the protocol on triage practice and insight into future research and practice improvements.

**Quantitative results.** Of the ten possible participants, nine (N=9) responded to the posttest. Half of the participants responded that they triaged an average of 0 to 5 patients per week during the eight-week pilot period (N=5). Participant responses regarding the amount of time that was spent on each triage phone call overall as well as the time spent documenting each call did not demonstrate any consistency (see Table 5). In general, most participants agreed that, during the eight-week pilot period, the triage protocol improved the amount of time they had to address and document each triage phone call thoroughly and adequately throughout their workday, improved triage workflow consistency and efficiency, reduced time spent addressing

and documenting each call, improved their ability to practice to the fullest of their education and training, made them feel more adequately prepared for the patient issues they encountered, and improved their ability to work within their scope of practice. There were four items identified as outliers; these included items 6, 10, 11, and 12. In items 6, 11, and 12 participants were neutral, neither agreeing nor disagreeing that time spent on telephone triage negatively impacted or detracted from time that should have been spent on other job activities, that the triage protocol increased the amount of time they were able to spend on other job activities, and that the protocol improved their understanding of their role and responsibilities regarding telephone triage, respectively. For item 10, participants tended to agree or feel neutral regarding whether or not the protocol improved the quality of documentation. These results are summarized in Tables 5 and 6 below.

Table 5: Posttest Items 1-3

Item #	0-5 patients	6-10 patients	11-15 patients	16-20 patients	>20 patients		
1	<b><i>55.6%</i></b>	33.3%	11.1%	0%	0%		
2	0-5 minutes	6-10 minutes	11-15 minutes	16-20 minutes	21-25 minutes	26-30 minutes	>30 minutes
	<b><i>22.2%</i></b>	11.1%	11.1%	<b><i>22.2%</i></b>	<b><i>22.2%</i></b>	11.1%	0%
3	0-5 minutes	6-10 minutes	11-15 minutes	16-20 minutes	>20 minutes		
	<b><i>44.4%</i></b>	<b><i>44.4%</i></b>	11.1%	0%	0%		

Bold, italicized font indicates the most selected answer

Table 6: Posttest Items 4-15

Item #	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
4	0%	<b>88.9%</b>	11.1%	0%	0%
5	0%	<b>55.6%</b>	44.4%	0%	0%
6	0%	33.3%	<b>44.4%</b>	22.2%	0%
7	0%	<b>88.9%</b>	11.1%	0%	0%
8	0%	<b>66.7%</b>	33.3%	0%	0%
9	22.2%	<b>55.6%</b>	22.2%	0%	0%
10	11.1%	<b>44.4%</b>	<b>44.4%</b>	0%	0%
11	0%	44.4%	<b>55.6%</b>	0%	0%
12	11.1%	33.3%	<b>44.4%</b>	11.1%	0%
13	11.1%	<b>55.6%</b>	33.3%	0%	0%
14	11.1%	<b>66.7%</b>	22.2%	0%	0%
15	11.1%	<b>55.6%</b>	33.3%	0%	0%

Bold, italicized font indicates the most selected answer

**Qualitative results.** In addition to the 15 original items from the pretest, two short-answer questions were added to the posttest to get a more in-depth understanding of the impact of using the triage protocol on workflow consistency and efficiency, time management, documentation, clarity of nurse scope of practice, and comfort with providing care in this setting. Additionally, the PI sought to identify any themes related to role perception among care coordinators/triage nurses at MCC. The first question asked: *What would you change about the nausea/vomiting telephone triage protocol? Was it easy to use? Would you prefer this protocol in an electronic format in Epic? Do you think other triage protocols should be created? If yes, then for what other topics would you like to see protocols created?* Themes that emerged include: the need for additional protocols (N=7); preference for protocols in electronic format (N=6); and more flexibility within the protocols (N=3). For example, one participant wrote: *“Electronic format would be best...The more protocols we have the more likely there would be consistency among the nurses [sic] info to patients. Other protocols that would be helpful: diarrhea, constipation, rash, dehydration.”* Another participant wrote: *“Easy enough to use but electronic format would be preferred. Sometimes protocol didn’t match recommendation or*



*patient didn't have meds at home etc. Need protocols for diarrhea, constipation, fever.”* In addition to diarrhea, constipation, rash, dehydration, and fever, other triage protocol requests included pain and mouth sores. One participant did not leave feedback on the first question.

The second question asked: *What do you think would improve your role as a care coordinator or triage nurse in the Masonic Cancer Clinic? What changes would you like to see happen to support you in this role, improve workflow, and produce positive patient outcomes (in any aspect of the job, including but not limited to triage)?* Themes that emerged include: the need for additional protocols (N=2); the need for role definition/refinement (N=2); the need for more support in terms of clinic resources (N=3); heavy workload/varied job activities (N=2); tools not easy to use or difficult to find information in EHR (N=3); and the desire for more nursing input into systems change (N=2). One participant wrote: *“Access to information should be easy, effortless and available at all times. It's ridiculous how many places I need to go to find phone numbers, other providers, other Fairview campus contact numbers, etc. etc. Currently I search several different places to find what I need. The information is out there, but not easy to find. That would be one thing which could improve work flow immensely.”* Another participant wrote: *“...Having more involvement in planning/designing of workflow solutions; not just getting something handed to us to do without getting our feedback and fully testing the process. We are told to initiate some new practice and are not given info...to follow through.”* One participant did not leave feedback on the second question.

### **Comparison of Pretest and Posttest Results**

A professional statistician was consulted for assistance with statistical analysis of the data. Analysis was performed on items 1 through 15 to determine differences between the pretest

and posttest responses. P-values were determined using Fisher's Exact test and are reported in Table 7 below.

Table 7: Pre and Posttest Comparison P-values

Item #	P-value
1	<b>*0.04</b>
2	0.19
3	0.58
4	0.21
5	0.46
6	0.31
7	0.47
8	0.30
9	0.58
10	0.14
11	<b>*0.01</b>
12	0.22
13	0.54
14	0.33
15	0.22

Bolded and starred numbers indicate statistically significant values.

There were several notable differences between the pretest and posttest. For example, on item 1 of the pretest half of participants reported triaging more than 20 patients per week on average (N=5), whereas on the posttest half reported triaging 0 to 5 patients per week on average (N=5). This was a statistically significant difference ( $P < 0.05$ ). For item 11 on the pretest, all participants reported they felt that a protocol would allow them to spend time on other job activities (N=10), whereas on the posttest less than half of participants agreed that the protocol actually increased the amount of time available to spend on other job activities (N=4). This was also a statistically significant difference ( $P < 0.05$ ). However, while not statistically significant, the majority of participants did agree that the protocol improved the amount of time they had to address (N=8) and document (N=5) each triage call. This was further corroborated in that participants felt the protocol improved triage workflow consistency and efficiency (N=8); reduced time spent on addressing (N=6) and documenting (N=7) each triage call; improved the

quality of documentation (N=5); improved their ability to practice to the fullest of their education and training (N=6); made them feel more prepared for and comfortable with the patient issues and questions they encountered (N=7); and improved their ability to practice within their scope (N=6).

