

WESTERN UNIVERSITY OF HEALTH SCIENCES

Pomona, California

**USING A COLLABORATIVE CENTER FOR INTEGRATIVE REVIEWS
AND EVIDENCE SUMMARIES TO NARROW THE
EDUCATION-PRACTICE-RESEARCH GAP**

A dissertation submitted to the

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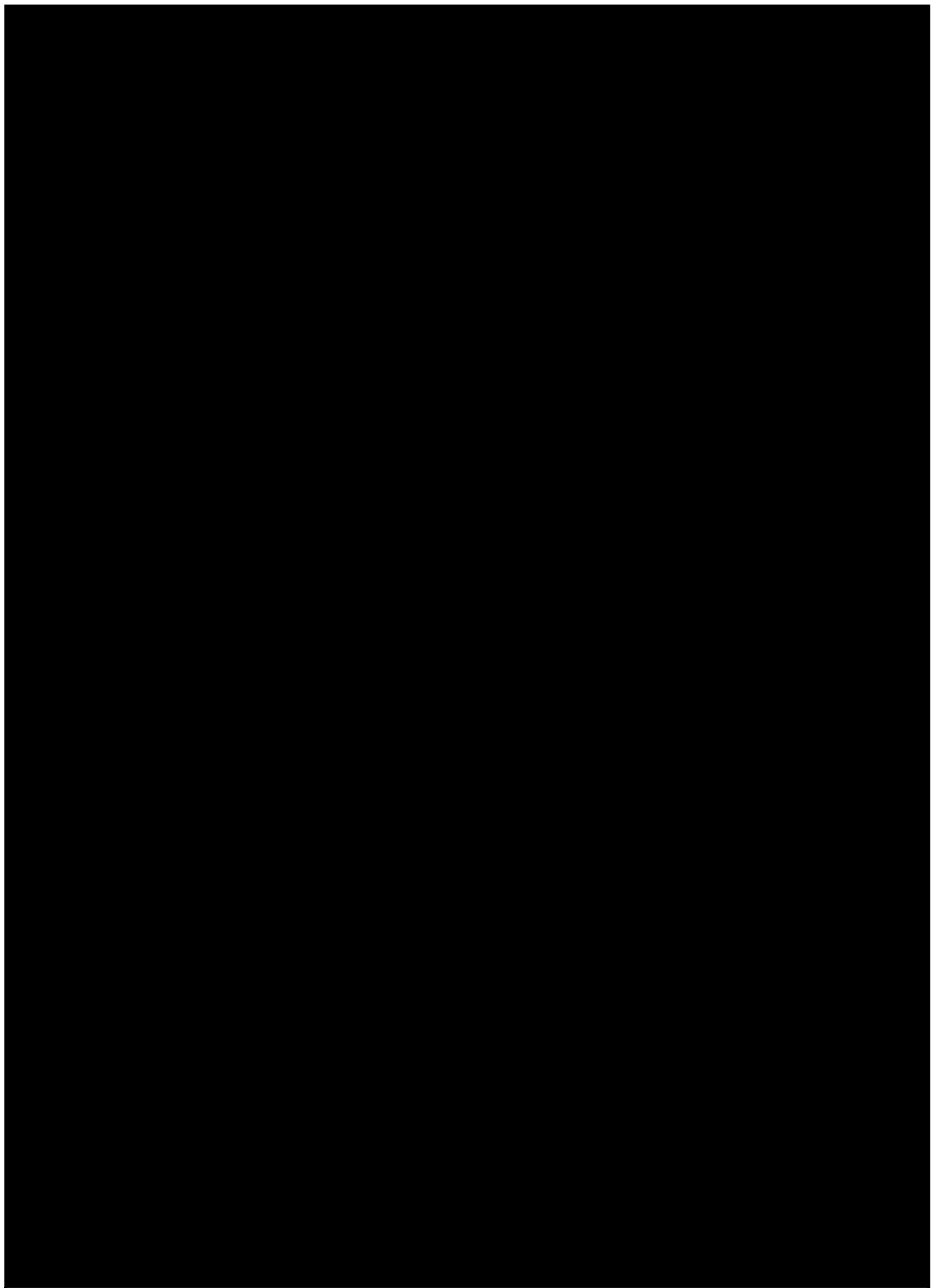
in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

Cecelia L. Crawford, RN, DNP

College of Graduate Nursing

May 31, 2012



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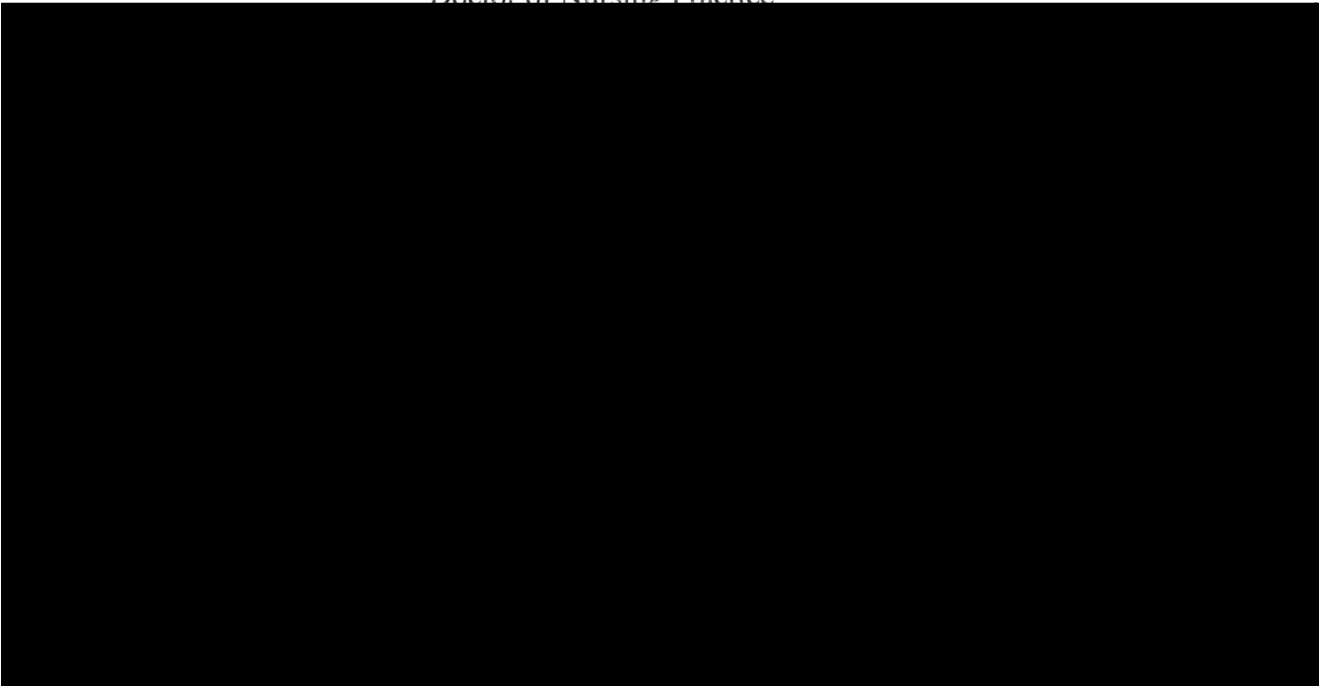
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by

Cecelia L. Crawford, RN, MSN, DNP(c)

has been approved by the
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in partial fulfillment of the requirements
for the degree

Doctor of Nursing Practice



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I end with a final salute to the members of CCIREs, who continue to inspire me with their quest to translate evidence and place it in the caring hands of the professional nurse. Women and men such as these will change the world.

DEDICATION

I wish to dedicate this dissertation to my beloved husband, David Jesse Crawford, for his continuous support, encouragement, and unique sense of humor. I have often used the metaphor of climbing Mount Whitney to illustrate this dissertation journey as I hiked up to the summit and back down to the start of the trail. David has been by my side every step of this strenuous academic hike. He has sheltered me from the elements and led me safely through the dark. I not only married an athlete, I also married tech support and a gifted editor. Three years, countless scholarly papers, and one dissertation manuscript later, I have discovered that true love is helping me revise – again and again and again.

ABSTRACT

USING A COLLABORATIVE CENTER FOR INTEGRATIVE REVIEWS AND EVIDENCE SUMMARIES TO NARROW THE EDUCATION-PRACTICE-RESEARCH GAP

by Cecelia L. Crawford, RN, DNP

The overarching purpose of this dissertation project was to design a collaborative center for integrative reviews and evidence summaries (CCIRES) to advance the state of the art and science of nursing knowledge and narrow the education-practice-research gap. The CCIRES program was created as a web-based platform embedded in the Kaiser Permanente Southern California infrastructure. The specific purpose of this project was to implement CCIRES via that infrastructure, and evaluate the implementation, structures, processes, and usability of CCIRES. The Diffusion of Innovations was the theoretical framework, as supported by the Model of Diffusion in Service Organizations and the Colorado Patient-Centered Interprofessional Evidence-Based Practice Model. These theoretical perspectives and models informed the structures and processes for the design, implementation, and evaluation of the CCIRES innovation. The literature captured the history of the education-practice-research gap and the use of translational research to support evidence-based nursing practice. A rigorous methodology involving formative and summative evaluation structured data collection and analyses. Four expert members of CCIRES comprised the sample targeted for voluntary participation in the

SWOT web-based survey and construction of a logic model providing the data outcomes. NVIVO was the qualitative software program chosen for SWOT data storage and management. The SWOT analysis identified nine individual themes, with three themes spanning all categories and four themes populating four separate categories. These data results allowed deep examination of the essential core functions needed to achieve CCIRES' goals and succeed as a program. Group consensus during a webinar meeting was the data analysis technique for the construction of the 2012 CCIRES logic model. CCIRES members analyzed the alignment of multiple model components to understand the gaps, commonalities, and interrelated elements needed for a successful academic-service partnership program. Secondary outcomes included increased membership, website design, increased evidence review competencies, development of resources, and tool testing. CCIRES' goal of narrowing the education-practice-research gap facilitates the delivery of meaningful knowledge into the caring hands of professional nurses. CCIRES next bold step is to partner with other influential groups seeking to increase the breadth, depth, and rigor of the evidence. By heeding this call to action, CCIRES can translate, diffuse, and disseminate 21st Century nursing knowledge that has meaning for the two people who seek it and need it most – the nurse and the patient.

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CHAPTER I

INTRODUCTION

Researchers and practitioners have long considered the difficulty moving research results from the bench to the bedside, given a lag time of up to 17 years between research-to-clinical practice (Baumbusch et al., 2008; Chelsa, 2008; Clements & Crane, 2006; Institute of Medicine [IOM], 2001). This vast time lag often means that research findings are outdated by the time nurses implement them in the clinical practice environment. Buried within this discussion is an additional gap between the “ideal world” of academia and the “practical world” of service, with the idealistic scholar seen as being unrealistic, while the pragmatic clinician is overwhelmed by coping with reality’s day-to-day events (Horns et al., 2007).

The integration of nursing research, education, and practice demands a knowledge translation approach (Mitchell, 2008). The last several decades have seen a multitude of academia-service partnerships attempt to bridge these twin gaps and restore a collaborative community of nursing (Kirshchling & Erickson, 2010). Twenty-first century nursing professionals increasingly use innovative partnerships within nontraditional environments to obtain, translate, and disseminate knowledge (Cader, Campbell, & Watson, 2009; Tsai & Chai, 2005). A collaborative center for integrative reviews and evidence summaries (CCIRES) is a novel strategy to advance the state of the art and the science of nursing knowledge and narrow the education-practice-research gap.

History of the Education-Practice-Research Gap

Many nurse historians consider the abandonment of hospital-based nursing education as the beginning of the modern professional nurse (Reverby, 1987). Other nurse experts believe that separating the practice environment from the educational environment was the beginning of fragmented nursing care and the loss of the community of nursing (Dean, 1995; Thompson, Galbraith, & Pedro, 2010). The changes in the education of nurses may have been the crack leading to the current academic-to-service gap, which mirrored in the research-to-practice gap (Dean, 1995; Thompson et al., 2010). The restoration of a community of nursing requires the bridging of these deep and wide gaps through academic-service partnerships (Kirshchling & Erickson, 2010).

Collaborative academic-service partnerships take many forms and have many distinct features, which depend upon unique geographical settings, differing cultures, and diverse educational/clinical venues (Kirshchling & Erickson, 2010). Successful collaborators understand the benefits, risks, and the power of the many versus the benefits, risks, and the power of the few and are able to discern these ratios before proceeding (De Geest et al., 2010; Kirshchling & Erickson, 2010). Key features of committed collaborative efforts include (a) shared mission, vision, goals, and purpose, (b) purposeful participation, (c) leveraging strengths/resources, (d) dependability, (e) accountability, (f) open communication, and (g) ability to seize opportunities and take risks (Campbell & Jeffers, 2008; Engelke & Marshburn, 2006; Horns et al., 2007; Kirshchling & Erickson, 2010).

Engaged partnerships can harness the energies of the education-practice-research triad by designing mutual goals and channel nursing's destiny through the resulting

power and strength (Kirshchling & Erickson, 2010). One innovative academic-service pairing is the use of integrative reviews and evidence summaries as a forum for collaborative partnerships via the creation, translation, and dissemination of nursing knowledge (Baumbusch et al., 2008; Brouwers, Stacy, & O'Connor, 2010; Engelke & Marshburn, 2006; Kirshchling & Erickson, 2010).

Integrative Review Process as a Forum for Collaborative Partnerships

Evidence summaries, integrative reviews, and systematic reviews infuse nursing practice with the best available evidence in order to provide solutions to clinical problems. However, the purposes and intents of these three evidence reviews are different (Table 1).

Table 1

Types of Evidence Reviews: Purposes and Intents

Review Type	Literature/Evidence Summary	Integrative	Systematic
Description	Narrative account of published materials on a topic of interest	Literature compilation and synthesis of diverse studies via narrative analysis	Literature compilation and synthesis of like studies (i.e., RCTs) via narrative or statistical analysis
Purpose	Convey current state of knowledge and ideas on a specific topic; does not answer a clinical question	Answer a targeted clinical question using a systematic search strategy and rigorous appraisal methods	Address a specific clinical question using a comprehensive, detailed search strategy and rigorous appraisal methods
Intent	Present a “snapshot” and set a research problem into context	<p>Present varied perspectives of diverse methodologies without an over-emphasis on empirically based research</p> <p>Does not employ summary statistics; sample sizes cannot be pooled due to heterogeneity</p>	<p>Summarize, appraise, and communicate contradictory results and/or unmanageable amounts of research</p> <p>Sample sizes are pooled and summary statistics are used to present results</p>

Midway between a simple literature review and a complex systematic review, an integrative review uses a detailed search strategy to find relevant evidence to answer a targeted clinical question (Melnyk & Fineout-Overholt, 2005). The integrative review structure stresses narrative analysis to explain the compilation of literature and the resulting synthesis of diverse studies. Often described as research of research, nurses and other professionals use integrative reviews to answer a targeted clinical question using a

systematic search strategy and rigorous appraisal methods (Armolda et al., 2009; Melnyk & Fineout-Overholt, 2005; Torraco, 2005; Whitemore & Knafl, 2005).