### **Summary**

A thorough discussion of these results follows in Chapter V. Implications for practice and future research will also be presented.

## CHAPTER V

The following chapter will provide a discussion of the results, perceived ROI, and limitations of the study. Recommendations for future practice and research, as well as a discussion of the ethical and social justice issues in this project will conclude the chapter.

Cancer care is complex and costly. As one of the leading causes of death, cancer and how the care of individuals experiencing it is coordinated has the potential to positively impact health systems through reduced morbidity, mortality, and health care costs as well as improve patient experience. As such, nurses play a unique and important role in the coordination of cancer care.

The goal of FHS and UMP is to provide patients with access to timely, coordinated, best-practice care; exceptional patient experience; best value for cancer care in the regional market; and be at the forefront of innovation. In an attempt to achieve these goals, FHS and UMP have committed to enhancing care coordination in the oncology service line, in part via better organization of triage care. This SCP was one component of this commitment. Through implementation of a telephone triage protocol for management of nausea and vomiting, it was anticipated that triage workflow, time management, documentation, clarity of nurse scope of practice in this role, and comfort with providing triage care would improve.

Prior to implementation of the N/V protocol, the telephone triage system operated on provider knowledge and training alone. There were no formal clinical decision support systems in use. The EHR was used mainly for accessing patient information and documenting the phone call. There were no specific documentation standards and notes may have contained more or less information than what was needed. Since anyone can pick up the triage line depending on the day and time of the call, and quality and content of documentation varied, there was no

consistent way to know what advice had been given or actions taken during a previous call if a patient called again with the same complaint.

Additionally, prior to the intervention, inconsistent home care advice from one provider to another was common, often overlapping for patients who called multiple times with the same symptom. Furthermore, care coordinators often felt they were spending a lot of time tracking down clinicians for instruction or permission to make certain suggestions for symptom management, routing prescriptions to providers to sign, and at times acting first and seeking approval later. Because the clinic medical director approved use of the protocol for all appropriate patients during the pilot study, coordinators were able to recommend any of the medications and interventions listed. They were not required to ask permission first unless they had a question or concern. The PI of this project administered a survey pre- and post-initiation of this protocol to gather data and determine whether or not care coordinators perceived the protocol as minimizing barriers to efficiency and practicing within their scope of practice. The following chapter provides a detailed discussion of the evaluation of this change process.

## **Discussion of Findings**

### **Surveys**

The goal of this SCP is to support CCCs to enhance their practice and outcomes. The MCC coordinators were asked what they perceived were barriers to providing efficient and effective care. During an informal focus group prior to development of the pilot study, they identified suboptimal workflow, time management, documentation, ability to practice within scope, and comfort level with performing telephone triage as perceived barriers. The project was then designed to address these barriers, and the surveys were designed to measure related outcomes. The pretest items were chosen carefully as key indicators of care coordinator/triage

nurse perception of workflow, time management, documentation, role, scope of practice, and comfort level with providing care.

**Workflow.** At baseline, the majority of participants felt that a telephone triage protocol would improve workflow consistency and efficiency. Workflow, as identified and discussed during the initial informal focus group, incorporated time management issues such as time spent on the call, documentation, and tracking down clinicians for questions or orders. Results of the posttest indicate that the majority of participants felt that the N/V protocol did, in fact, improve workflow consistency and efficiency. However, several participants indicated that workflow would improve further with additional protocols; many felt that one protocol is simply not enough to make a substantial difference in workflow. Additionally, participants felt that protocols would have greater impact on workflow if they were built into the EHR for ease of access and use.

**Time management.** At baseline, only half of participants agreed they had enough time to address each triage phone call thoroughly and adequately throughout their workday. At the same time, more than half indicated that time spent on telephone triage negatively impacts or detracts from time that should be spent on other job activities. This data is concerning because it suggests that care coordinators feel their work is substandard and incomplete in multiple realms of the job. A majority of participants felt that a telephone triage protocol would reduce time spent on phone calls and documentation. All indicated that a protocol would allow more time for other job activities. Care coordinators have a wide array of duties and serve a number of patients. As evidenced in the literature, the coordinator workload can be overwhelming.

Results of the posttest indicate that the N/V protocol did not have as much of an impact on time management as participants expected and predicted. On one hand, the majority agreed

that the protocol did, in fact, improve the amount of time they had to address each triage phone call thoroughly and adequately and reduced time spent addressing each call overall. However, a majority still felt neutral or agreed that time spent on telephone triage negatively impacted or detracted from time that should have been spent on other job activities even with the protocol in place. Additionally, for most participants the protocol did not increase the amount of time they had to spend on other job activities. As mentioned above, participants felt that additional protocols, or protocols that combined more than one symptom, would be more effective at reducing time constraints and improving time management. Also, electronic format would allow for ease of access and use of protocols, which would save time.

**Documentation.** At baseline, participants felt they lacked time to document each triage phone call thoroughly and adequately. Documentation, which should be thorough yet succinct, appeared to encompass about 50 percent of the time spent on each triage phone overall (an average of 6 to 10 minutes out of 16 to 20 minutes). Participants indicated that a triage protocol would reduce time spent on documentation and improve the quality. Results of the posttest indicate that the N/V protocol reduced time spent on documenting each triage phone call but did not affect time for documentation throughout the participants' work day overall. Additionally, the protocol did not improve the quality of documentation. This finding is significant because the literature stresses the importance of detailed triage documentation to justify the advised management, demonstrate appropriateness of telephone consultation, protect against liability, and provide continuity of care by communicating patient calls and concerns to other care providers (ACP-ASIM, 2000; Wheeler, 2011).

**Role/scope of practice/comfort level.** At baseline, a majority of participants indicated understanding of their role and responsibilities, felt they were able to practice to the fullest of

their education and training, and felt adequately prepared for and comfortable with triage care. At the same time, however, responses were mixed with regard to ability to work within scope of practice; approximately one-third of participants disagreed with this statement. These responses suggest that providers feel they are able to practice to the fullest of their education and training but not necessarily their scope of practice, which indicates they may benefit from ongoing education that is better aligned with their scope.

Results of the posttest indicate that the majority of participants felt that the N/V protocol made them feel more adequately prepared for and comfortable with the patient issues and questions they encountered during telephone triage. At the same time, the protocol had only slightly positive to little impact on participants' understanding of roles and responsibilities regarding telephone triage, ability to practice to the fullest of their education and training, and ability to work within their scope of practice. The lack of substantial differences regarding role and scope of practice with the intervention is not surprising since scores were high at baseline.

**Other/complementary themes.** In addition to the fifteen questions that were asked in the pretest, the posttest included two short-answer questions that asked care coordinators/triage nurses to evaluate the pilot study, such as what worked and what did not, what they would change about the protocol, and what they would like to see in the future to support them in their role. Several themes emerged in the responses. Regarding the protocol itself, the need for additional protocols, protocols that combine more than one symptom, and protocols in electronic rather than paper format were common themes. Participants also indicated that protocols should be more flexible so as to personalize to individual patients.

In general, nurses would benefit from improvement in other areas of triage and symptom management, such as availability of advanced practice providers as resources and more add-on



appointments in the clinic and infusion center. Furthermore, participants indicated there is still need for better defined roles of care coordination; telephone triage protocols cannot necessarily provide this definition. Additionally, care coordinators feel overwhelmed by their workload. They are assigned many different tasks, some of which could be delegated to other types of providers or support staff. Another major theme that emerged was that patient health information is scattered, housed in too many different locations in the clinic and EHR, and not always easy or straightforward to access. Finally, another common theme that emerged in the free responses was that participants feel as though the Fairview-University and other health systems take a “top down” approach to systems change and that they are not always involved in the creation or evaluation of quality improvement projects.

### **Summary of Findings**

Participants had high expectations for the N/V protocol. As indicated, a number of the pretest item responses were higher than was anticipated based on the focus group discussion. While high scores at baseline can be interpreted as a positive finding, there was little room for improvement on the posttest and seemed incongruent with what the nurses had indicated as areas of need or improvement. As a result, the implementation of a telephone triage protocol for management of nausea and vomiting demonstrated no statistically significant positive changes. In general, participants had high expectations of the protocol that were not necessarily met. Participants felt that it would be more helpful than they ultimately perceived it to be. However, while not statistically significant, the majority of participants did agree that the protocol: improved the amount of time they had to address and document each triage call; improved triage workflow consistency and efficiency; reduced time spent on addressing and documenting each triage call; improved the quality of documentation; improved their ability to practice to the

fullest of their education and training; made them feel more prepared for and comfortable with the patient issues and questions they encountered; and improved their ability to practice within their scope. These findings indicate that a telephone triage protocol may be one small step toward improving triage practice but that more work needs to be done on the protocol itself and in other realms of the triage system as a whole.

### **Return on Investment**

The Fairview-University system is committed to providing patients with access to excellent and affordable cancer care. Cost-containment strategies are important to be able to offer such value. For the purpose of this SCP, ROI can be calculated in terms of potential costs avoided with an effective and efficient telephone triage protocol in place. One potential cost avoided is the cost of hospitalization, ED, or urgent care visits. In one study on chemotherapy induced nausea and vomiting (CINV), researchers found that average daily cost of CINV treatment for all care settings (inpatient, ED, and outpatient/ambulatory) was \$1,854.70 (Craver, Gayle, Balu, & Buchner, 2011). Because home care management of nausea and vomiting is free or at least significantly less expensive than other care settings, there stands to be great benefit if the triage protocol reduces the number of patients who seek care outside the home. According to the Blue Cross and Blue Shield of Minnesota (2014), in 2002 the average ED visit cost \$1,049 while the average ambulatory care clinic visit cost approximately \$153, a difference of \$896. Thus, one clinic appointment in lieu of an ED visit saves almost \$900. If each of the ten care coordinators/triage nurses used the telephone triage protocol to prevent one unnecessary ED visit per month, even if the patient ended up being seen in the clinic instead, the protocol could save nearly \$9000 per month.

Another potential cost avoided is the cost of nurse turnover if care coordinators/triage nurses feel valued and supported in their workplace. Nurse turnover is a recurring and costly problem for health care organizations. Turnover can cost anywhere from \$22,000 to \$64,000 on average (Jones & Gates, 2007). There is little data on cost specifically for care coordinator or CCC turnover. However, the average salary of a CCC in the US ranges from \$60,000 to \$82,500 (Indeed, 2014; NCONN, 2010; PayScale, 2014; Simply Hired, 2014; Suttle, 2014). Based on this information and the understanding that a triage protocol has the ability to increase the CCC's satisfaction, there stands to be great benefit in terms of costs of turnover avoided. Similarly, with improved workflow, a triage protocol could allow care coordinators/triage nurses to address high volume, complex tasks more efficiently and thus reduce the need to hire additional coordinators to complete clinic work, thereby reducing further direct care costs. Other expected outcomes of this SCP that were not measured directly or estimated but are nonetheless important to consider include the possibility that other clinic providers could experience fewer workflow interruptions; patient care quality could improve leading to better outcomes; and providers and patients have the potential to be more satisfied with the care given and received.

Theoretically, guiding patients to the right care location, i.e. keeping them out of the ED and hospital if appropriate, can save health care dollars. Treating patients at home saves time and money. At the same time, getting patients to the ED or hospital when they might otherwise stay home could avoid potentially disastrous situations and costly acute care. If patients receive a consistent message with accurate information in a timely manner, such as with a telephone triage protocol, they may be more inclined to continue care and recommend the treatment center to others. If documentation is improved, the timeline of care is more visible, providers do not waste as much time, and there is less vulnerability in legal situations, all of which can be cost-saving.

Finally, ensuring that nurses are practicing within and to the fullest of their scope and education can help to eliminate waste and protect against legal problems, which could save time and money as well (AHRQ, 2007; Briggs, 2012; Briggs & Grossman, 2006; Bunik et al., 2007; Bunn et al., 2005; Cancer Institute NSW, 2011; Hickey & Newton, 2012; O'Connell, Johnson, et al., 2001; Wheeler, 2009, 2011).

### **Study Limitations**

No study is without limitations. The small sample size (N=10) of this project is a limitation. The sample size was determined solely on number of care coordinators/triage nurses who work in MCC. Due to small sample size, this project is highly subject to type II errors, failing to recognize statistically significant differences before and after the intervention. Similarly, because this project was implemented within a single department of one branch of a larger health care system, the results are not necessarily generalizable to other departments and organizations. However, modifications to the pilot study, such as creating a more comprehensive, electronic clinical decision support system and testing it among all coordinators in more than one cancer clinic within the Fairview-University system, may allow for better transferability to other clinics, departments, and health care systems.

It is reasonable to assume that the protocol may have been more effective for less experienced nurses who might find it comforting to be able to refer to a protocol to avoid missing red flags. More experienced nurses may rely more on prior experience and less on a protocol to determine most appropriate patient disposition and advice, however this is not always done within appropriate scopes of practice. The responses to the pretest and posttest were anonymous with no provider demographic data, so it was not possible to correlate findings with age or years of experience.