The meta-research of integrative reviews require extensive resources to complete successfully. Experienced researchers within resource-rich academic environments have access to sophisticated software applications and research assistants to conduct evidence reviews (Guyatt et al., 2008). However, most integrative reviews are conducted in isolation by one or two reviewers who rely heavily upon pen-and-paper or desktop computer documentation of database search methodology, results, and appraised findings via static forms (Brouwers et al., 2010). The 2010 KP Crawford Model for Conducting Integrative Reviews vividly illustrates why this labor-intensive and sometimes intimidating process can take days, weeks, and even months to complete (See Appendix A).

A collaborative center of integrative reviews and evidence summaries creates an environment that provides linkage across the academic-to-service and research-to-practice divides via an innovative nursing collaborative partnership. This partnership could enlighten review processes within a collaborative setting and enhance the retrieval, appraisal, translation, and dissemination of research and other forms of evidence (Cader et al., 2009; Tsai & Chai, 2005). Nursing and other professions consider evidence a valuable form of knowledge that provides the basis of evidence-based patient care.

The Problem: Knowledge Acquisition to Application

Knowledge informs decision-making (Sowell, 1996). Nurses use knowledge to inform their clinical decision-making (Brouwers et al., 2010). Nurses must rapidly move research results into clinical reality in order to create a safe patient environment, promote

evidence-based patient care, and truly impact patient outcomes (Mitchell, 2004).

However, the most difficult component of evidence-based nursing practice (EBP) is the dissemination of research findings and other types of evidence (M. Titler, PhD, RN, BSN, FAAN, personal communication, February 2008; Titler et al., 2001). People within academic institutions and healthcare organizations alike have difficulty acquiring and translating nursing knowledge to answer clinical questions, as well as delivering that translated knowledge to nursing professionals (Baumbusch et al., 2008; Brouwers et al., 2010; Engelke & Marshburn, 2006; Kirshchling & Erickson, 2010).

What counts as knowledge and evidence varies across disciplines. The medical worldview is grounded in quantitative empirical data, with a gold standard of randomized control trials (RCT), meta-analyses of RCTs, and systematic reviews of RCTs (Cloutier, Duncan, & Bailey, 2007; Upshur, VanDenKerhof, & Goel, 2001). Empirically based qualitative methodologies, often seen as less rigorous than empirically based quantitative methodologies, stem from social sciences, and nursing (Upshur et al., 2001). Thus, nursing's worldview involving the scientific, aesthetic, personal, ethical, and sociopolitical ways of knowing is seen as less rigorous than the medical worldview (Cloutier et al., 2007). However, the inclusion of values, preferences, and perspectives of individuals and communities is a strength of nursing science and imparts its meaning (Goode, Fink, Krugman, Oman, & Traditik, 2011; Upshur et al., 2001). Meaning is crucial in the synthesis of information into knowledge (Baumbusch et al., 2008).

The process of knowledge development is a systematic one and begins with discrete data, such as quantitative statistical data or qualitative interview results. Data are then organized to obtain facts, and data-produced facts are analyzed to create

information. Synthesis of information develops the meaning of the information. This crucial synthesis of “raw” information into “cooked” meaning then results in knowledge; in other words, the information contains meaning that people extract as knowledge (D. J. Crawford, BS, personal communication, July 2, 2010; Greenhalgh, 2010). Structuring this process using a systematic research-process focus results in scientific knowledge, as the research process is the underlying systematic method used to create new scientific knowledge (See Figure 1) (A. K. Omery, RN, DNSc, PhD, personal communication, December 2009; Polit & Beck, 2008; Tress, Tress, & Fry, 2004). The final product of knowledge development and translation must be knowledge that really matters, both to the nurse and to the patient (Mitchell, 2008).

The Process of Knowledge Development (Omery, 1998)

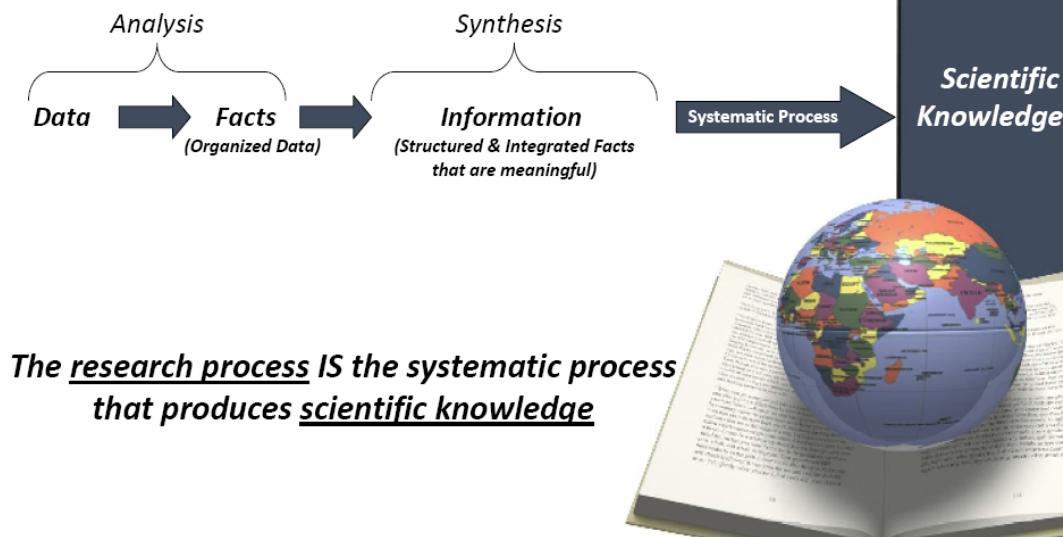


Figure 1. Process illustrating knowledge development, beginning with the analysis of data to facts, synthesis of facts from organized data that produces meaningful information, eventually leading to knowledge. The application of the research process is the systematic process that produces scientific knowledge. Available at <http://nursingpathways.kp.org/scal/research/resources/researchseries/index.html> Copyright 1998 by Anna K. Omery. Reprinted with permission from Anna Omery.

The creation, translation, and mobilization of knowledge addresses the needs of diverse patient populations considered vulnerable, such as women in menopause, persons with diabetes, patients who are cancer survivors, and others (Baumbusch et al., 2008; Brouwers et al., 2010). Nurses themselves are a vulnerable population, as they often lack the evidence-based information needed to deliver equitable care to their patients (Baumbusch et al., 2008). United States nurses feel unprepared for EBP because of (a) gaps in information literacy, (b) lack of computer skills, (c) lack of time, (d) limited access to resources, equipment, and supplies, and (e) individual and organizational

attitudes to research and EBP (Gale & Schaffer, 2009; Pravikoff, Tanner, & Pierce, 2005). Many clinicians do not have the kind of preparation needed to adequately appraise research and other types of evidence (Armolda et al., 2009; Jones, 2010). The interpretation of research results remains a distinct challenge to the bedside clinician (Gale & Schaffer, 2009).

Clements and Crane (2006) believe that the linear trajectory of new knowledge translation from discovery to publication to utilization is an antiquated and hierarchical model that is not suited for the modern exchange of information. Knowledge translation must break free of its current boundaries and be effectively mobilized for dissemination. Overcoming the barriers surrounding the black box of dissemination and implementation of knowledge-based evidence is vital if knowledge is to move from the books to the bedside (Rycroft-Malone, 2007). Changing the trajectory of knowledge acquisition, translation, mobilization, and dissemination mandates that isolated academic institutions and healthcare service organizations partner and set a new course for knowledge creation, interpretation, and movement. Only in this manner can professional nurses access and use the knowledge they need to make clinical decisions and provide safe evidence-based patient care (Brouwers et al., 2010).

Purpose of CCIRES

The specific purpose of this project was to create a platform for CCIRES within the Kaiser Permanente (KP) Southern California (SCAL) infrastructure, implement CCIRES via the use of that infrastructure, and evaluate the implementation, structures, processes, and usability of CCIRES. An academic-service partnership was established to order to achieve the project's common goals. Professional KP and non-KP nurses

evaluated the implementation, structures, and processes of CCIRES using a SWOT analysis and logic model. A sample of KP staff nurses, nurse managers, handpicked professional colleagues, and nurse educator listserv members represented the main end users of CCIRES who would have been targeted to voluntarily evaluate CCIRES using an online nursing website evaluation questionnaire via a web-based survey system. The proposed triangulation of these data formed the formative and summative analyses of the successes and learnings of this innovative project.

For the purposes of this project, an academic-service partnership was defined as a group of academic scholars and health care professionals demonstrating shared mission, vision, goals, and purpose; purposeful participation; leveraging strengths/resources; dependability; accountability; open communication; and seizing opportunities while also taking risks (Campbell & Jeffers, 2008; Engelke & Marshburn, 2006; Horns et al., 2007; Kirshchling & Erickson, 2010). An academic partner was a nursing scholar employed as a faculty member by and/or affiliated with a local academic institution, while a service partner was a nurse employed by and/or affiliated with a health care organization (Berry, 2011; Campbell & Jeffers, 2008; Kirshchling & Erickson, 2010).

Limitations, Assumptions, and Controls

The physical and digital infrastructure of KP SCAL is the setting within which CCIRES is be designed and housed. CCIRES represented a significant investment involving academic-service partnerships, executive organizational sponsorship, human capital, resources, physical/virtual infrastructure, and equipment. Although CCIRES targets both KP and community professional nurses, as well as healthcare business

leaders, healthcare researchers, and academic-service partners, KP's sponsorship had the potential to overshadow smaller CCIREs contributors.

Although past academic-service partnerships have been documented (Kirschling & Erickson, 2010), there are currently no education-practice collaborations using integrative reviews as a concept for mutual gathering. The fact that this type of collaboration has never before existed was paradoxically a weakness and a strength. The construction of the investigator-developed a 2010 SWOT analysis and a 2010 logic model assisted in the creation and development of CCIREs, as well as its assumptions, processes, and outcomes. However, the lack of a guiding collaborative model threatens to undermine the development of evolving structures, processes, and strategies and limit the uptake of new knowledge generated by CCIREs (Brouwers et al., 2010).

Two underlying assumptions of CCIREs were that nursing is a professional community committed to high quality and evidenced-based patient care and that patients will benefit from this evidence-based care. An understanding of organizational, professional, and political aspects of academic-service partnerships was needed to control for the external factors influencing the creation of CCIREs (Baumbusch et al., 2008; Thompson et al., 2010). These external factors were (a) availability of time, personnel, infrastructure, and resources for collaborations, (b) impact of healthcare initiatives on vulnerable patient populations, and (c) internal and external processes for systematic reviews.

Innovative programs such as CCIREs potentially fulfill the need for knowledge and bridge long-standing gaps. However, innovative programs are inherently risky; nurse leaders implementing these programs must understand the risks involved (Kirschling &

Erickson, 2010; Sowell, 1996). A collaborative center for academic-service partnerships and the translation of nursing knowledge represents this type of innovative risk. The innovative twist presented by CCIRES was the use of integrative reviews and evidence summaries as a forum for collaborative partnerships via knowledge creation, translation, and mobilization (Baumbusch et al., 2008; Brouwers et al., 2010; Engelke & Marshburn, 2006). This forum seemed an appropriate one for the achievement of CCIRES' visionary goal of creating a collaborative academic-service partnership to close education-practice-research gaps through the translation and dissemination of nursing knowledge. CCIRES may be a great success or failure. Regardless of the outcome, the results provide "lessons learned" for further innovative programs seeking to establish collaborative partnerships.

Definition of Key Terms

The definitions for this proposal were adapted from the literature and included components defining collaborative nursing partnerships, knowledge development, formative and summative evaluation methods, a theoretical model, and two conceptual models. The models are (a) Rogers' Diffusion of Innovations (Rogers, 2003), (b) Conceptual Model for Considering the Determinants of Diffusion, Dissemination, and Implementation of Innovations in Health Service Delivery and Organization (Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004), and (c) Colorado Patient-Centered Interprofessional Evidence-Based Practice Model (Goode et al., 2011).

- Academic Service Partnership is a group of academic scholars and health care professionals demonstrating (a) shared mission, vision, goals, and purpose, (b) purposeful participation, (c) leveraging strengths/resources, (d) dependability, (e) accountability, (f) open communication, and (g) seizing opportunities and taking risks

(Campbell & Jeffers, 2008; Engelke & Marshburn, 2006; Horns et al., 2007; Kirshchling & Erickson, 2010).

- Academic Partner is a nursing scholar who is a faculty member employed by and/or affiliated with an academic institution, college, or university (Berry, 2011; Campbell & Jeffers, 2008; Kirshchling & Erickson, 2010).
- Capacity is the ability of individuals, groups, organizational units, and organizations to perform functions and produce outcomes in an effective, efficient, and sustainable manner (Enemark, 2003).
- Capacity Building is the development of the knowledge, skills, commitment, structures, systems, and leadership needed to ensure and enable effective projects and programs (de Groot, Robertson, Swinburn, & de Silva-Sanigorski, 2010).
- Collaborative Center for Integrative Reviews and Evidence Summaries (CCIRES) is an academic-service partnership using integrative reviews and evidence summaries as a concept for mutual gathering to advance the state of the art and the science of nursing knowledge and narrow the education-practice-research gap.
- Collaboration is defined by Dougherty and Larson (2010) as, “To labor or cooperate with another, especially in literary or scientific pursuits.” The Latin word root of collaboration stems from *laborare*, meaning “work,” and *com* meaning “with,” for a base meaning of “to work together ” (Dougherty & Larson, 2010; Funk & Wagnalls, 1966; Henneman, Lee, & Cohen, 1995).
- Colorado Patient-Centered Interprofessional Evidence-Based Practice Model is an evidence-based practice model featuring a patient-centered focus and four concepts vital to establishing an evidence-based clinical environment (Goode et al., 2010).

- Communication Channels is the process where members of a social system create and share information in an effort to achieve mutual understanding (Rogers, 2003).
- Diffusion is the passive spread process where a particular innovation is communicated through various channels over a time period via the members of a specific social system (Rogers, 2003; Greenhalgh et al., 2004).
- Diffusion of Innovations (DoI) is a theoretical framework illustrating the spread of knowledge and innovations involving the four main elements of the diffusion process (see Diffusion) (Rogers, 2003).
- Dissemination is the active and planned spread process to persuade adoption of the innovation by targeted groups (Greenhalgh et al., 2004).
- Education-Practice-Research Gap, also known as the Discovery-Delivery Gap, is lag time between research results being implemented in the clinical practice (Baumbusch et al., 2008; Chelsa, 2008; Clements & Crane, 2006; IOM, 2001). The bench-to-bedside lag is impacted by an additional gap between the “ideal world” of academia and the “practical world” of service (Horns et al., 2007).
- Evidence-Based Medicine (EBM) is “...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of EBM means integrating individual clinical expertise with the best available external clinical evidence from systematic research...” (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996).
- Evidence-Based Nursing Practice (EBP) is the use of the best clinical evidence via a systematic approach to make decisions concerning quality patient care (Goode, 2000). More recently, EBP is defined as “...the process of shared decision-making between

practitioner, patient, and others significant to them based on research evidence, the patient's experiences and preferences, clinical expertise or know-how, and other available robust sources of information" (p.57) (Cullen, DiCenso, Griffiths, McCormack, & Rycroft-Malone, 2008).