Another limitation of this study is that the pilot period was relatively short (eight weeks) and the protocol tool was not used as much as was expected. Perhaps a longer pilot period would have given nurses more time to get comfortable with using the protocol and work it into their daily routines. It also would have allowed more time for variations in triage census to level out closer to average.

Limitations of the protocol tool itself include paper format, which is less accessible and efficient than electronic format. Regarding the home care guidelines, even though a medication might be on the list and appropriate for relieving patient symptoms, a clinician may not have prescribed it and/or a patient may not have the medication available at the time of their call. Nurses noted that patients they triage for nausea and vomiting tend to have only one or two medications available to them and typically have already tried them before calling, which puts limitations on care that can be provided at home. Additionally, only one symptom was represented among a wide range of symptoms that cancer patients experience and nurses triage. Patients often call with multiple symptoms at the same time, making the use of a single-symptom protocol somewhat challenging.

Finally, direct costs and patient outcomes of this project were not measured, so presumed results and anticipated implications are theoretical, which somewhat limits analysis of impact and generalization of this project.

### **Implications of Findings and Recommendations for Future Practice**

Earlier referenced studies pointed to care coordination as a key element of health care planning and delivery and illustrated the significance and benefits of care coordination and telephone triage in cancer care. Cancer care coordination has been shown to improve patient experiences and outcomes along the cancer continuum from screening to survivorship and end of

life. Telephone triage is one way in which effective care coordination is facilitated. These studies support activities, such as ongoing research of effective care coordination models and how to translate research into practice, that seek to better understand care coordination in different health care settings and identify the key roles and activities of formal care coordination. They support changes that facilitate more efficient and effective care coordination practices (AHRQ, 2007; ANA, 2012; Campbell et al., 2010; Cancer Institute NSW, 2011; Crane-Okada, 2013; Ell et al., 2008; Fang et al., 2007; Fillion et al., 2009; IOM, 2001, 2003a; Paskett et al., 2011; Wells et al., 2008). Likewise, the Fairview-University system is committed to enhancing care coordination and its patients stand to benefit from research on ways to improve care coordination services.

This SCP focused on care coordination in the University MCC and revealed that inefficiencies in triage workflow and time management are issues that affect care coordination as a whole, that care coordinator education and practice may not align with scope and responsibilities, and that care coordination needs more refined definition and scope in general. Despite its limitations, this study has important implications for nursing as a whole related to the use of future triage protocols, system change, barriers to practice, and social justice. Implications and recommendations for future study can be divided into protocol-specific and future systems change.

### **Future Protocols**

Future study on telephone triage protocols should include protocols for additional symptoms or combined symptoms, such as diarrhea, constipation, fever, pain, and skin rash. Clinical decision support tools such as protocols should allow more than one symptom to be addressed at a time since patients often call the triage line with multiple complaints. Future

protocols should also be built directly into the EHR for ease of access and use. Patient answers to questions and symptoms reported via the protocol could automatically populate into a note to same time and enhance documentation.

For future studies, it is recommended that clinicians and nurse providers receive education on the telephone triage protocols prior to use so that they are exposed to the protocol, and so that questions and concerns can be answered. Additionally, prescribing providers should be instructed to give patients undergoing active treatment with chemotherapy or radiation at least one antiemetic prescription for future use or fill, as nurses reported that patients often do not have antiemetic medications available to them at home.

Future studies could perhaps involve other triage providers, such as physician residents and fellows on call who work the triage line after-hours, or care coordinators/triage nurses at other clinics. Involving providers at other Fairview cancer clinics would not only offer a larger sample size, but also a different perspective on triage as many satellite clinics lack access to an infusion center and may have more limited community resources.

Finally, it is recommended that future studies collect additional information, such as how the protocols affect other providers (such as physicians and advanced practice providers) in terms of workload and time management. Other outcomes that could be measured are triaged patient demographics, patient satisfaction with and adherence to triage recommendations, and patient disposition (e.g. ED, inpatient, infusion center, etc.).

### **Future Systems Change**

In addition to telephone triage, future studies should also investigate other barriers to care coordination workflow, time management, and role development/scope of practice. For example, one could look at other aspects of the care coordinator job, such as referrals, appointment-

making, and patient education, and decipher how to streamline those processes as well. The MCC could explore enhancing the add-on clinic and incorporating the infusion center.

Future studies could also work on refining the CCC role and responsibilities, drafting a formal CCC definition and role description, and delegating job activities that would be better served by other types of providers. The SCP underscored that telephone consultation differs from telephone triage. Triage may be best left up to designated triage nurses so that coordinators have time to perform other job activities. In the future, the MCC could consider separating triage from care coordination altogether. This would entail a reworking of the entire triage system, hiring additional triage nurses, and providing triage specific education and clinical decision support tools.

Furthermore, this study highlighted inadequacies in the EHR system and the need to use health information technology to its fullest. Ideally, the EHR is a tool that facilitates storing and retrieving information quickly and accurately. To improve functionality of the EHR, one can modify the program itself, or ensure that it is being used to its fullest capabilities. Future system change could focus on making the most of the existing EHR program, such as consolidating and corralling patient information into one location, creating a tab specifically for care coordinators that includes information most pertinent to them, and ensuring that information is present and updated each time a patient is seen in the clinic. At the same time, more work could be done on upgrading and renovating the EHR system altogether, incorporating feedback from multiple disciplines. This type of work could improve not only workflow and time management, but also enhance protection of sensitive information and patient safety.

In these future studies, it is very important that the health system and researchers involve nurses in discussion and system changes that directly affect their practice. Nurses play an



important role in health care delivery and may have good insight into what types of interventions may or may not work for them. Additionally, nurses should receive more thorough education and direction in system changes, and should have opportunities to ask questions and provide feedback. An intervention may be a good idea in theory but not effective in practice.

While stakeholder input and buy-in is very important, it is also important to note the difference between perceived and actual need. In the case of this SCP, it seems the actual need for a protocol for management of nausea and vomiting was perhaps less than the perceived need as evidenced by the relative lack of use and nurse reports that they did not have much of an opportunity to use the protocol due to limited appropriate triage calls during the study period. In such cases, it is the researcher's responsibility to use multiple modalities to investigate where actual and perceived needs align.

### **Ethical Considerations and Social Justice Issues**

Cancer is a challenging disease and treatment is often harsh. Cancer care providers are ethically and legally obligated to provide patients with safe, appropriate care which includes triage and symptom management. If an intervention is safe and effective, even if not cost effective, it is still a viable option worth consideration. This SCP, despite its limitations, posed minimal harm to study participants and patients with whom they worked. Participant protection and confidentiality were a priority.