- Evidence Summaries are an account of published materials and other evidence sources on a topic of interest to set a research problem into context (Armolda et al., 2009; Goode et al., 2011). The purpose of these summaries is to convey the current state of knowledge and ideas on a topic and examine their strengths and weaknesses. Evidence summaries serve as a general background discussion of a particular issue, rather than answering a clinical question (Armolda et al., 2009; Whitemore & Knafl, 2005).
- Explicit Knowledge is formalized information that is (a) disseminated via documents, images, and best practices via various communication technologies, and (b) learned through structured scientific processes (Sanchez, 2004).
- Formative Evaluation is an evaluative analysis process that uses rigorous assessment methods to discover various influences on the progress and/or the effectiveness of a program's implementation work (Patton, 2008; Polit & Beck, 2008; Stetler et al., 2006).
- Fuzzy Boundaries is the perceived adaptable "soft periphery" of a complex innovation (Greenhalgh et al., 2004).

- Heterophily is a person's conscious or unconscious tendency to associate with other people dissimilar to one's self ("opposites attract" and "attract and introduce") (Christakis & Fowler, 2009; Christakis & Fowler, 2007; Fowler & Christakis, 2008a; Fowler, Dawes, & Christakis, 2009; Fowler, Settle, & Christakis, 2011; Rogers, 2003).
- Homophily is a person's conscious or unconscious tendency to associate with other people similar to one's self ("birds of a feather flock together"); literally means "love of being alike" (Christakis & Fowler, 2007; Christakis & Fowler, 2009; Fowler & Christakis, 2008a; Fowler et al., 2009; Fowler et al., 2011; Rogers, 2003).
- Hyperdyadic Spread is the tendency of effects to spread from person to person to person, and included the notion of degrees of separation (Christakis & Fowler, 2007; Christakis & Fowler, 2009; Fowler & Christakis, 2008a; Fowler et al., 2009; Fowler et al., 2011; Rogers, 2003).
- Implementation is the active and planned process of integrating an innovation into the core infrastructure of an organization (Greenhalgh et al., 2004).
- Implementation Science is the inquiry into the methods, interventions, and variables that influence the adopter(s) uptake and integration of evidence-based practices, including the testing of intervention effectiveness (Titler, Everett, & Adams, 2007).
- Innovation is a thought, practice, or product that is perceived as being new, unique, and original by an individual or group of adopters (Rogers, 2003).
- Integrative Reviews are research of research. The metaresearch of integrative reviews answers a targeted clinical question using a systematic search strategy and rigorous appraisal methods (Armolda et al., 2009; Melnyk & Fineout-Overholt, 2005;

- Torraco, 2005; Whitemore & Knafl, 2005). Integrative reviews are capable of presenting varied perspectives and a depth and breadth of evidence without over-emphasizing randomized control trials (RCTs) and other studies within empirically-based quantitative research hierarchies (Jones, 2010; Rawlins, 2008).
- Knowledge is the ability to exercise judgment and requires drawing distinctions within a domain of action. Knowledge has been described as both a process and an outcome (Greenhalgh, 2010; Porter-O'Grady & Malloch, 2007).
 - Knowledge Translation is the process of acquiring, deconstructing, reconstructing, synthesizing, sharing, and applying both explicit and tacit knowledge (Greenhalgh et al., 2004).
 - Knowledge Worker is a person who synthesizes a wide variety and types of information and knowledge and then integrates that information and knowledge into the work place (Porter-O'Grady, 2003).
 - Model of Diffusion in Service Organizations (MoDSO), also known as The Conceptual Model for Considering the Determinants of Diffusion, Dissemination, and Implementation of Innovations in Health Service Delivery and Organizations, is a memory tool to promote the understanding of the critical components and interactions involved in diverse health care service issues. The model describes the content and processes involved in spreading and sustaining innovations in health service delivery and service organizations (Greenhalgh et al., 2004).
 - Logic Model is a formative program evaluation tool that uses images or narration to describe the logical linkages between the (a) situation, (b) design (inputs), (c) planning and implementation (outputs), (d) underlying assumptions, (e) influencing

external factors, and (f) evaluation (outcomes) of projects (McCawley, 1997). The logic model is used by various organizations as a means of facilitating thinking, planning, and communicating a program's goals, objectives, and achievements (W.K. Kellogg Foundation, 2004).

- Observability is the degree of visibility of benefits of an innovation to the targeted end users (Greenhalgh et al., 2004).
- Opinion Leaders are person able to influence the beliefs, attitudes, behaviors, and actions of colleagues via perceived formal or informal organizational authority, status, and credibility (Greenhalgh et al., 2004; Rogers, 2003).
- Partnership is a joint enterprise involving two or more persons who share the profits and risks (Stanley, Hoiting, Burton, Haris, & Norman, 2007).
- Reinvention is the degree to which an innovation has been adapted, refined, and/or modified by the end user(s) during the adoption and implementation process to suit specific user needs (Greenhalgh et al., 2004; Rogers, 2003).
- Research Utilization is the translation of empirically generated new knowledge into clinical practice (Polit & Beck, 2008).
- Service Partner is a nurse who is employed by and/or affiliated with a health care organization, medical center, hospital, clinic, or other type of health care delivery system (Berry, 2011; Campbell & Jeffers, 2008; Kirshchling & Erickson, 2010).
- Social Desirability is a phenomena where persons answer surveys and questionnaires in such a manner as to present themselves in a socially desirable and favorable light by giving answers based on perceived expectations and prevailing social norms (Polit & Beck, 2008).

- Social Networks is a form of human-to-human connectiveness, with network nodes represented by human beings and the linked interdependent connection between the nodes represented by formal/informal communication, interactions, values, beliefs, and relationships (Bramouille, Djebbari, & Fortin, 2007; Christakis & Fowler, 2009; Malloch & Porter-O'Grady, 2006; McNeely & Wolverton, 2008).
- Social Systems are interrelated units of people who are actively involved in the joint decision-making and problem solving process in order to reach a common goal. These units can be organizations, systems, subsystems, formal/informal groups, and individual persons (Rogers, 2003).
- Summative Evaluation is an outcome analysis method used to assess a program's predetermined goals, objectives, and effectiveness in order to determine whether the program is to be continued or terminated (Patton, 2008; Polit & Beck, 2008).
- Survey Response Burden is a phenomenon concerning a person's perception of burden in completing a self-administered questionnaire (SAQ), along with the additional factors of total time for completion, participant perceptions, questionnaire sponsor, survey design, stress triggered by sensitive questions, and the amount of effort to complete the SAQ (Jones, Haraldsen, & Dale, 2007).
- Sustainability is the active process of ensuring an implemented innovation has become a routine component within an organizational infrastructure (Greenhalgh et al., 2004).

- Tacit Knowledge is hidden or local knowledge that is informally (a) learned by bringing the right people together to share specific knowledge and information, or (b) transferred by moving people within or between organizations (Berry, 2011; Sanchez, 2004).
- Translational Research is “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008).
- Trialability is the process in which end user(s) experiment with the innovation on a time limited basis in order to test the innovation’s effect (Greenhalgh et al., 2004).
- Vulnerable Patient Populations are people who share social characteristics that make them susceptible to or at increased risk of developing new health problems and/or exacerbating current health problems, as compared to the general population (de Chesney & Anderson, 2008; Frohlich & Potvin, 2008). However, individual vulnerable population members may not necessarily be vulnerable (de Chesney & Anderson, 2008).
- Vulnerable Nurse Populations are nurses who are challenged in delivering evidence-based nursing due to a lack of evidence-based information and/or the knowledge to incorporate the evidence into their practice (Baumbusch et al., 2008; Pravikoff et al., 2005).

Summary & Conclusions: Translating Knowledge into Clinical Reality

The overarching purpose of CCIRES was to create collaborative academic-service partnerships to close education-practice-research gaps through the translation and dissemination of nursing knowledge. CCIRES was designed to create an investigative and collaboration framework, tools, and resources to gather, examine, and appraise the best available evidence for integrative reviews and evidence summaries in order to answer clinical questions. Using existing technologies, the review findings were to be housed within a web-based repository with 24 hours a day/7 days a week (24/7) access by the collaborative team. Improved processes via newly developed and sophisticated tools housed within a digital environment, as developed by a collaborative academic-service team, could eliminate some of the current barriers to evidence-based nursing practice (Pravikoff et al., 2005).

CCIRES provides a conceptual framework for the unification of academic-service collaborative work (Thompson et al., 2010) and has particular potential value and relevance for collaborative academic-service partners and vulnerable patient populations. A nursing collaborative center focused on partnership and knowledge translation can provide staff nurses with the tools needed for enhanced decision-making and “just-in-time” answers to clinical questions, which result in a savings in time, effort, related financial costs, and negative patient outcomes (Brouwers et al., 2010). The ultimate aims were to advance nursing knowledge, narrow the education-practice-research gap, and supply professional nurses with the resources they need to safely provide patient care.

Nursing needs a multitude of individual and collective voices in order to create, translate, and mobilize the nursing knowledge needed to address the issues of diverse patient populations (Brouwers et al., 2010). Embracing clinical and academic nurses

across the patient care continuum ensures the inclusion of these new voices and profoundly increases the impact of CCIRES on both vulnerable patient populations and vulnerable nursing professionals. A collaborative center to translate and mobilize meaningful knowledge assists in nursing's mission of quality patient care and ensures that patient care is evidence-based (Baumbusch et al., 2008). CCIRES has the potential to translate this mission into reality.

CHAPTER II

THEORETICAL PERSPECTIVES

Nurses have a mandate to deliver high quality care to diverse patient populations not just at the individual level, but also at the unit, family, system, and population level (Bakken, 2006; Clements & Crane, 2006). As a professional community, nursing's social mission is to deliver safe and effective patient care based on the best available scientific evidence, as guided by clinical expertise and the values, preferences, and experiences of the patient (Baumbusch et al., 2008; Goode et al., 2011). In order to meet this mandate and fulfill nursing's core mission, nurses need meaningful knowledge that they can translate into evidence-based patient care (Brouwers et al., 2010; Malloch & Porter-O'Grady, 2006). This chapter will discuss (a) the importance of knowledge for evidence-based nursing care, (b) a theoretical framework to clarify the components needed for the diffusion of this knowledge, (c) a conceptual model that considers the determinants of innovative diffusion, dissemination, and implementation of this knowledge within a healthcare system, and (d) an evidence-based practice model that provides linkage between the theoretical framework and the conceptual model.

Conceptual frameworks and models have the ability to illuminate and magnify the complexities involved in the translation of meaningful knowledge and provide assistance in alternate ways of thinking (Bordage, 2009). Sound theoretical perspectives, coupled with the varied viewpoints of alternate conceptual models, informed the structure and

processes necessary for implementation of the CCIRES innovation within a collaborative setting. The anticipated end products are narrowed education-practice-research gaps that facilitate the creation and delivery of knowledge meaningful to both the nurse and the patient (Mitchell, 2008).

The Shifting Paradigm of Knowledge

Civilization has always depended upon the creation, preservation, access, and mobilization of knowledge (McNeely & Wolverton, 2008). The methods by which oral and written knowledge are handed down from one generation to the next are embedded within the social systems that created the content of that knowledge. Throughout history, technological breakthroughs have reinvented the development, access, and transmission of knowledge. From rolled scrolls to hand written tomes to printed books to the World Wide Web, the creation, organization, and communication of massive amounts of information has challenged humankind (McNeely & Wolverton, 2008)

The innovation of the printed word and book publishing did not put knowledge directly into people's hands (McNeely & Wolverton, 2008). Libraries organized books and provided a process by which people could access information via books and find the meaningful knowledge they sought. Governmentally maintained and supported libraries illustrate that well-designed and organized structures and processes are essential elements to meeting the monumental challenge of ensuring easy presentation and access of information. Thus, robust and sustainable social structures and technology for information and knowledge management must be in place until the next paradigm shift forces a reinvention (McNeely & Wolverton, 2008).

Paradigm Shift: The Internet

The end of the 20th Century and beginning of the 21st Century are a time of just such a technology and social system paradigm shift (McNeely & Wolverton, 2008). The advent of computer systems, the Internet, and the World Wide Web have largely removed the physical and technological obstacles of time and distance for the dissemination of knowledge. Information acquisition and transmission throughout the entire world, which once took weeks and months, now occurs within milliseconds. However, the availability of knowledge does not guarantee people will use it (Dreyfus, 2001). Diverse and accessible but not well organized, the Internet presents an embarrassment of informational riches which often demonstrates that not all information is correct, not all information is of value, and not all information is meaningful. Each person and/or group of people must determine what is useful and what is not. In other words, easily obtained and spreadable knowledge must also be meaningful to the social groups that created the knowledge (Dreyfus, 2001; McNeely & Wolverton, 2008; Sowell, 1996). Two social systems seeking meaningful information and knowledge are nursing and healthcare service organizations (Greenhalgh et al., 2004; Malloch & Porter-O'Grady, 2006; Pravikoff et al., 2005).

Nurses as Knowledge Workers

Knowledge workers either create or harness existing information and knowledge from various sources, then synthesize and integrate that knowledge into the work place (Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007). Nurses are knowledge workers. A primary role of the nurse is to access, identify, gather, appraise, and implement useful knowledge in the clinical setting (Donaldson, 1995). Nurses need relevant information and knowledge not only for safe patient care decision-making, but

also for the conceptualization of clinical problems, evaluation of evidence-based interventions, and the measurement of patient outcomes (Brouwers et al., 2010; Donaldson, 1995; Sowell, 1996). Nurses incorporate research and non-research information and knowledge into their clinical judgments and deliberate decision-making processes in order to understand clinical situations and deliver appropriate nursing care (Goode et al., 2011; Rycroft-Malone, 2010).

Knowledge has been described as both a process and an outcome (Greenhalgh, 2010; Porter-O'Grady & Malloch, 2007). Whatever form it takes, meaningful and innovative knowledge is a power nurses use to truly impact patient outcomes (Porter-O'Grady & Malloch, 2007). CCIRES has the potential to deliver this power to the nurse knowledge worker and positively contribute to patient care and outcomes. Conceptual and theoretical frameworks provide a coherent method of analyzing the complexities involved in the translation of knowledge (Bordage, 2009). The following theoretical framework illustrates the process and outcome components needed to (a) facilitate the spread of innovative information and knowledge throughout a healthcare service organization to the professional nurse and (b) guide the development of an innovative program, CCIRES (Rogers, 2003).

Diffusion of Innovations

Based on the seminal work of E. M. Rogers (2003), Diffusion of Innovations (DoI) provides a description of the components and processes involved in the manner by which users adopt a new technology, technique, or other invention (Rogers, 2003; Starkweather & Kardong-Edgren, 2008). The diffusion and spread of knowledge and innovations is a slow and laborious process for reasons that may have little to do with

technological barriers. Rather, the barriers usually involve the four main elements of the diffusion process, which are an innovation, communication channels, time, and a social system. Thus, diffusion is defined as the process by which an innovation is communicated through specific channels over a period of time among members of a social system. All components must be in synergistic play if DoI is to occur, whether by an individual or an organization. These organizations may be real world based, virtually based, or both (Rogers, 2003).

CCIRES encompassed the four foundational elements of DoI within both a physical and virtual world. Therefore, the DoI description for CCIRES was as follows: “CCIRES (innovation) can be accessed via a dedicated website (communication channel) on a 24/7 basis (time) by the community of professional nurses (social system) seeking to create, translate, mobilize, and/or disseminate knowledge for clinical decision making.” CCIRES resolved many barriers to DoI, as seen by the four aforementioned DoI components. An examination of these components demonstrates the value of CCIRES, both within the KP organization and to the community of nursing.

The Innovation

CCIRES involved an academic-service partnership collaborating on the common goal of creating, translating, diffusing, and disseminating knowledge to professional nurses so they may fulfill their role as knowledge workers (Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007). The CCIRES infrastructure organized knowledge and information within a healthcare institution's physical and virtual world via clearly defined processes. A prolonged research-to-practice time lag may place patients at risk while waiting for innovative solutions to clinical problems to be diffused into pragmatic

reality (Dobbins, Ciliska, Cockerill, Barnsley, & DiCenso, 2002; IOM, 2001). CCIRES represented a knowledge portal for nurses to access and obtain just-in-time knowledge and information for decision-making, thereby shorting the time it takes research to reach the bedside. The innovation, however, was not the technology alone, but rather the overarching concept of CCIRES, as implemented by the academic-service collaborative forming the backbone of CCIRES.

Communication Channels

In the past, innovation could take weeks, months, and years for the diffusion of new and reinvented knowledge to take place, as diffusion involved word-of-mouth via print media, radio and television, and/or face-to-face interactions (McNeely & Wolverton, 2008). Sometimes ideas did not diffuse at all (Rogers, 2003). The advent of the Internet and the development of electronic mail (e-mail), web logs (blogs), chat rooms, text messaging, and voice-over Internet protocols such as Skype and Google Talk, have streamlined the communication process (Rogers, 2003). Some feel that technology denies the essence of true human-human communication (Dreyfus, 2001). Regardless of perception and despite the lightning speed of access and mobilization, information and knowledge must still have meaning and must matter to the user (McNeely & Wolverton, 2008; Mitchell, 2008). A well-organized website with immediate, obvious, and meaningful information invites nurses to stop unfruitful web-based searching, as they have now found the reliable information they were seeking (Cader et al., 2009). CCIRES is part of this revolution in knowledge diffusion and mobilization, as its web-based platform included the following:

- Eight major menu items: Home, Academic-Service Partnership, Education, Integrative Reviews, Tools, Frequently Asked Questions (FAQ), Links, and Contact
- Content appropriate to each menu item or topic, as well as tools and resources relevant to the content
- 24/7 access to repository documents, tools, educational materials, and resources
- E-mail connections to key CCIRES members

Time

The element of time in the DoI involves (a) an individual's decision to adopt or reject the innovation, (b) the rate by which the innovation is adopted, and (c) the integration of the innovation into a system (Rogers, 2003). The element of time has also been cited as a critical component influencing quality patient care (Dobbins et al., 2002; IOM, 2001). The expectation for nurses to do more with less in a shorter amount of time expedites the need for timely access and integration of information and knowledge in the clinical practice environment (Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007; Wakefield, 2001). Access to the CCIRES website facilitates rapid communication with specific individual nurses or groups of nurses and allows timely 24/7 access to a repository of educational and knowledge resources, tools, and evidence-based documents. A user-friendly knowledge portal such as CCIRES allows nurse knowledge workers to have ready access to quality evidence-based information and other types of resources. This portal can assist in the innovation-adoption decision, increase the innovation adoption rate, and accelerate the integration of CCIRES into the KP infrastructure. Thus,

different intersecting constructs of time involving DoI, nursing practice, and quality patient care, inform the innovation of CCIRES.

Social System

Communication channels alone cannot diffuse and disseminate an innovation. A social network contained within a socially bound structure generates the forces necessary to move knowledge through the communications channels. Social systems consist of specific units or subsystems linked together for the purpose of goal achievement and problem solving (Rogers, 2003). Knowledge must be made active and socially relevant by the members of a particular social network, who then mobilize, diffuse, and disseminate the specific information and knowledge they consider vital to other interpersonal networks (Greenhalgh et al., 2004).

Peer interaction in social groups is affected by the interaction between (a) exogenous (contextual) effects, (b) endogenous (influence of peer outcomes) effects, and (c) correlated effects (similar behaviors based on common values or environments) (Bramoulle et al., 2007). These effects cause social systems to become contagious networks and the bidirectional interaction of people within those networks can affect an individual's attitudes and behaviors (Bramoulle et al., 2007; Jaffe, 2010). Social systems such as the discipline of professional nursing set the boundaries that define the work, values, practice, and education of itself and other nursing subsystems (Rodgers, 2005).

All social systems move through several phases of innovation adoption, which consist of the following stages: (Rogers, 2003; Starkweather & Kardong-Edgren, 2008)

- Knowledge: Being aware of the innovation and an understanding of its function
- Persuasion: Forming a positive attitude towards the innovation

- Decision: Committing to the adoption of the innovation
- Implementation: Putting the innovation to practical use
- Confirmation: Achieving positive outcomes to reinforcement the adoption decision

The social system of CCIREs opens up a channel of communication between the distinct nursing subsystems of academia and service, while also providing a link to the greater macro-system of the discipline of nursing by narrowing the gap between research, practice, and education. CCIREs members are responsible for the contagious spread, dissemination, and adoption of knowledge to different social networks such as interdisciplinary health care service organizations (Greenhalgh et al., 2004; Rogers, 2003; Starkweather & Kardong-Edgren, 2008). Other social systems and subsystems must acknowledge and accept CCIREs if the innovation is to truly be adopted by the macro-system representing the community of professional nursing.

The nursing community consists of nurse knowledge workers (Donaldson, 1995). The nursing community must be aware that the innovation of CCIREs exists and must have access to the knowledge created, translated, and stored on the CCIREs website repository. The stored information and knowledge must then be organized and presented in a manner that immediately persuades nurse users to implement the accessed knowledge in their clinical practice settings. As nurse knowledge workers disseminate the knowledge generated by CCIREs, they also diffuse the innovation of CCIREs itself to other social networks. A collaborative academic-service social system is therefore vital for the creation and social structure of CCIREs, as well as for the diffusion of the

innovation of CCIRES and its capabilities to other social networks and communities seeking knowledge for clinical decision-making (Rogers, 2003).

Beyond Diffusion of Innovations: From Theory to the Practice

Various synergistic forces work in concert to breathe life into the Diffusion of Innovations (DoI) process (Greenhalgh et al., 2004; Rogers, 2003; Starkweather & Kardong-Edgren, 2008). Diffusion has been described as being a passive process, while dissemination is recognized as a more active process (Greenhalgh et al., 2004). CCIRES needs both passive diffusion and active dissemination if it is to live and become a sustainable innovation. A practice-based conceptual model outlining both the passive and active determinants of innovative diffusion, dissemination, and implementation within a healthcare system illustrates the complexities involved in the spread of innovative knowledge and programs (Greenhalgh et al., 2004).

A Model of Diffusion in Service Organizations

Although the DoI framework is a useful guide for the underpinnings needed in developing CCIRES, the implementation of this innovative program requires a conceptual model specific to health care service organizations. A conceptual model specific to health care organizations provides magnification of different aspects of the implementation and evaluation of CCIRES (Bordage, 2009; Greenhalgh et al., 2004). The Conceptual Model for Considering the Determinants of Diffusion, Dissemination, and Implementation of Innovations in Health Service Delivery and Organizations is such a model, as illustrated in Figure 2 (Greenhalgh et al., 2004).

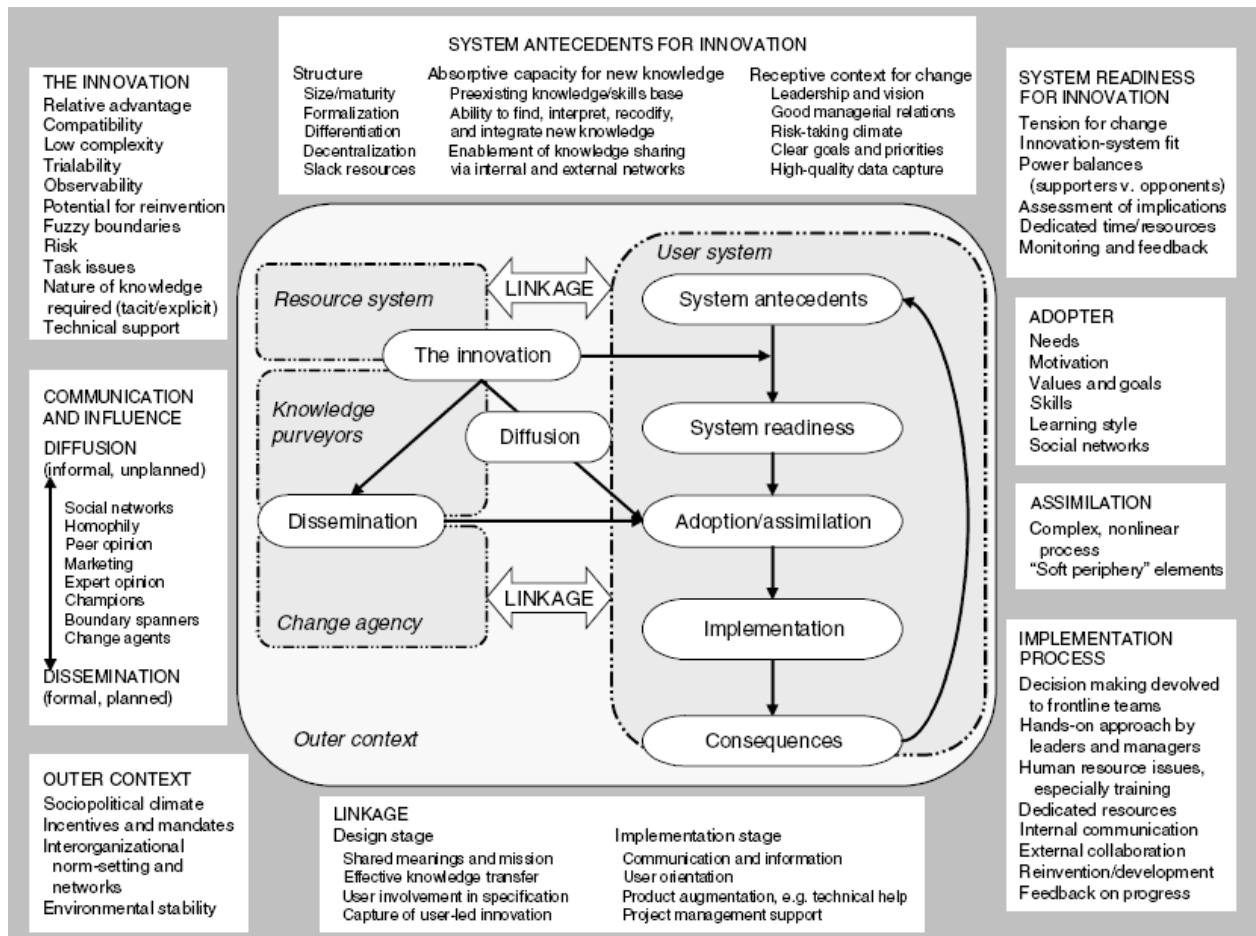


Figure 2. Conceptual Model for Considering the Determinants of Diffusion, Dissemination, and Implementation of Innovations in Health Service Delivery and Organizations. Adapted from "Diffusion Of Innovations in Service Organizations: Systematic Review and Recommendations," by T. Greenhalgh, G. Robert, F. MacFarlane, P. Bate, and O. Kyriakidou, 2004, *The Milbank Quarterly*, 82, p. 15. Copyright 2004. Reprinted with permission from John Wiley and Sons.

Greenhalgh et al. (2004) initially conceived The Model of Diffusion in Service Organizations (MoDSO) as a memory tool to promote the understanding of the critical components and interactions involved in diverse health care service issues. The MoDSO is based upon a rigorous systematic review that examined DoI in service organizations. The extensive review describes both the content and process involved in spreading and sustaining innovations in health service delivery and service organizations (Greenhalgh et

al., 2004). Greenhalgh et al. (2004) used the review's synthesis of empirical and theoretical findings to design an evidence-based conceptual model for DoI in health care service organizations that is both parsimonious and complex.

Model Determinants

The complexities of CCIRES demanded a robust non-prescriptive model able to describe the determinants, and the linkage between these determinants, that must be considered for the design, implementation, and evaluation of a collaborative innovation (Greenhalgh et al., 2004). There are eight major active and passive determinants of the model: (Greenhalgh et al., 2004)

- The Innovation
- Communication and Influence
- Diffusion
- Outer Context
- Linkage
- Adopter
- System Readiness for Innovation
- System Antecedents for Innovation

Key Attributes of MoDSO

There are 11 key attributes of service innovations in health care (See Figure 2) (Greenhalgh et al., 2004). Rogers (2003) initially described five perceived standard attributes of innovations, which are relative advantage, compatibility, complexity, trialability, and observability. Greenhalgh et al. (2004) used recent empirical researching findings to augment Rogers' foundational attributes with the following six additional

attributes of (a) potential for reinvention, (b) fuzzy boundaries, (c) risk, (d) task issues, (e) natures of required knowledge, and (f) technical support. It must be noted that innovation attributes are not stable and that the mere presence of these attributes does not guarantee successful implementation and sustainability of an innovation such as CCIREs. Rather, it is the interaction of the innovation with the other eight major determinants, particularly the targeted adopter, and a unique social system context, that drives the diffusion process (Greenhalgh et al., 2004; Rogers, 2003). Conceptual models such as the MoDSO illuminate and magnify attributes seen as important to the innovation, while ignoring attributes considered unimportant (Bordage, 2009). This proposal will specifically address the following key attributes of service innovations in health care, as related to the CCIREs innovation.

Relative advantage. Innovations perceived as having obvious economic value, social status, or other types of advantages are more readily adopted (Greenhalgh et al., 2004; Rogers, 2003). The CCIREs academic-service partnership provides a model for improving strained academic-service relationships, while its resulting technology demonstrates clear advantages over the primitive instruments and tedious processes related to knowledge creation, translation, mobilization, and dissemination.

Compatibility. Innovations consistent with the adopters' values, professional norms, past experiences, and perceived needs in the workplace are more easily adopted (Greenhalgh et al., 2004; Rogers, 2003). Nurse adopters might not even know they have a need for a practice innovation until they become aware of the innovation (Rogers, 2003). Evidence-based nursing practice requires current evidence in order to structure a safe practice setting and deliver evidence-based care (Goode et al., 2011). The creation

and dissemination of CCIRES provides nurse knowledge workers with the information and knowledge they seek to deliver high quality patient care and create a culture of patient safety (Baumbusch et al., 2008; Goode et al., 2011; Porter-O'Grady & Malloch, 2007).

Low complexity. Organizational settings having few response barriers find that innovations which are incrementally implemented in small, manageable components are more easily assimilated (Greenhalgh et al., 2004; Rogers, 2003). The CCIRES innovation is complex; the academic-service partnership relationships and resulting website repository and resources require sophisticated technology and a rigorous infrastructure. However, the perceived usability of CCIRES by the nurse adopters, coupled with compatibility and relative advantage, has the potential to overcome the complexity of the innovation (Greenhalgh et al., 2004; Rogers, 2003). The key to this attribute is ensuring that CCIRES is user friendly to the nurse knowledge worker (Rogers, 2003).