This project and future projects like it have the potential to affect social justice in that they intend to address barriers to care and social justice issues inherent to cancer care, coordination, and outcomes. Studies show that there are significant disparities in cancer morbidity and mortality. Minority, low income, low socioeconomic status, and rural patients tend to have poorer cancer outcomes. Although patient demographics and outcomes were not

measured in this SCP, the literature strongly suggests that CCCs have a positive effect particularly on minority and underserved patients. Assuming that the Fairview-University system is similar to health care systems represented in other such studies, and seeing as how it does serve a wide range of patients, then it stands to reason that minorities and underserved patients benefit from interventions designed to enhance care coordination such as this one. Patients who live far from a hospital or clinic, who lack means of transportation, or who have other obligations that preclude them from being seen in person rely on telephone triage symptom management. This project seeks to provide consistent, timely, accurate, and appropriate cancer care to all patients.

Another intention of this project rooted in social justice is supporting a valuable member of the multidisciplinary care team. Nurses can provide valuable care coordination services but face barriers to doing so. Barriers may include lack of recognition, role development and clarity, inappropriate utilization, not enough time for workload, other burdens on time management and workflow, lack of workplace support systems, and underuse or misuse of health information technology. This project seeks to recognize the unique contributions of care coordinators, document nursing interventions and patient education to provide evidence of nursing value, and highlight positive outcomes. It is crucial and ethically responsible to highlight nursing contributions to both patient care and health care reform.

Finally, poor workflow, time management, and lack of role development and clarity can affect experiences and outcomes among many people within a system, and can affect the ability to provide timely, appropriate care to patients. Additionally, improving use of health information technology and minimizing “clutter” within the EHR can help safeguard sensitive patient information and provide safe care.

### **Conclusions**

While this SCP did not demonstrate statistically significant outcomes for the MCC care coordinators and triage nurses overall, it did highlight some important gaps in our knowledge and understanding of cancer care coordination, and revealed areas for future improvement and study. This project also serves as a foundation for future scholarship as a DNP-prepared leader in health care practice, education, research service, and public policy. Doctorate prepared nurses have unique knowledge and training to increase awareness, enhance education, and facilitate change in the health care system. They are leaders among other nurses and advanced practice providers, can see the value in nursing practice from different angles and lenses, and can advocate for fellow nurses and support them in their practice. Evidence does exist to support cancer care coordination but ongoing investigation is necessary and recommended.

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**APPENDICES****Appendix A  
Pretest**

The purpose of the following pre-intervention survey is to obtain some baseline information regarding certain aspects of current telephone triage practice, nursing roles, and workflow. There are 15 multiple choice/rating scale items. Please answer each item carefully to the best of your ability.

1. On average, how many patients do you triage via telephone in any given week?
  - 0-5 patients
  - 6-10 patients
  - 11-15 patients
  - 16-20 patients
  - More than 20 patients
  
2. On average, how much time (in minutes) do you spend on each triage phone call overall? (This includes all activities, such as talking with the patient/caregiver, consulting the MD/NP/PA or pharmacist, follow-up, documentation, etc.).
  - 0-5 minutes
  - 6-10 minutes
  - 11-15 minutes
  - 16-20 minutes
  - 21-25 minutes
  - 26-30 minutes
  - More than 30 minutes
  
3. On average, how much time (in minutes) do you spend documenting each triage phone call in the electronic medical record?
  - 0-5 minutes
  - 6-10 minutes
  - 11-15 minutes
  - 16-20 minutes
  - More than 20 minutes

The following items (#4-15) should be answered based on how strongly you agree or disagree with the statement. Each statement refers to telephone triage as performed in the Masonic Cancer Clinic or your primary work location. Please read each statement carefully and choose the answer that most closely represents your degree of agreement.

4. I have enough time to address each triage phone call thoroughly and adequately throughout my workday.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

5. I have enough time to document each triage phone call thoroughly and adequately throughout my workday.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

6. Time spent on telephone triage negatively impacts or detracts from time that should be spent on other job activities.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

7. A telephone triage protocol would improve workflow consistency and efficiency.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

8. A telephone triage protocol would reduce time spent addressing each triage phone call overall.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

9. A telephone triage protocol would reduce time spent on documenting each triage phone call.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

10. A telephone triage protocol would improve the quality of documentation.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
11. A telephone triage protocol would allow me to spend time on other job activities.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
12. Regarding telephone triage, I understand my role and responsibilities.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
13. Regarding telephone triage, I feel I am able to practice to the fullest of my education and training.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
14. Regarding telephone triage, I feel adequately prepared for and comfortable with the patient issues and questions I encounter.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
15. Regarding telephone triage, I feel I am able to work within my scope of practice.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree

## Appendix B Posttest

The purpose of the following post-intervention survey is to ascertain whether any differences in certain aspects of telephone triage practice, nursing roles, and workflow were improved with use of the nausea/vomiting telephone triage protocol over the last 8 weeks. The "protocol" includes the intake form, home care guidelines, and Epic smart phrase note. Please answer each item carefully to the best of your ability.

1. On average, during the 8-week nausea/vomiting protocol pilot period, how many patients did you triage via telephone in any given week?

- 0-5 patients
- 6-10 patients
- 11-15 patients
- 16-20 patients
- More than 20 patients

2. On average, during the 8-week nausea/vomiting protocol pilot period, how much time (in minutes) did you spend on each triage phone call overall? (This includes all activities, such as talking with the patient/caregiver, consulting the MD/NP/PA or pharmacist, follow-up, documentation, etc.).

- 0-5 minutes
- 6-10 minutes
- 11-15 minutes
- 16-20 minutes
- 21-25 minutes
- 26-30 minutes
- More than 30 minutes

3. On average, during the 8-week nausea/vomiting protocol pilot period, how much time (in minutes) did you spend documenting each triage phone call in the electronic medical record?

- 0-5 minutes
- 6-10 minutes
- 11-15 minutes
- 16-20 minutes
- More than 20 minutes

The following items (#4-15) should be answered based on how strongly you agree or disagree with the statement. Each statement refers to telephone triage as performed in the Masonic Cancer Clinic or your primary work location during the 8-week protocol pilot period. The "protocol" includes the intake form, home care guidelines, and Epic smart phrase note. Please read each statement carefully and choose the answer that most closely represents your degree of agreement.