Trialability. Experimentation of innovations by the intended users increases the rate of adoption and assimilation within an organization (Greenhalgh et al., 2004; Rogers, 2003). Nurse end users acting as early adopters will use and evaluate the CCIRES website and its related technology. The CCIRES members conducted a separate evaluation of the academic-service partnership as a whole. Trialability of CCIRES resulted in a reinvention of some structures, processes, and tools central to the innovation (Rogers, 2003). Trialability is closely related to reinvention and fuzzy boundaries (Greenhalgh et al., 2004).

Observability. Visible and easily communicated benefits of an innovation assist in its adoption by end users (Greenhalgh et al., 2004; Rogers, 2003). Tying health care and professional nursing initiatives to CCIRES' ability to deliver just-in-time information and knowledge increases the likelihood of the innovation's assimilation by both the nurse knowledge worker and service organizations (Goode et al., 2011; Greenhalgh et al., 2004; Rogers, 2003).

Potential for reinvention. The more easily an innovation can be changed, refined, adapted, and/or modified to meet specific end user needs, the more readily it will be adopted (Greenhalgh et al., 2004; Rogers, 2003). Some inventors regard reinvention a distortion of their original findings and purposely structure new ideas as "re-invention proof" as a means of quality control. Adopters, however, view reinvention as beneficial and necessary (Rogers, 2003). Spontaneous innovations that can be reinvented are seen as "good ideas" and are spread more informally through decentralized, horizontal social networks (Greenhalgh et al., 2004). CCIRES digitally based tools design include the ability for these tools to be adapted and reinvented. Reinvented tools allow CCIRES members and nurse end users to meet their specific professional needs, thus improving the rate of diffusion and dissemination of both the concept and the resources of CCIRES.

Fuzzy boundaries. Researchers describe complex innovations such as CCIRES are seen as having a "hard core" of critical elements surrounded by a "soft periphery" or fuzzy boundary (Greenhalgh et al., 2004). This nebulous boundary represents the organizational infrastructure and systems needed for the innovation implementation process. The adaptiveness of the soft periphery is considered a key attribute of the innovation and is often linked to reinvention. Fuzzy boundaries can indicate system

readiness via a good innovation-system fit (Greenhalgh et al., 2004). The CCIRES innovation has the aforementioned ability to be reinvented and redesigned to fit the KP service organization's needs, as well as the needs of the academic-service partnership and the nurse end user.

Risk. Innovative programs are inherently risky (Kirshchling & Erickson, 2010; Sowell, 1996). If end users perceive the innovation as being risky and are unable to discern specific outcomes, they will be less likely to adopt the innovation (Greenhalgh et al., 2004). The better the balance between the risks and benefits within the organizational power base, the more easily the innovation will be adopted (Greenhalgh et al., 2004). Those who have participated in successful academic-service partnerships are able to understand and discern the risks and benefits of innovative ideas (De Geest et al., 2010; Kirshchling & Erickson, 2010). CCIRES members already had a good understanding of the risks involved in implementing this collaborative partnership and its resulting technology, tools, and resources (Kirshchling & Erickson, 2010; Sowell, 1996). The members of CCIRES realized that the final formative and summative program evaluation provided "lessons learned" for further innovative programs seeking to establish collaborative partnerships.

Task issues. Innovations that are relevant to the end users' work and improved task performance are more easily adopted. Interventions linked to the workability, usability, and feasibility of the innovation enhances the process of successful assimilation by adopters (Greenhalgh et al., 2004). Evidence is foundational for the art and the science of professional nursing practice and is needed for the work of nursing (Donaldson, 1995; Goode, 2000; Goode et al., 2011). Demystifying the integrative

review process is possible via the CCIRES innovation. The innovation and its resulting tools and resources can potentially impact the nurse knowledge workers' ability to gather, evaluate, and translate just-in-time information and knowledge in order to deliver evidence-based patient care (Brouwers et al., 2010; Donaldson, 1995).

Nature of knowledge required. Tacit knowledge is hidden or local knowledge that can be learned by bringing the right people together to share specific knowledge and information or transferred by moving people within or between organizations (Berry, 2011; Sanchez, 2004). People can disseminate explicit knowledge and information via documents, images, and best practices by using various communication technologies learned through structured scientific processes. The personal nature of tacit knowledge is inherently difficult to extract, as compared to the less complex processes of articulating, codifying, and transferring explicit knowledge (Sanchez, 2004). If the knowledge needed to use CCIRES can be codified and transferred from one context to the next, it will be adopted more readily by CCIRES members and nurse knowledge users (Greenhalgh et al., 2004). This critical attribute was incorporated into the structure and processes of CCIRES during the initial design phase.

Technical support. If an innovation is equipped with technological customization, training, and assistance, it will be more easily adopted by end users (Greenhalgh et al., 2004). CCIRES members utilized the services of a software developer to design the website and proposed consulting with information technology experts to assist in the creation of innovative tools and resources needed to support the work of conducting digitally based integrative reviews and evidence summaries.

Training presentations, a frequently asked questions (FAQs) menu item, and the ability to e-mail feedback to CCIRES members are designed to enhance the adoption process.

Linking Theoretical Perspectives to Clinical Practice

Health care organizations and collaborative partnerships seek frameworks to transform the patient care environment. The construction of these frameworks links philosophical perspectives and abstract concepts to the real world of clinical practice. Evidence-based practice (EBP) models provide this critical linkage by ensuring nursing practice is based upon the easy access of meaningful knowledge and assisting partnerships such as CCIRES in creating a culture of EBP (Goode et al., 2011). The University of Colorado Hospital (UHC) recently developed an EBP model that featured a patient-centered focus and emphasized four concepts considered vital to establishing an evidence-based clinical environment (See Figure 3, page 41). This newly published conceptual model is congruent with the KP Nursing Model, which is also patient-centered, and thus promotes a visible alignment between KP values, EBP ideals, and CCIRES's goal of diffusion and dissemination of translatable knowledge for clinical decision-making (Goode et al., 2011). This innovative model is the Colorado Patient-Centered Interprofessional EBP Model, also known as the Colorado Model (Goode et al., 2011).



Figure 3. The Colorado Patient-Centered Interprofessional Evidence-Based Practice Model. Adapted from, “The Colorado Patient-Centered Evidence-Based Practice Model: A Framework for Transformation,” by C. Goode, R. Fink, M. Krugman, K. Oman, and L. Traditnik, 2011. *Worldviews on Evidence-Based Nursing*, 8, p. 4. Copyright 2011 by University of Colorado Hospital. Reprinted with permission from John Wiley and Sons.

Using the Colorado Model to Embed Evidence in Practice

Four key attributes support the Colorado Model’s framework: organizational support, leadership, mentorship, and facilitation (Goode et al., 2011). Each of the four attributes resonates with the individual goals of CCIRES. Organizational support, found at the bottom of the model, plays a more significant role than the other three concepts and thus provides the model’s conceptual foundation (Figure 3). The abundant use of resources, the highlighting of EBP-related outcomes, and the promotion of an EBP culture demonstrate tangible organizational support. Leaders dedicated to a culture of

EBP ensure that essential infrastructure and resources are available for interprofessional staff and act as role models for evidence-based clinical decision-making. Mentorship extends the concept of role modeling by guiding professional staff in the gathering, appraisal, and implementation of the best available evidence. The attribute of facilitation crowns the model and ensures an easily navigated EBP process through tactics such as engaging stakeholders and assistance with EBP project completion and dissemination. These four interlinked concepts frame the Colorado model and support the remaining components (Goode et al., 2011).

Current EBP models incorporate the use of research and nonresearch evidence (Goode et al., 2011). Nonresearch evidence supplements current research evidence if it is lacking or does not fully answer the clinical question. The Colorado Model has multiple components that specify nonresearch evidence sources and include: (Goode et al., 2011)

- Pathophysiology
- Retrospective or concurrent medical record review
- Quality improvement and risk data
- International, national, and local standards
- Infection control data
- Clinical expertise
- Benchmarking data
- Cost-effectiveness analysis

Using the Colorado Model to Diffuse and Disseminate

The passive nature of DoI, coupled with the active complexities of the MoDSO model, has the potential to prevent the spread of innovation (Greenhalgh et al., 2004).

The pragmatic simplicity of the Colorado Model provided a method of embedding innovative EBP within the organizational infrastructure and yet allowed room for DoI processes and MoDSO attributes to play a role in the design, implementation, evaluation, and diffusion of CCIREs (Goode et al., 2011). The Colorado Model has ties to both the DoI and MoDSO conceptual frameworks, as the aforementioned 11 key attributes of service innovations in health care and their effects also impact nurses when they ask, acquire, appraise, apply, and assess evidence (Goode et al., 2011; Greenhalgh et al., 2004; Rogers, 2003). Used in totality, the intricate and multifaceted interconnections between DoI, MoDSO, and the Colorado Model provided essential guidance for the CCIREs innovation.

Summary & Conclusions: Using Multiple Frameworks to Inform Practice

Nursing's mandate and social mission demands that nurses deliver evidence-based patient care across a complex patient care continuum, in various health care environments, and to diverse patient populations (Bakken, 2006; Clements & Crane, 2006; Goode et al., 2011). To meet these multiple demands, nurse knowledge workers seeking to deliver high quality patient care must have timely access to knowledge and information that has translatable meaning for both the patient and the nurse (Brouwers et al., 2010; Malloch & Porter-O'Grady, 2006; Mitchell, 2008; Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007; Sowell, 1996). The 21st Century has seen a paradigm shift of knowledge acquisition and transmission, as well as the contextual social structures and processes informing them. This paradigm shift has led to innovative methods of accessing, appraising, translating, mobilizing, and disseminating knowledge and information (McNeely & Wolverson, 2008; Sowell, 1996).

CCIRES is capable of straddling the seismic paradigm divide between the 20th and 21st Century's reinvention of knowledge. However, innovations such as CCIRES need theoretical frameworks and conceptual models to identify, illuminate, magnify, and describe the modern structures and processes critical to the diffusion and dissemination of innovative knowledge and information (Bordage, 2009; Goode et al., 2011; Greenhalgh et al., 2004; Rogers, 2003; Titler, 2007). The theoretical framework of DoI was integral to understanding how nurse users could potentially adopt the CCIRES innovation and its resulting new technology, resources, and tools, as described by the four foundational DoI elements of innovation, communication channels, time, and social system (Rogers, 2003; Titler, 2007).

Yet the DoI framework was not enough to ensure the successful implementation of CCIRES. The theoretical perspectives of DoI, coupled within the MoDSO conceptual model and the Colorado Model, informed the structures and processes necessary for the implementation of the CCIRES innovation within a collaborative setting. However, the simplicity of the Colorado Model provided the critical linkage between the theoretical framework of DoI and the conceptual constructs of the MoDSO model and ensured that EBP was embedded in the CCIRES environment (Goode et al., 2011). The determinants and key attributes contained within the MoDSO model were essential for moving the CCIRES innovation past the passive process of “let it happen” and steer it towards the active process of “help it happen” and “make it happen” (Greenhalgh et al., 2004; Mitchell, 2008). Both the Colorado Model and the MoDSO highlighted the active and dynamic processes of diffusion and dissemination that involved the interaction of end users, power brokers, and social systems contained within a supportive health care

service organization, as facilitated by leaders and mentors (Goode et al., 2011; Greenhalgh et al., 2004; Mitchell, 2008). A deep understanding of the linkages between MoDSO's determinants and key attributes, as aligned with the Colorado Model's pragmatic EBP framework, ensures the preliminary integration of CCIREs within the KP organizational infrastructure and processes.

Theoretical frameworks and conceptual models provided the “backbone” for the CCIREs innovation. The use of multiple frameworks and models vividly conceptualized the complex problems associated with CCIREs and suggested viable solutions (Bordage, 2009; Wilkinson, Kent, Hutchinson, & Harrison, 2011). However, theoretical concepts and abstract models are dead phrases and static diagrams waiting for the transformational power of people to illuminate them, magnify them, and bring them to life. Individual nurses coming together to partner via an academic-service collaborative provided the transformational power CCIREs needed to reach its full potential as an innovation. The creation of this new social network within the meta-network of professional nursing was a logical strategy for the design and implementation of the CCIREs innovation (Mitchell, 2008).

The collaborative goal of linking education to practice, practice to research, and research back to education restores the education-practice-research triad and facilitates the creation and delivery of meaningful knowledge (Mitchell, 2008; Titler, 2007). The academic-service partnership continues to form the synergistic core of CCIREs and unites the “ideal world” of academia with the “practical world” of service. Greater than the sum of its parts, CCIREs synthesizes a new whole as it reinvents nursing knowledge

that has meaning for the two people who seek it and need it most – the nurse and the patient (Mitchell, 2008).

CHAPTER III

REVIEW OF THE LITERATURE

Nursing has been defined as being health care itself (Ashley, 1976). To maintain this definition, nurses must rapidly move research results into clinical reality in order to create a safe patient environment, promote evidence-based patient care, and truly impact patient outcomes (Mitchell, 2004). The integration of nursing research, education, and practice demands a knowledge translation approach (Mitchell, 2008). Twenty-first century nursing professionals increasingly use innovative partnerships within nontraditional environments to obtain, translate, and disseminate knowledge (Cader et al., 2009; Tsai & Chai, 2005). A collaborative center for integrative reviews and evidence summary (CCIRES) was a novel strategy to advance the state of the art and the science of nursing knowledge and narrow the education-practice-research gap. Additionally, CCIRES creates an environment that provides linkage across the academic-to-service and research-to-practice divides via an innovative nursing collaborative partnership. The partnership's common goal centered upon the creation, translation, diffusion, and dissemination of knowledge to professional nurses so they may fulfill their role as knowledge workers and deliver evidence-based patient care (Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007).

The specific purpose of this project was to create a platform for CCIRES within the Kaiser Permanente (KP) Southern California (SCAL) infrastructure, implement CCIRES via the use of that infrastructure, and evaluate the implementation, structures,

processes, and usability of CCIREs via the triangulation of formative and summative evaluative data. An academic-service partnership committed to the CCIREs program was created in order to achieve the program's ambitious goals. However, a deep understanding of the literature was required in order to accomplish the three complex purposes of CCIREs and connect the work of CCIREs to the current literature (Bordage, 2009). This chapter will discuss the major topics of (a) the history of the education-practice-research gap, (b) the use of translational research to support evidence-based nursing practice, (c) social networks and technology, (d) academic-service partnerships, and (e) measurement instruments needed to evaluate the structures, processes, and usability of academic-service partnerships.

This chapter will systematically and critically examine the past knowledge and commentary on these literature topics. While many experts have studied the education-practice-research gap, few have attempted to create a practical means for bridging this gap. CCIREs seeks to use past knowledge as a springboard to synthesize a new gestalt that is greater than the sum of the literature components. Thus, CCIREs could potentially take on a life of its own, be reinvented by nurse end users, and become extensible beyond its original boundaries.