4. The nausea/vomiting protocol improved the amount of time I had to address each triage phone call thoroughly and adequately throughout my workday.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
5. The nausea/vomiting protocol improved the amount of time I had to document each triage phone call thoroughly and adequately throughout my workday.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
6. During the 8-week protocol period, time spent on telephone triage negatively impacted or detracted from time that should have been spent on other job activities.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
7. The nausea/vomiting protocol improved triage workflow consistency and efficiency.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
8. The nausea/vomiting protocol reduced time spent addressing each triage phone call overall.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree
9. The nausea/vomiting protocol reduced time spent on documenting each triage phone call.
- Strongly agree
  - Agree
  - Neither agree nor disagree
  - Disagree
  - Strongly disagree

10. The nausea/vomiting protocol improved the quality of triage documentation.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

11. The nausea/vomiting protocol increased the amount of time I was able to spend on other job activities.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

12. The nausea/vomiting protocol improved my understanding of my role and responsibilities regarding telephone triage.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

13. The nausea/vomiting protocol improved my ability to practice to the fullest of my education and training regarding telephone triage.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

14. The nausea/vomiting protocol made me feel more adequately prepared for and comfortable with the patient issues and questions I encountered during telephone triage.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree



15. The nausea/vomiting protocol improved my ability to work within my scope of practice regarding telephone triage.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

The following final questions are open-ended and intended to get a more in-depth look at your experience using the triage protocol, and how you view your role in the cancer clinic. Please use as much space as you need to answer the questions completely.

16. What would you change about the nausea/vomiting telephone triage protocol? Was it easy to use? Would you prefer this protocol in an electronic format in Epic? Do you think other triage protocols should be created? If yes, then for what other topics would you like to see protocols created?

17. What do you think would improve your role as a care coordinator or triage nurse in the Masonic Cancer Clinic? What changes would you like to see happen to support you in this role, improve workflow, and produce positive patient outcomes (in any aspect of the job, including but not limited to triage)?

Appendix C  
N/V Protocol Intake Form

<b>Nausea/Vomiting Telephone Triage Intake Form &amp; Protocol</b>		
***Has this protocol been initiated today? If yes, go to last completed step.***		
<b>DRUG/PROCEDURE HISTORY</b>		
Current or recent chemotherapy/radiation/surgery	YES	NO
<i>Description:</i>		
Current or recent antibiotics	YES	NO
<i>Description:</i>		
Current or recent antiemetics	YES	NO
<i>Description:</i>		
<b>CHARACTERISTICS</b> (i.e. onset, duration, description, aggravating and relieving factors, timing)		
<b>A. Are any of the following present?</b>		
Loss of consciousness		<u>YES</u> - Call an ambulance or seek immediate emergency care
Vomiting bright red blood or dark, coffee-ground emesis		
Recent injury to head or abdomen and vomiting		
Acute chest pain, palpitations, or sweating		<u>NO</u> - Go to B
Acute shortness of breath		
Persistent, severe abdominal pain or projectile vomiting		
<b>B. Are any of the following present?</b>		
Moderate to severe signs of dehydration (see below)		<u>YES</u> - Seek urgent medical care (e.g. emergency department, local clinic, or Masonic clinic within 2-4 hours)
Decreased level of consciousness, confusion		
Fainting/syncope		
Abdominal pain (new or different from baseline)		<u>NO</u> - Go to C
Neutropenic fever (ANC $\leq$ 1000, temperature $>$ 100.4)		
<b>C. Are any of the following present?</b>		
No oral intake for $>$ 24 hours		<u>YES</u> - Seek same-day care (e.g. local clinic or Masonic clinic within 24 hours)
Emesis $\geq$ 6 times in past 24 hours		
Non-neutropenic fever (ANC $>$ 1000, temperature $>$ 100.4)		<u>NO</u> - Go to D
New focal weakness (e.g. in a specific muscle or limb)		

<b>D. Are any of the following present?</b>		
Nausea/vomiting with none of the above symptoms	<input type="checkbox"/>	<u>YES</u> - Home care guidelines (on the opposite side of this page) +/- telephone follow-up
Diarrhea or constipation	<input type="checkbox"/>	
Able to eat or drink at least small amounts	<input type="checkbox"/>	
Emesis <6 times in past 24 hours	<input type="checkbox"/>	
Recent sick contacts	<input type="checkbox"/>	
Recent chemo, procedure, or emetogenic medications	<input type="checkbox"/>	
Other mild to moderate symptoms	<input type="checkbox"/>	
<b>SIGNS AND SYMPTOMS OF DEHYDRATION</b>		
<b>Mild to Moderate:</b> Dry, sticky mouth or eyes; Dry skin; Thirst; Drowsiness/fatigue; Decreased urine output; Dark yellow urine; Headache; Dizziness or lightheadedness; Constipation		
<b>Moderate to Severe:</b> Very dry mouth, skin, or membranes; Skin that lacks elasticity; Extreme/excessive thirst; No urine output for 8 hours or more; Very dark, amber/tea-colored, concentrated urine; Severe headache; Low blood pressure; Rapid heartbeat; Rapid breathing; Delirium, confusion, loss of consciousness		

Appendix D  
N/V Protocol Home Care Guidelines

HOME CARE GUIDELINES

STEP ONE

**Take one of the following below +/- alternative therapies.**

- Ondansetron (Zofran) 4-8mg PO/ODT q8 hours PRN
- Prochlorperazine (Compazine) 5-10mg PO q6 hours PRN
- Lorazepam (Ativan) 0.5-1mg PO q6 hours PRN
- Other medication on current med list indicated for nausea/vomiting

**\*Instruct patient to try increasing to upper limit of dose range and/or alternating different antiemetics (see step 2). Encourage patient to eat and drink as possible. Patient should call back within 24 hours if unable to keep pills and fluids down, if nausea/vomiting persists or worsens, or if having multiple signs of dehydration. If no relief, then move to step 2.**

STEP TWO

**Take one of the following below (should be a different drug than used in step 1) +/- alternative therapies.**

- Ondansetron (Zofran) 4-8mg PO/ODT q8 hours PRN
- Prochlorperazine (Compazine) 5-10mg PO q6 hours PRN
- Lorazepam (Ativan) 0.5-1mg PO q6 hours PRN
- Other medication on current med list indicated for nausea/vomiting

**\*Instruct patient to try increasing to upper limit of dose range and/or alternating different antiemetics. Patient should call back within 24 hours if unable to keep pills and fluids down, if nausea/vomiting persists or worsens, or if having multiple signs of dehydration. If no relief, then move to step 3.**

STEP THREE

**\*Instruct patient to go to local clinic or Masonic Cancer Center for evaluation, IV fluids, and/or IV antiemetics.**

ALTERNATIVE THERAPIES

- |  |                                   |                            |
|--|-----------------------------------|----------------------------|
| -Rest/Relaxation                       | -Avoid spicy, fatty foods         | -Meditation/Guided imagery |
| -Music therapy                         |                                   |                            |
| -Acupressure                           | -Avoid strong smells              | -Aromatherapy (e.g.        |
| peppermint)   -Fan/cool breeze on face |                                   |                            |
| -Ginger/Ginger ale                     | -Eat smaller, more frequent meals | -Massage                   |
| -Heating pad on abdomen                |                                   |                            |

**OTHER ANTIEMETIC OPTIONS** \*Discuss with provider if not on patient's current med list\*

- Dexamethasone (Decadron) 2-4mg PO BID (or up to 12mg/day)
- Olanzapine (Zyprexa) 5-10mg PO qHS (or 2.5mg PO TID PRN +/- 5mg PO qHS)
- Dronabinol (Marinol) 2.5-10mg PO q6-8h
- Haloperidol (Haldol) 0.5-1mg PO q4-6h PRN
- Metoclopramide (Reglan) 5-10mg PO q4-6h PRN (do not use if patient has concurrent diarrhea)
- Promethazine (Phenergan) 12.5-25mg PO q4h PRN
- Scopolamine (Scopoderm/Transderm Scop) 1.5mg= 1 patch placed on skin behind ear q72h

**Disclaimer:** Care has been taken in the preparation of the information contained in these guidelines. Nonetheless, any person seeking to apply or consult this document is expected to use independent clinical judgment and skills in the context of individual clinical circumstances, or to seek out the supervision of a qualified specialist clinician.

Appendix E  
N/V Protocol EHR Note Outline

**MASONIC CANCER CLINIC TELEPHONE TRIAGE NOTE**

Patient name: \*\*\*

Date/time of initial phone call: \*\*\*/\*\*\*

Chief complaint: \*\*\*

Was the nausea/vomiting telephone triage protocol used?    YES                    NO

Patient reported the following symptoms: \*\*\*

The following advice was given and/or interventions were taken: \*\*\*

At what step of the protocol were you when this phone call ended? \*\*\*

Did the patient experience resolution of symptoms?            YES                    NO

Provider signature: \*\*\*

Subsequent phone calls within 24 hours of initial phone call:

Date/time of phone call:

Chief complaint:

Was the nausea/vomiting telephone triage protocol used?    YES                    NO

Patient reported the following symptoms:

The following advice was given and/or interventions were taken:

At what step of the protocol were you when this phone call ended?

Did the patient experience resolution of symptoms?            YES                    NO

Provider signature:

## Appendix F Introductory/Pretest Email

September 27, 2013

Dear Masonic care coordinators and triage nurses,

Meghann Pierce, Certified Nurse Practitioner and Doctor of Nursing Practice student, in collaboration with Masonic Cancer Clinic staff and providers, is conducting a study of the care coordinator/triage nurse role and current telephone triage practices in the clinic. For her doctorate program, she is working on a pilot project to address care coordination and triage care reform. This project was created in response to a focus group discussion with Masonic care coordinators and triage nurses who identified concerns about the triage nursing role and workflow. The goal of this project is to better understand current triage practices and develop tools that will improve the triage process. The pilot project involves development and implementation of a telephone triage protocol and home care guidelines for management of patients who call with the complaint of nausea/vomiting. Based on feedback from this pilot project, the plan is to create other effective and efficient triage protocols for use in the clinic.

The purpose of the following pre-intervention survey is to obtain some baseline information regarding certain aspects of current telephone triage practice, nursing roles, and workflow. Please answer each question carefully to the best of your ability.

By returning your completed pre-intervention survey, you are implying consent to participate in the pilot project. Participation in the pilot project was outlined in detail during the clinic meeting and prior to sending out this survey. Briefly, participation requires that you utilize the new nausea/vomiting telephone triage protocol and home care guidelines on appropriate patients during your routine triage work for a period of 6-8 weeks. During this time, you will use a paper version of the protocol on patients with the complaint of nausea/vomiting for whom you provide telephone triage care. You will document your telephone calls in Epic using a designated "Smart Phrase." You will then submit each used paper protocol to a locked box; contents of the box will be collected each week. At the end of the 6-8 weeks, you will be asked to fill out a post-intervention survey very similar to this one. Participation in this project should not require significant amount of time above and beyond your routine daily work activities.

Your answers to the pre- and post-intervention surveys are anonymous and will be kept completely confidential. Surveys can be completed and returned via the SurveyMonkey link below. They will be routed to Meghann Pierce but will not contain identifying information such as sender name or email address. Your work throughout the pilot project will also be kept confidential.

An email with more information about the pilot study, use of the nausea/vomiting protocol, and documentation using the Epic "Smart Phrase" (which will be shared with you in Epic) will be sent following collection of the pre-intervention surveys. Once surveys have been returned, the paper protocols and locked drop box will be available in the triage office.

Your participation in this project is greatly appreciated! If you have any questions or concerns, please feel free to contact Meghann Pierce at [mpierc1@gmail.com](mailto:mpierc1@gmail.com).

Thanks,  
Meghann Pierce

## Appendix G Weekly Reminder Emails

October 6, 2013

Hi all,

Hope you had a nice weekend even though the weather was kind of dreary! I'll be dropping off the blank N/V protocols and "drop box" on Monday. I'm also attaching a copy to this email so you can familiarize yourself with it and in case you need quick access to it or run out of them. The front side is the intake form and the back side is home care guidelines. Dr. Greeno has approved use of this protocol for all Masonic patients. Obviously, some patients will have allergies, won't have certain drugs on their med list, or won't have prescriptions available at home. But otherwise, you should be able to apply this protocol to everyone that calls with N/V.

The idea of this pilot project is that you use the protocol and home care guidelines (if appropriate) on as many patients as possible that you triage with the complaint of nausea or vomiting for the next 6-8 weeks. As I said in the meeting, don't feel obligated to put a check mark next to every item on the intake form - I want this to be a quick tool for you! But you can definitely make notes, circle symptoms that the patient reports, circle meds they take for symptom management, etc. All those items are helpful to me when analyzing the results and may be helpful to you when documenting. It's also important that I know where you recommended the patient receive treatment (e.g. ED, urgent care, local clinic, Masonic clinic, home, etc.), so just circle or make a note of that on the protocol.

Once you are done with the triage call, you should document it in Epic using the smart phrase "NVTRIAGEMASONIC" which I have created and shared with you. It is a quick, simple note that will hopefully allow others to see where you left off in the protocol if the patient calls back. You can put everything in this note that you would normally document, so you don't have to create a second note. Once you are done with the protocol and documentation, put the "used" protocol in the drop box. I will collect them regularly. This pilot study will last about 6-8 weeks.

Thanks again,  
Meghann

### Quick instructions:

1. Patient calls with complaint of N/V
  2. Grab a blank protocol (from triage office or via email)
  3. Start with intake form, then move on to home care guidelines if appropriate
  4. Document call in Epic using smart phrase "NVTRIAGEMASONIC"
  5. Put used protocol in grey/white metal drop box in triage office
- 

October 14, 2013/October 20, 2013/October 27, 2013/November 10, 2013

Hi all,

Just checking in as a reminder to use the N/V triage protocol and make sure things are going OK with it so far. Quick instructions for using the protocol are below. Let me know if there are any questions.