History of the Systematic Divide

The beginning of the education-practice-research divide can be found in the foundations of North American nursing education and training (Berry, 2011; Judd, Sitzman, & Davis, 2010). The first post Civil War nursing schools opened in Boston, New York, and New Haven (Judd et al., 2010). Formal hospital nursing training programs were initially supervised and directed by medical physicians (Ashley, 1976;

Malloch & Porter-O'Grady, 2006). Soon, the undesirable nature of nursing shifted from the work of a drunken Dickensian hag to a more respectable view of nursing (Kalisch & Kalisch, 1983). This shift featured the image of a loyal and submissive woman whose selfless dedication to humanitarian service allowed a trade of her labors for nursing education and knowledge (Benner, Sutphen, Leonard, & Day, 2010; D'Antonio, 2010; Judd et al., 2010; Malloch & Porter-O'Grady, 2006; Reverby, 1987). The apprenticeship arrangement between nursing service and hospitals not only solved the problem of financial support for nursing schools, but also provided a publicly popular means of incorporating nursing care with inexpensive nursing staff within the hospital environment (Ashley, 1976; Berry, 2011; Reverby, 1987). By 1900, schools of nursing were either integrated into affiliating hospitals or created by hospital boards (Ashley, 1976; Reverby, 1987).

The student nurse was the workhorse of the hospital system (Reverby, 1987). The demands of the hospital's organizational, business, and patient care needs overrode the educational needs of the student nurse and the emerging nursing profession (Ashley, 1976; Benner et al., 2010; Berry, 2011; Reverby, 1987). Based upon ritual and tradition, nursing education was in reality nursing training, with exploited students expected to care for patients for the societal good and trained to work for the smooth functioning of the hospital machine (Ashley, 1976; D'Antonio, 2010; Reverby, 1987). It soon became apparent that the promotion of scientific nursing knowledge could not take place within a prescriptive and medically oriented hospital setting (Ashley, 1976; Berry, 2011; Judd et al., 2010).

By the early 1900s, the nursing profession initiated the move of nursing education from hospitals to academic institutions (Ashley, 1976; Judd et al., 2010). The nursing faculty based within these colleges and universities were prepared to instill not only the practice of nursing, but also nursing theory and nursing science, to student nurses seeking freedom from the apprenticeship model and the obligation to care (Ashley, 1976; Berry, 2011; Judd et al., 2010; Malloch & Porter-O'Grady, 2006; Reverby, 1987). The renewed focus of nursing education was on scientific knowledge and structured learning, with a reduced emphasis on unpaid work and hospital service (Berry, 2011; Judd et al., 2010). By the mid-1930s, in the midst of the Great Depression, the traditional system of staffing hospitals with student nurses imploded (Reverby, 1987). The first cracks between nursing education and nursing service had appeared.

The Academic-Service Gap

Many nurse historians consider the abandonment of hospital-based nursing education as the beginning of the modern professional nurse (Reverby, 1987). Other nurse experts believe that separation of the practice environment from the educational environment was the beginning of fragmented nursing care and the loss of the community of nursing. The profound changes in the professional nursing education system led to the current academic-to-service gap (Dean, 1995; Thompson et al., 2010). The cultural and organizational differences between the “ideal world” of academia and the “practical world” of service have resulted in the idealistic scholar being labeled as obtuse and unrealistic, with the pragmatic clinician seen as overwhelmed by reality’s day-to-day events (Horns et al., 2007). Both the voice of education and the voice of service inform the nursing conversation surrounding the academic-service gap.

The voice of nursing education. The current nursing educational system successfully forms a new nurse well versed in nursing theory, professional identity, and ethical reasoning (Benner et al., 2010). However, many nursing academics express concern that the practice environment is unwilling to incorporate and adapt to the demands of a modern nursing educational curriculum (Benner et al., 2010). Nursing academic leaders believe that the education of nurses is a shared professional responsibility belonging to all nurses, regardless of setting and role (Benner et al., 2010; Berry, 2011). Although nursing practice leaders insist that well prepared nurses are critical to safe patient care, practice institutions are often reluctant to share the clinical experiences and human resources necessary to ensure that new nurses and experienced nurses are properly educated (Berry, 2011). Thus, the expert knowledge of academia remains in the university setting and local practice knowledge remains in the clinical setting, with a split between the “town” of the local nursing community and the “gown” of the university nursing academics (Berry, 2011).

The voice of nursing practice. Many critics believe that nursing education housed within an isolated collegiate setting has resulted in nursing students who are ill prepared for clinical reality, as illustrated by a lack of clinical skill development and overemphasis on nursing theory (Ashley, 1976; Berry, 2011). Nursing service leaders have expressed concern that nursing academia has not met the challenges of 21st Century nursing practice, technology, and generational needs (Benner et al., 2010). These same nursing leaders in service have insisted upon traditional service-driven programs that emphasize classroom instruction and supervised clinical experiences within clinical practice settings (Ashley, 1976; Benner et al., 2010). In other words, nursing service has

seen the practice environment as the “real” workplace for learning the work of nursing, while the academic environment has represented an unrealistic “ivory tower” environment ill prepared to educate nurses for today’s health care realities (Ashley, 1976; Benner et al., 2010; Berry, 2011). The essential tensions between nursing academia and nursing practice have not eased for decades; instead, these tensions provoked the adverse divide among education, practice, and research (Berry, 2011; Dean, 1995; Judd et al., 2010; Thompson et al., 2010)

The Education-Practice-Research Gap

The split of the academic setting from the practice setting emphasized the separation of nursing education and nursing practice (Berry, 2011; Judd et al., 2010). The cracks in the modern academic-to-service gap mirror the research-to-practice gap (Berry, 2011; Conklin, Hallsworth, Hatzianandreu, & Grant, 2008; Dean, 1995; Judd et al., 2010; Thompson et al., 2010). Health care organizations have experienced this gap on a regular basis; rarely have nurses in the practice environment sought academic consultation to answer researchable clinical questions occurring in the practice setting or to partner in the generation of new knowledge (Berry, 2011; Judd et al., 2010; Pentland et al., 2011). Instead, nurses have relied upon professional colleagues and peers or the World Wide Web for just-in-time answers to their clinical questions (Berry, 2011; Pravikoff et al., 2005). Nurses might have reduced this reliance upon these possibly unreliable sources if they had ready access to evidence-based knowledge; however, the lack of computer access, poor database search skills, and time barriers have been cited previously as barriers for access to evidence (Malloch & Porter-O’Grady, 2006; Pentland et al., 2011; Pravikoff et al., 2005).

Narrowing the education-practice-research gap. Regardless of the aforementioned barriers, most nurses have not been prepared for the critical appraisal of research and other types of evidence to determine its appropriateness for practice and patient care (Armolda et al., 2009; Gale & Schaffer, 2009; Jones, 2010). Combined academic-service outreach have mentored new nurses and experienced staff nurses alike in the research process, evidence appraisal, and research utilization in an effort to narrow the deep divide between research and practice (Byrne & Keefe, 2001; Kirshchling & Erickson, 2010; Pipe, Cisar, Caruso, & Wellik, 2008). Experts have observed that active communication channels, flexible formats, informal electronic networks, and knowledge brokers facilitated the transfer of knowledge and narrowed certain education-practice-research gaps (Conklin et al., 2008; Greenhalgh et al., 2004; Pentland et al., 2011). However, methods for measuring the transfer of research and other types of evidence into practice have remained elusive (Dobbins et al., 2002).

Effective use of knowledge. Humans are the engine that drive research into practice and ensures effective use of knowledge (Conklin et al., 2008). Research-to-practice time lags have been cited as having an adverse impact on patient care and patient outcomes while organizations, healthcare providers, and patients wait for knowledge and technology to be translated and implemented into practice (Dobbins et al., 2002; IOM, 2001). Scholars have emphasized combining the technical aspects and the human social aspects of knowledge generation and dissemination to reduce this time lag and increase the effective use of knowledge (Conklin et al., 2008; Greenhalgh et al., 2004; McNeely & Wolverton, 2008; Pentland et al., 2011; Rogers, 2003). Positive attitudes toward research have increased the likelihood that nurses implement research-related findings, over and

above educational preparation (Omery & Williams, 1999). Nurses of all educational backgrounds, with the proper mentoring and exposure to positive research experiences, seem capable of participating in the research process (Byrne & Keefe, 2001; Kirshchling & Erickson, 2010; Munroe, Duffy, & Fisher, 2008; Pipe et al., 2008). The involvement of nurses in scholarly research activities at the practice level strengthens the infrastructure needed to bridge the gap between research and practice (Conklin et al., 2008; Munroe et al., 2008; Pentland et al., 2011). The translation of research and other types of evidence is one such scholarly activity that promotes the effective use of meaningful knowledge by nurses (Conklin et al., 2008; Pentland et al., 2011).

Translating Knowledge and Research in Nursing

The development and translation of knowledge is complex (Berry, 2011). Many scholars believe that traditional quantitative empirical science is the father of knowledge, with the generation and translation of scientific knowledge proceeding in a logical unidirectional linear flow to impact those who most in need of it (Baumbusch et al., 2008; Powers, 2011). Others believe that knowledge can also be generated from nontraditional empirical sources involving qualitative, personal, professional, ethical, historical, and sociopolitical ways of knowing, and include values and preferences of both the patient and the practitioner (Cloutier et al., 2007; Goode et al., 2011; Profetto-McGrath, Negrin, Hugo, & Bulmer-Smith, 2010). While some see knowledge as the final product produced by a linear data-analysis-information-synthesis continuum, others believe that knowledge is a multidimensional and multilayered process involving the iterative interaction of human judgment and critical thinking (Greenhalgh, 2010; Levine, 2007; Porter-O'Grady & Malloch, 2007; Rycroft-Malone, 2007; Scott et al., 2010).

The knowledge debate spills over into the definition of knowledge, how it differs from data, information, evidence, and experience, and what form it takes (individual knowledge versus collective knowledge) (Greenhalgh, 2010). Some regard knowledge as a type of concrete “truth” (Polit & Beck, 2008), as seen in first generation knowledge (primary research studies), second generation knowledge (meta-analyses and systematic reviews), and third generation knowledge (tools/products such as decision aids and educational modules) (Brouwers et al., 2010). Others believe knowledge is not an end to itself, but rather a dynamic and fluid judgment capacity process embedded within social context (Greenhalgh, 2010; Porter-O'Grady & Malloch, 2007). Unifying both definitions frames knowledge as a decision making process that involves (a) who is driving the process (individuals or collective bodies), (b) determining the nature of knowledge, (c) thinking about knowledge, and (d) deciding how to use knowledge (Greenhalgh, 2010; Levine, 2007; Powers, 2011; Sowell, 1996). Regardless of its origin, definition, and form, narrowing the education-practice-research gap via the translation and delivery of meaningful knowledge is critical for the day-to-day practice of professional nurses (Baumbusch et al., 2008; Mitchell, 2008).

Knowledge Translation

Language is important in determining what knowledge translation means. Scholars and professional alike have used the terms “translational research,” “translation research,” “knowledge translation,” and “knowledge transfer, dissemination, diffusion, and implementation” interchangeably for years (Kerner, 2006). Some scholars have defined knowledge translation as the interaction between the potential knowledge users (policy makers, decision makers, and researchers), with well-timed responses by

researchers to the users' identified knowledge needs (Baumbusch et al., 2008). This definition supports the notion of a "knowledge-to-action" cycle and knowledge funnel activities; after knowledge creation, knowledge moves through a refinement process where it takes on unique meaning and usefulness for the nurse knowledge worker. In other words, users translate generic knowledge into meaningful knowledge and transform that knowledge into clinical reality (Brouwers et al., 2010; Porter-O'Grady, 2003). The efficacy of the translation process either widens or narrows the education-practice-research gap, also called the discovery-delivery gap (Baumbusch et al., 2008; Kerner, 2006). A need exists for common language and common understandings between academic researchers and healthcare professionals concerning not just knowledge translation, but also translational research (Kerner, 2006).

Translational Research

As a "bench-to-bedside" patient-centered approach for moving scientific discoveries to the clinical environment to improve patient care, healthcare professions have become actively involved in the interpretation of various types of knowledge (Kitson, 2009; Kline, 2007). Although several entities have crafted multiple definitions for translational research over the years, few of them moved past citing examples as the basis for explaining this complex concept (Graham & Tetroe, 2008; Nunes, Carroll, & Bickel, 2002). Recently, nursing has begun to develop a unique view of translational research that incorporates scientific investigation, evidence-based practice (EBP), and the testing of intervention effects (Chesla, 2008). In 2008, the KP SCAL Regional Nursing Research Program constructed a definitive definition that reaffirms nursing's unique view and states that translational research is: "A systematic investigation that has as its purpose

the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008).

The aforementioned KP definition illustrates that the translation of research has taken many forms. The most common forms have been research utilization (RU) and evidence-based nursing practice (EBP) (Goode et al., 2011; Polit & Beck, 2008; Titler et al., 2001). RU’s starting point of research emphasizes the translation of empirically generated new knowledge into clinical practice. On the other hand, the broader concept of EBP begins with a specific clinical question and integrates research findings with other sources of evidence in order to personalize the evidence for specific patient populations and/or needs (Polit & Beck, 2008). Regrettably, many healthcare professionals use these two concepts interchangeably. Although these are areas of overlap, RU and EBP have been, and remain, distinctly different (Olade, 2004). The similarities and contrasts between RU and EBP require an understanding of the development of nursing research against the backdrop of nursing history (Goode et al., 2011; Polit & Beck, 2008; Titler et al., 2001).

Using Knowledge and Research in Practice

RU in nursing has its roots in Nightingale’s use of statistical data to altering practices associated with high mortality rates (Rubenfeld & Scheffer, 2010; Titler et al., 2001). Florence Nightingale was the first nurse to gather, analyze, and use evidence to alter current healthcare practice, seen by her use of mortality rates to demonstrate how modern nursing efforts reduced deaths amongst soldiers in the Crimean War (Rubenfeld & Scheffer, 2010). Despite Nightingale’s and other nursing leaders’ efforts, little linkage

was established between the conduct of research and the use of research evidence in nursing practice during most of the 20th Century (Titler et al., 2001). However, three key nursing research studies in the 1970s and 1980s provided the framework to bridge the education-practice-research gap and served as the critical underpinnings for RU and EBP (Goode et al., 2011). These seminal research studies, known as Western Interstate Commission for Higher Education (WICHE), Conduct and Utilization of Research in Nursing (CURN), and Nursing Child Assessment Satellite Training (NCAST), were transformational in creating the structures, tools, and processes necessary for work reaching into the 21st Century (Goode et al., 2011; Olade, 2004; Polit & Beck, 2008; Titler et al., 2001).

Bridging the Education-Practice-Research Gap

The WICHE project broke ground as the first federally funded RU study. The key study component involved a clinician-researcher dyad to plan and develop a research-based protocol. The WICHE study lasted from 1975 to 1997 and demonstrated the complexities these two nurses faced as they attempted to implement practice changes in an organizational culture (Beyea & Nicoll, 1997; Goode et al., 2011; Krueger, 1978; Olade, 2004). The 1975 CURN study was the second federally supported study on RU. From 1975 to 1981, CURN focused on the design and testing of ten research-based protocols; the study's results underscored the importance of dedicated nursing leaders and organizational context in changing clinical practice (Beyea & Nicoll, 1997; Goode et al., 2011; Horsley, Crane, & Bingle, 1978; Olade, 2004; Polit & Beck, 2008). The final study, NCAST, lasted from 1976 to 1985 and sought to teach research-based strategies for nurse-mother-child interaction and assessment of infant behavior/states within an

acute care environment (Beyea & Nicoll, 1997; Goode et al., 2011). Thousands of health care providers worldwide have been taught NCAST techniques; training continues to this day (Goode et al., 2011).

Findings from the aforementioned RU studies illustrated that RU was composed of a multitude of factors, which encompassed the following: (Goode et al., 2011; Titler et al., 2001; Titler et al., 2007)

- Dissemination of research-based scientific knowledge
- Study critiques
- Study synthesis
- Applicability of findings for clinical practice
- Research-based guidelines and protocols
- Evaluation of clinical practice changes
- Organizational context
- Individual versus organizational and system factors influencing RU

These three nursing RU studies not only triggered a national movement for funding within the United States, but also highlighted the need for grounding nursing practice on the science of research in order to provide safe patient care. As a result, nursing utilization and EBP models and methods began to emerge as a means of providing a framework for the translation and dissemination of research knowledge meaningful to modern nursing practice (Beyea & Nicoll, 1997; Goode et al., 2011).

Although RU and EBP efforts may have differed in their target populations, structures, processes, and specific outcomes, their goals remained the same – to give professional nurses a comprehensive method of successfully utilizing research in the clinical practice

setting as they seek to provide quality patient care (Beyea & Nicoll, 1997; Goode et al., 2011). A review of the history of RU and EBP provides the critical background needed to understand the complexities involved in moving research from the bench to the bedside and beyond.

Research utilization. In 1976, Stetler and Marram developed and published the first United States-based RU project as they attempted to teach students how to move research results into practice. Their work proposed critical thinking as a central focus for prescriptive healthcare providers who deliberately used research and other evidence to drive their nursing practice and patient care (Goode et al., 2011; Stetler & Marram, 1976). Other research utilization projects soon followed in the 1970s, 1980s, and 1990s, which produced the following models: (Beyea & Nicoll, 1997; Goode et al., 2011)

- Dracup/Breu Model (1977)
- Goode Research Utilization Model (1987)
- Quality Assurance Model Using Research (1987)
- Synergy Model (1989)
- University of North Carolina Model (1989)
- Stetler Model (1994)
- Iowa Model of Research in Practice (1994)
- Ottawa Model of Research Use (1998)
- Promoting Action on Research Implementation in Health Services (PARIHS) (1998)

The end of the 20th Century and beginning of the 21st Century saw a global focus on the use of scientific evidence in practice (Olade, 2004). RU captured not only

research evidence, but also findings from non-RCT quantitative studies and qualitative studies (Polit & Beck, 2008; Titler et al., 2001). These key features led to the integration of RU within the nursing profession and helped pave the way for the EBP movement. However, RU was just one developmental point along the EBP continuum. A critical factor necessary for the complete crystallization of EBP was healthcare quality improvement (Malloch & Porter-O'Grady, 2006; Polit & Beck, 2008).

Quality improvement. Another precursor to EBP was the quality movement (Malloch & Porter-O'Grady, 2006). Appearing in Japan, then the US, and followed by Europe, post-World War II business models used the initiatives of first Total Quality Improvement (TQI) and then Continuous Quality Improvement (CQI) to inductively improve business service processes (Malloch & Porter-O'Grady, 2006). The quality improvement (QI) movement of the 1980s, as exemplified by Donabedian, emphasized the combined and interrelated elements of structure, process, and outcomes as being key to quality patient care (Donabedian, 2003; Malloch & Porter-O'Grady, 2006). Health care QI programs sought to combine improvement in average performance with reduced process variations as a means of improving outcomes (Kelly, 2007).

Healthcare leaders promoted the use of non-research QI data as a type of evidence upon which to build and compare best practices through the technique of benchmarking that data (Malloch & Porter-O'Grady, 2006). Past and current examples of QI benchmarking data include medication errors, inpatient falls, and patient satisfaction surveys (Carey & Lloyd, 2001). However, the intents, structures, processes, and outcomes of QI remained different from those of research (Carey & Lloyd, 2001; Donabedian, 2003; Kelly, 2007; Kleinpell, 2009; Polit & Beck, 2008). The research

process used a rigorous and systematic method to test hypotheses and create new scientific knowledge, while QI used a structured non-systematic format to create non-research-produced data that becomes information (Dawson & Trapp, 2004; Donabedian, 2003; Polit & Beck, 2008; Stommel & Wills, 2004). During the 1990s, the concept of EBP emerged from the discussions surrounding the different purposes, aims, and components of research and QI (Dawson & Trapp, 2004; Goode, 2000; Malloch & Porter-O'Grady, 2006; Stommel & Wills, 2004).

Evidence-based practice. First coined by The Agency for Health Care Policy and Reform (AHCPR; now the Agency for Health Care Research and Quality [AHRQ]) in the 1990s (Malloch & Porter-O'Grady, 2006; Rubenfeld & Scheffer, 2010), the term EBP relied upon the use of various sources of knowledge that included clinical expertise, professional practice, research results, QI benchmarking data, patient preferences, and other types of “evidence” (Goode, 2000; Goode et al., 2011; Titler et al., 2001). EBP evolved from evidence-based medicine (EBM) (Hudson, Duke, Haas, & Varnell, 2008). Sackett et al. (1996) defined EBM as:

“...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of EBM means integrating individual clinical expertise with the best available external clinical evidence from systematic research...” (p. 71) (Sackett et al., 1996).

The touchstone of EBM was the establishment of the Cochrane Center (1993) and the International Cochrane Collaboration in the 1970s and 1980s (Polit & Beck, 2008; Rubenfeld & Scheffer, 2010). Founded by the British epidemiologist Archie Cochrane and housed in Oxford, England, Cochrane Centers spread throughout the world

and continue operation into the 21st Century (Polit & Beck, 2008). EBM was further advanced by McMasters Medical School in Hamilton, Canada, which stressed the value of research over the value of authority as the foundation for learning (Rubenfeld & Scheffer, 2010).

Nurses embraced the central tenets of EBM and developed their own unique conceptualization of EBP set within the paradigm of nursing (Hudson et al., 2008; Polit & Beck, 2008). The 1990s saw the publication of nursing journals devoted to EBP, such as *Worldviews on Evidence-Based Nursing* by STTI and *Evidence-based Nursing* by a joint Canadian/British publishing company (Rubenfeld & Scheffer, 2010). The 1996 establishment of Australia's Joanna Briggs Institute and its focus on the development of nurse-centered systematic reviews, EBP guidelines/protocols, and website repository at <http://www.joannabriggs.edu.au> mirrored the work of medicine's Cochrane Centers. In the Northern Hemisphere, the Registered Nurses of Ontario created similar online resources found at <http://www.rnao.org>, soon followed by efforts in the United States with the Academic Center for Evidence-based Practice (ACE) (University of Texas) and the Center for the Advancement of Evidence-Based Practice (Arizona State University) (Melnik & Fineout-Overholt, 2005; Rubenfeld & Scheffer, 2010).

Nursing quickly moved beyond the “gold standard” of RCTs as evidence to embrace other types of evidence, as RCT-based testing of many patient care problems was narrow, limiting, and may not be ethical (Cullen et al., 2008; Goode, 2000; Malloch & Porter-O'Grady, 2006; Olade, 2004). A health care practice forced to rely upon RCTs as a sole contribution to the evidence base forced healthcare professionals to use intuition, tradition, and trial and error in order to navigate patient care issues not

addressed by RCTs. Nursing's refusal to limit its evidence base solely to RCTs allowed professional nurses to move beyond the quantitative empirical world of RCTs and into a world rich with various types of research and non-research evidence, as guided by patient values and clinical experts (Benner et al., 2010; Cullen et al., 2008; Goode, 2000; Goode et al., 2011; Malloch & Porter-O'Grady, 2006).

Criticisms of evidence-based nursing practice. Although many in the nursing profession saw EBP as a broader strategy of translating the best evidence into clinical reality to improve patient care, others questioned its value (Malloch & Porter-O'Grady, 2006). Some nursing experts criticized the EBP movement for creating a form of cookbook nursing that lacked a theoretical framework, valuing quantitative research over qualitative research, and being unable to adequately articulate EBP as a viable construct versus a process. Still others questioned whether EBP was truly a unique process, a politically constructed entity, or a new form of QI (Malloch & Porter-O'Grady, 2006).

The unquestioned universal adoption of EBP by health care professionals and institutions has created unease amongst some scholars, who express concerns about the effect EBP has upon creativity and its inability to adequately address nursing's holistic traditions (Hudson et al., 2008). Some academics consider EBP a form of fascism and believe that the EBP movement could marginalize evidence as it creates an exclusionary paradigm (Holmes, Murray, Parron, & Rail, 2006; Hudson et al., 2008). In the early 1990s, a lack of a central definition reflected the several different meanings given to EBP (Goode, 2000; Malloch & Porter-O'Grady, 2006; Titler et al., 2001). However, the first decade of the 21st Century saw a refinement in the meaning and purpose of EBP (Cullen et al., 2008; Goode et al., 2011).

Evidence-based nursing practice defined. A 2008 position statement by the nursing honor society, Sigma Theta Tau International (STTI), defined EBP as “...the process of shared decision-making between practitioner, patient, and others significant to them based on research evidence, the patient’s experiences and preferences, clinical expertise or know-how, and other available robust sources of information” (Cullen et al., 2008). The inclusion of patient preferences and clinical expertise echoes back to nursing’s social mission of delivering safe and effective patient care based on the best available scientific evidence, as guided by clinical expertise and the values, preferences, and experiences of the patient (Baumbusch et al., 2008; Goode et al., 2011; Olade, 2004). Many EBP models reflect the aforementioned definition and include the following: (Goode, 2000; Goode et al., 2011; Newhouse, 2008; Olade, 2004; Titler et al., 2001)

- Iowa Model of Research-Based Practice to Promote Quality Care (1994)
- Iowa Model of Evidence-Based Practice to Promote Quality Care (2001)
- University of Colorado Hospital Evidence-Based Multidisciplinary Practice Model (The Colorado Model) (2000)
- ACE Star Model of EBP (2000)
- Tyler Collaborative Model (2004)
- Johns Hopkins Nursing EBP Model (2007)
- Colorado Patient-Centered Interprofessional EBP Model (2011)

Barriers to evidence-based practice. A multitude of barriers exist which limit the initiation, planning, implementation, evaluation, and dissemination of EBP. These barriers are not unique to the United States, but extend beyond its borders into the global community (Olade, 2004). The more common barriers have been documented as lack of

time, staff, access to EBP and research resources, education, technology, and organizational support, all of which have resulted in an inability for nurses to change practice (Olade, 2004; Pravikoff et al., 2005). Other disenfranchising elements included isolation from expert peers, workloads, inability to properly evaluate the quality of the evidence, and inability to translate knowledge into practice (Malloch & Porter-O'Grady, 2006; Olade, 2004).

Various research studies have documented many key elements needed to overcome barriers to EBP, such as resource availability, knowledge of the research process, research consultants, favorable research attitudes, academic-service partnership, and monetary resources (Olade, 2004; Omery & Williams, 1999). Organizational facilitators to these barriers have included administrative/leadership commitment and a supportive culture (Omery & Williams, 1999). Thus, the major facilitators to overcome the barriers to EBP break down into two broad categories: (Olade, 2004)

1. Providing the resources and expertise needed by professional nurses in order to translate and synthesize scientific and other types of evidence, and
2. Making EBP a priority for professional nurses, as demonstrated by an organizational, administrative, and leadership commitment.

Commitment to Evidence-Based Nursing Practice

Despite its limitations and criticisms, the translation of knowledge into EBP provides the foundation for nurses to deliver quality health care so that patients may receive EBP's many benefits (Goode et al., 2011; Hudson et al., 2008). These benefits are exemplified by evidence-based protocols designed to prevent Medicare and Medicaid never events, as well as the Magnet hospital initiative linking rigorous evidence-based

nursing care to empirical patient and nursing outcomes (Goode et al., 2011). The success of EBP rests not only upon organizational commitment, but also upon the commitment of individual nurses in providing evidence-based health care (Cullen et al., 2008). However, commitment to EBP is not enough. EBP is also dependent upon (a) resources and research expertise, (b) the ease with which the practicing nurses access just-in-time information, and (c) the ability of those nurses to synthesize knowledge for their nursing practice and patient care (Malloch & Porter-O'Grady, 2006; Olade, 2004). Nursing's societal mandate demands that professional nurses base their practice upon reliable nursing knowledge. A socially-based framework dedicated to best practices ensures that reliable research evidence and other types of evidence for EBP are identified, gathered, appraised, translated, and utilized (Malloch & Porter-O'Grady, 2006). This framework involves the use of specific social systems and social networks.

How Nurses Learn: Social Systems and Social Networks

Knowledge translation is complex (Berry, 2011). Individually and collectively, formally and informally, nurses and other professionals learn from each other. The integration of tacit and explicit knowledge into the infrastructure of social systems and social networks has ensured continued learning within these professional communities (Berry, 2011; Malloch & Porter-O'Grady, 2006; Sanchez, 2004; Sowell, 1996).

Purposeful interactions within social systems have been referenced as a vital source of nursing knowledge, development, and learning (Berry, 2011). Additionally, social context has proven foundational for the development of communication channels and the social dimension that originally created the system (McNeely & Wolverton, 2008; Pirnejad, Niazkhani, Berg, & Bal, 2008; Rogers, 2003; Sowell, 1996). Sustainable social

networks connect for the ultimate purpose of mutual benefits and desirable outcomes (Berry, 2011; Christakis & Fowler, 2009; McNeely & Wolverton, 2008). For nursing, the desirable outcomes stemming from these social networks have involved knowledge creation and translation, promoting professional nursing practice, and enhancing quality patient care (Berry, 2011; Malloch & Porter-O'Grady, 2006).

Social Networks

Throughout history, knowledge creation, translation, and spread have relied upon social networks woven within the fabric of society (McNeely & Wolverton, 2008). The sustainability of knowledge networks has proven dependent upon the optimal cultural functioning of these social networks (Jbilou, Landry, Amara, & El Adlouni, 2009; McNeely & Wolverton, 2008). Social networks have always involved human-to-human connectiveness, with network nodes represented by human beings and the linked interdependent connection between the nodes represented by formal/informal communication, interactions, values, beliefs, and relationships (Bramouille et al., 2007; Christakis & Fowler, 2009; Malloch & Porter-O'Grady, 2006; McNeely & Wolverton, 2008). The science of social networking has linked the study of individuals to the study of groups in order to describe the human experience (Christakis & Fowler, 2009). Ultimately, the members of interpersonal social networks use their own unique social context as they enact and circulate knowledge amongst its individuals and groups throughout the entire network (Greenhalgh et al., 2004).