Thanks!  
Meghann

### Quick instructions:

1. Patient calls with complaint of N/V
  2. Grab a blank protocol (from triage office or via email)
  3. Start with intake form, then move on to home care guidelines if appropriate
  4. Document call in Epic using smart phrase "NVTRIAGEMASONIC"
  5. Put used protocol in grey/white metal drop box in triage office
-



November 4, 2013

Hi all,

Just checking in! We're about midway through the pilot study and it looks like more "used" protocols are rolling in so thanks and keep them coming! I will keep the pilot going as long as possible, but want to have plenty of time to collect post-surveys and look over all the data. I'm thinking we'll keep plugging away until the end of the month, then I'll see where we're at with the protocols and hopefully send another short SurveyMonkey survey out at that time.

As always, let me know if you have questions, need more blank protocols, etc.

Thanks!  
Meghann

---

November 21, 2013

Hi all,

Just a reminder to use the N/V triage protocol as much as possible this week and next. I think we'll have the study run through next week, then stop and I'll send out the link to the post-survey. I'd love to have as many protocols back as possible, and hope that you'll have had enough exposure to the protocol to know if something like this would be of benefit to you in the future.

Also, just a reminder that there's a standardized Epic note in addition to the paper protocol. Once you are done with the triage call, you should document it in Epic using the smart phrase "NVTRIAGEMASONIC" which I created and shared with you. It's a quick, simple note that will hopefully allow others to see where you left off in the protocol if the patient calls back. You can put everything in this note that you would normally document, so you don't have to create a second note.

Thanks,  
Meghann

Quick instructions:

1. Patient calls with complaint of N/V
2. Grab a blank protocol (from triage office or via email)
3. Start with intake form, then move on to home care guidelines if appropriate
4. Document call in Epic using smart phrase "NVTRIAGEMASONIC"
5. Put used protocol in grey/white metal drop box in triage office

## Appendix H Final/Posttest Email

December 1, 2013

Dear Masonic care coordinators and triage nurses,

This email is to notify you that the N/V telephone triage protocol pilot study period has ended. I will be collecting the remaining “used” and blank protocols and drop box on Monday.

As noted prior to the start of this study, Meghann Pierce, Certified Nurse Practitioner and Doctor of Nursing Practice student, in collaboration with Masonic Cancer Clinic staff and providers, is conducting a study of the care coordinator/triage nurse role and current telephone triage practices in the clinic. For her doctorate program, she is working on a pilot project to address triage care reform. This project was created in response to a focus group discussion with Masonic care coordinators and triage nurses who identified concerns about the triage nursing role and workflow. The goal of this project is to better understand current triage practices and develop tools that will improve the triage process. The pilot project involves development and implementation of a telephone triage protocol and home care guidelines for management of patients who call with the complaint of nausea/vomiting. Based on feedback from this pilot project, the plan is to create other effective and efficient triage protocols for use in the clinic.

By returning your completed post-intervention survey, you are implying consent to participate in the pilot project. Participation in the pilot project was outlined in detail during the previous clinic meeting. Briefly, participation required that you utilized the new nausea/vomiting telephone triage protocol and home care guidelines on appropriate patients during your routine triage work for a period of 6-8 weeks. During this time, you used a paper version of the protocol on patients with the complaint of nausea/vomiting for whom you provided telephone triage care. You documented your telephone calls in Epic using a designated “Smart Phrase.” You then submitted each used paper protocol to a locked box and they were collected each week.

The purpose of the following post-intervention survey is to ascertain whether any differences in certain aspects of telephone triage practice, nursing roles, and workflow were improved with the use of the nausea/vomiting telephone triage protocol over the last 6-8 weeks. Please answer each question carefully to the best of your ability.

Your answers to this survey are anonymous and will be kept completely confidential. Surveys can be completed and returned via the SurveyMonkey link below. They will be routed to Meghann Pierce but will not contain identifying information such as sender name or email address.

Your participation in this project is greatly appreciated. If you have any questions or concerns, please feel free to contact Meghann Pierce at [mpierc1@gmail.com](mailto:mpierc1@gmail.com).

Thanks,  
Meghann Pierce

Appendix I  
St. Catherine University IRB Letter of Approval

September 17, 2013

Meghann Pierce RN, BSN, MSN, CNP  
5211 Hiawatha Lane  
Minneapolis, MN 55417

Re: IRB#13-N-30 Improving Care Coordination and Workflow Through the Use of a Telephone  
Triage Protocol

Dear Ms. Pierce:

Thank you for your reply to the St. Catherine University Institutional Review Board (IRB) letter of 9-10-13 outlining the stipulations required for approval of the research project listed above. You have addressed all concerns and clarifications as requested. As a result, your project is approved.

Please note that all research projects are subject to continuing review and approval. You must notify the IRB of any research changes that will affect the risk to your subjects. You should not initiate these changes until you receive written IRB approval. Also, you should report any adverse events to the IRB. Please use the reference number listed above in any contact with the IRB. At the end of the project, please complete a project completion form. These forms are available on the St. Catherine University IRB website.

We appreciate your work to ensure appropriate treatment of your research subjects. Good luck with your research.

Sincerely,  
John Schmitt, PT, PhD

Chair, Institutional Review Board

Cc: Emily Nowak

Appendix J  
University of Minnesota IRB Letter of Approval

**1309E43763 - PI Pierce - IRB - Exempt Study Notification**

irb@umn.edu <irb@umn.edu>  
To: mrpierce@stkate.edu

Fri, Sep 27, 2013 at 10:59 AM

TO : [mrpierce@stkate.edu](mailto:mrpierce@stkate.edu), [ewnowak@stkate.edu](mailto:ewnowak@stkate.edu),

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2 SURVEYS/INTERVIEWS; STANDARDIZED EDUCATIONAL TESTS; OBSERVATION OF PUBLIC BEHAVIOR.

**Study Number:** 1309E43763

**Principal Investigator:** Meghann Pierce

**Title(s):**

Improving Care Coordination and Workflow Through the Use of a Telephone Triage Protocol

---

This e-mail confirmation is your official University of Minnesota HRPP notification of exemption from full committee review. You will not receive a hard copy or letter.

This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

Research that involves observation can be approved under this category without obtaining consent.

**SURVEY OR INTERVIEW RESEARCH APPROVED AS EXEMPT UNDER THIS CATEGORY IS LIMITED TO ADULT SUBJECTS.**

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study's expiration date.

Upon receipt of this email, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

You may go to the View Completed section of eResearch Central at <http://eresearch.umn.edu/> to view further details on your study.

The IRB wishes you success with this research.