Network commonalities. Technological, social, and biological systems apparently share common network designs (Bramouille et al., 2007; Christakis & Fowler, 2010). The universal governing principles for human social networks have been

identified as (a) horizontal informal person-to-person peer influence, (b) interdependence of people and events, (c) social ties, (d) social distance versus geographic distance, (e) contagious spread, (f) density, and (g) intransitivity (several options which produce a looped preference cycle) (Barabasi, 2007; Bramouille et al., 2007; Christakis & Fowler, 2010; Christakis & Fowler, 2007; Fowler & Christakis, 2008a; Greenhalgh et al., 2004). Networking research isolated two key measurement determinants of network nodal infrastructure – connection and disconnection. This measurement has been used to characterize how individuals are connected or isolated within a network, and summarize the properties of whole networks via the connection or isolation of individuals as compared to other networks (Arbesman & Christakis, 2010; Cacioppo, Fowler, & Christakis, 2009; Fowler et al., 2009; Rosenquist, Fowler, & Christakis, 2011). Informal vertical networks have proven valuable in the construction of meaning, while traditional hierarchical networks use a more horizontal structure to codify information related to authoritative messages and decisions (Greenhalgh et al., 2004; Rogers, 2003).

Homophily, heterophily, and hyperdyadic spread. Various research studies have documented the principles of hyperdyadic spread for social networks, as well as homophily and heterophily (Christakis & Fowler, 2007; Christakis & Fowler, 2009; Fowler & Christakis, 2008a; Fowler et al., 2009; Fowler et al., 2011; Rosenquist et al., 2011). Multiple references defined hyperdyadic spread as the tendency of effects to spread from person to person to person, and include the notion of degrees of separation. Homophily (“birds of a feather flock together”), and heterophily (“opposites attract” and “attract and introduce”) have also been researched and discussed extensively (Christakis & Fowler, 2009; Christakis & Fowler, 2007; Fowler & Christakis, 2008a; Fowler et al.,

2009; Fowler et al., 2011; Rogers, 2003). The homophily effect has held true for both behavioral studies and contagious disease outbreak studies. However, multiple research studies demonstrated that after three degrees of separation, the effect of social networks dissipated (Christakis & Fowler, 2010; Christakis & Fowler, 2009; Fowler & Christakis, 2008a; Rosenquist et al., 2011). This evaporative effect has important implications for social networks.

Effects of social networks. People are interconnected; if this is true, then people's health is also interconnected (Fowler & Christakis, 2008b). Likened to a human superorganism with a life of its own, the social phenomenon of networks has proven pivotal for influencing the spread of multiple behavioral and physical effects, which have included the following: (Arbesman & Christakis, 2010; Barabasi, 2007; Bramouille et al., 2007; Cacioppo et al., 2009; Christakis, 2004; Christakis & Fowler, 2010; Christakis & Fowler, 2007; Fowler & Christakis, 2008a; Fowler & Christakis, 2008b; Rosenquist et al., 2011)

- Contagious disease outbreaks
- Depression
- Happiness
- Interpersonal health
- Leadership
- Loneliness
- Obesity

Social networking principles have been generalized to other types of contagious spread observed in informational, behavioral, psychological, and biological networks

(Christakis & Fowler, 2009; Christakis & Fowler, 2010). However, health care leaders must avoid the over-illumination or magnification of one lone aspect of social networking. An examination of successful social networks requires a holistic view, as the network “whole” is greater than the sum of its bits and pieces (Christakis, 2004). Critical to this examination are the social systems within the health care organizations.

Social Systems

The social context and patterned relationships within a social network that informed its structure and function also hold true for a social system (Greenhalgh et al., 2004; Rogers, 2003; Starkweather & Kardong-Edgren, 2008). Like social networks, successful health care social systems remained connected for the ultimate purpose of goal achievement and problem solving (Rogers, 2003). Peer-to-peer relationships and bidirectional interaction have been correlated with contagious effects within social systems (Bramoulle et al., 2007; Jaffe, 2010). These contagious effects have been related to the influence of, and behaviors role modeled by opinion leaders, champions, and change agents (Greenhalgh et al., 2004; Rogers, 2003). Authors have cited many factors related to the success and sustainability of a social system, such as social norms, social and organizational hierarchies, leadership, homophily, heterophily, and organizational complexity (Greenhalgh et al., 2004; Porter-O'Grady & Malloch, 2007; Malloch & Porter-O'Grady, 2006; Rogers, 2003). The end of the 20th Century and beginning of the 21st Century introduced new factors to the discussion of social systems – computerized technology, the Internet, and the World Wide Web (McNeely & Wolverton, 2008).

Use of technology in social systems. Historically, communication and learning within social systems took place via non-technical face-to-face interactions (Christakis &

Fowler, 2009; McNeely & Wolverton, 2008). As human civilization progressed over thousands of years, various technologies amplified person-to-person communication. Close-range interactions became more long-distance through the use of letter writing, telegram, and telephone (Christakis & Fowler, 2009; McNeely & Wolverton, 2008). The most primitive forms of information broadcasting included smoke/signal fires and the ringing of church bells (Christakis & Fowler, 2009). The 15th century invention of the printing press drove the appearance of newspapers in the 17th century and enabled the common person to have access to the printed news (McNeely & Wolverton, 2008). Radio and television modernized the broadcasting of information and brought it into the 20th Century (Christakis & Fowler, 2009; McNeely & Wolverton, 2008). The end of the 20th Century and first decade of the 21st Century exploded with new forms of social technology, communication, and connection, which include the following examples: (Christakis & Fowler, 2009; McNeely & Wolverton, 2008)

- The Internet
- Electronic mail
- World Wide Web
- Chat rooms
- Internet-based search engines (Veronica, Archie, Yahoo, Google, etc.)
- Web logs (blogs)
- Pagers
- Instant text messaging
- Twitter
- Audio and video conferencing

- Avatar-based platforms (SimCity, Second Life, Worlds of Warcraft)
- Social networking sites (MySpace, Facebook)
- Wikis

These technologies share one common aspect – human interaction. The time required to connect both globally and socially dramatically decreased from weeks and month to days, minutes, or fraction of a second (Christakis & Fowler, 2009; McNeely & Wolverton, 2008). Human interconnectedness changed correspondingly, with social networks modifying their pre-existing forms through (a) enormity (increase in networks and people in them), (b) communality (increased scale of information sharing and collective efforts), (c) specificity (increased formation of more focused personal ties), and (d) virtuality (assuming digital identities) (Christakis & Fowler, 2009).

Health care and technology. The complexities involved in the interface of humans, technology, safety, and caring are staggering. How humans use technology on other humans is an important consideration of any technological innovation (Anderson & Aydin, 2005). Some experts have stated the digital disembodiment of the physical from the virtual sacrifices the essence of what it means to be a human being and the meaning of human life (Dreyfus, 2001). However, others have embraced technological advances as a method of refocusing on people that is transformational and revitalizing (Ball, Weaver, & Abbott, 2003). Health care organizations seized these advanced technologies and leveraged them within their own institutional networks to improve clinical decision-making, enhance communication spread, promote educational opportunities, and impact patient outcomes (Pentland et al., 2011; Rogers, 2003). The creation, storage, and mobilization of human information and knowledge has allowed nurses and other health

care knowledge users within formal and informal social networks to swiftly access these resources in order to deliver safe and effective patient care (Pentland et al., 2011).

Nurses have been described as being the intersecting axis point of technology, health care environments, individuals, and communities, which allowed them to find the hidden meaning between nursing praxis, technology, and the human experience (Barnard, 2002). Technology moved nurses away from the invisible role of communication/information conduit between organizational departments and led them back to the more visible leadership role of patient advocate (Ball et al., 2003; Barnard, 2002). However, nursing's leadership role involves more than integrating technology and social systems; it also includes combining contemporary decision-making with innovative technology and social systems in order to translate knowledge into evidence-based nursing care (Ball et al., 2003; Jbilou et al., 2009).

Leadership and technology in clinical decision-making. Authorities cite leadership as being influential in clinical decision-making, as seen by a leader's ability to moderate social network cultures, social systems, and knowledge networks (Jbilou et al., 2009). Innovation literature has highlighted leadership as a key component in knowledge innovativeness and decision-making (Jbilou et al., 2009). Leaders know when to take risks, which is inherent in organizational and other types of innovation (Jbilou et al., 2009; Kirshchling & Erickson, 2010; Sowell, 1996). Some experts have described the boom in digital technology and its related hardware and software applications as proof of societal advancement (McNeely & Wolverton, 2008), while others have pronounced it a risky adventure that poorly serves humankind (Dreyfus, 2001). Nursing and other health care leaders have endorsed mastering technology as both the end and the means for

enhancing nursing education, nursing service, and EBP via the narrowing of the education-practice-research gap (Conklin et al., 2008; Doran et al., 2010; Morris & Maynard, 2010; Simpson, 2001). Risk-taking nursing leaders have provided and ensured access to evidence-based practice resources to support the informed clinical decision-making of professional staff nurses through various types of technologies, which included: (Albert & Siedlecki, 2008; American Association of Critical Care Nurses, 2011; Ball et al., 2003; Doran et al., 2010; Morris & Maynard, 2010; Simpson, 2001)

- Mobile devices such as Personal Digital Assistants (PDAs) (iTouch, Blackberry) and smart phones (iPhone, Android)
- Wireless tablet personal computers (PCs) such as the iPad
- Wireless laptop computers
- Desktop PCs
- Relational databases
- Internet connectivity
- Web searches
- Webinars

The use of the wireless tablets, as exemplified by 2010 introduction of the groundbreaking iPad, has redefined the use of mobile technology within health care organizations and for patients in the home setting (American Association of Critical Care Nurses, 2011; Borges, Huber, & Lugo, 2011; Hemodynamics, 2011). The ability of the iPad and other digital devices have been deemed critical to clinical decision support (American Association of Critical Care Nurses, 2011; Ball et al., 2003; Doran et al., 2010; Morris & Maynard, 2010; Simpson, 2001). Mobile devices using point-of-care

(POC) applications have been used to support visualization of radiological images, rapid access to lab results, and enhanced bedside documentation, while also managing billing and coding (American Association of Critical Care Nurses, 2011). Patient educational support, in-home vital sign monitoring, and information sharing with multiple clinicians represent the other cutting-edge uses of these types of technological innovations (Borges et al., 2011; Hemodynamics, 2011). However, leveraging the technology requires the spark of the human touch and human interaction (Jbilou et al., 2009).

Leveraging social systems, technology, and relationships. Sole reliance upon multiple interconnected social networks, diverse communication channels, and innovative technology to create and disseminate knowledge cannot solve the education-practice-research conundrum (Ball et al., 2003; Jbilou et al., 2009; Olade, 2004). Health care experts have stated the solution to the conundrum involves leadership-based relationships that (a) create a collaborative social system, (b) lead and participate in the utilization of innovative communication technologies, (c) value risk-taking, (d) promote/support the decision-making process, (e) eliminate barriers to the use of knowledge, and (f) give holistic meaning to the overarching purpose of the group (Berry, 2011; Jbilou et al., 2009; Olade, 2004). Academic-service nursing partnerships define these types of collaborative relationships.

Collaborative Academic-Service Partnerships

Academic-service partnerships promote restorative relationships between the academic world and the professional practice world and assist in narrowing the discovery-delivery gap (Baumbusch et al., 2008; Kerner, 2006). As nursing leaders, members of these partnerships provide the resources and expertise needed to translate and

synthesize scientific and other types of evidence, and role model the commitment to EBP. Thus, an academic-service linkage facilitates overcoming the barriers to RU and EBP (Olade, 2004). However, in order for these relationships to form, nursing scholars and practicing nurses must find common understandings to ease the mounting tensions between academia and service. Only then can true knowledge translation and knowledge utilization occur; only then can research, practice, and education unify (Baumbusch et al., 2008; Kerner, 2006). The academic-to-service gap and research-to-practice gap then become an interlinked triad of education-practice-research that is central to the social system and community of professional nursing. This interactive triad demands collaborative partnerships that have taken many forms (De Geest et al., 2010). An understanding of collaboration, partnerships, and specifically academic-service nursing partnerships, provides the background nursing leaders need to advance the state of the art and the science of nursing knowledge and restore education-practice-research unity.

Collaboration: Definition and Concept

Dougherty and Larson (2010) defined collaboration as, “To labor or cooperate with another, especially in literary or scientific pursuits” (Dougherty & Larson, 2010; Funk & Wagnalls, 1966). Austin and Baldwin (1992) defined academic faculty collaboration as a cooperative endeavor involving the collaborators’ coordinated efforts in achieving common goals and outcomes, for which they shared responsibility and credit. Austin and Baldwin’s definition places collaboration within an academic setting and contrasts sharply with the definition of Himmelman (2004), who defined collaboration within an organization context. Organizational collaboration then is the information exchange, activity alteration, resource sharing, and capacity enhancement of

another in order to achieve mutual benefits and common purposes (Himmelman, 2004). The multiple definitions of collaboration reflect the historic silos that house the isolated perspectives of education, service, and research (Berry, 2011; Boland, Kamikawa, Inouye, Latimer, & Marshall, 2010). These isolated definitions are reflected in the differing concepts of collaboration within nursing (Horns et al., 2007).

Differing concepts of collaboration. It is apparent that the concept of collaboration varies by type of organization, by professional discipline, and even by a person's career stage (Thompson et al., 2010). The goal of academic collaboration has traditionally involved the development of faculty as they incorporated their scholastic interests and specific scientific paradigms in the generation of new knowledge (Thompson et al., 2010). The concept of collaboration within health care service organizations has been to enhance interprofessional relationships between health care disciplines to positively impact patient outcomes (Dougherty & Larson, 2010; Seago, 2005; Sirota, 2007). The academic world and the practice world again clash in their singular definitions of this simple word. Although the concept of collaboration between education and service appeared in the literature in the 1990s, few efforts were realized (Campbell, Prater, Schwartz, & Ridenour, 2001). However, scholastic-based nurses and practice-based nurses have recently attempted to merge these differing concepts as they work towards building collaborative relationships (Campbell et al., 2001; Kirshchling & Erickson, 2010; McBride, 2005).

The synergism of relationships. The Latin word root of collaboration stems from *laborare*, meaning "work," and *com* meaning "with," for a base meaning of "to work together" (Dougherty & Larson, 2010; Funk & Wagnalls, 1966; Henneman et al.,

1995). The word root implies that collaboration is a relationship-based concept that is greater than the sum of its parts (Dougherty & Larson, 2010; Himmelman, 2004).

Academic-based nurses and service-based nurses have jointly utilized the inherent synergism of these relationships in their collaborative efforts (Horns et al., 2007; West, Hallick, Shaat, McGinley, & Bickert, 2006). The aforementioned varied perspectives of research, practice, and education have the power to create a new collaborative “whole” (Henneman et al., 1995). The synergistic quality of collaborative relationships, as described by Henneman et al. (1995), informs the next component to be examined – partnership.

Partnership: Definition and Concept

As with collaboration, partnerships vary across governmental institutions, businesses, and non-profit organizations (Boland et al., 2010). These variances have contributed to differing terminology defining partnerships (Wildridge, Childs, Cawthra, & Madge, 2004). A simple definition of partnership is a joint enterprise involving two or more persons who share the profits and risks (Stanley et al., 2007). However, other definitions have revealed that partnership has different meanings for different people in different situations, as seen by the interchangeable use of other words such as “collaboration,” “coordination,” “cooperation,” “joint/interagency working,” and “networking.” Attempts to accurately define and describe the concept of partnership have involved time-scales, structures, operational procedures, and personnel. Indeed, no universal definition of partnership may exist (Wildridge et al., 2004). A similar lack of clarity exists for the concept of partnership.

Differing concepts of partnership. The last 50 years have seen various social, political, and economic trends contributing to the evolving context of partnership within Western society (Gallant, Beaulieu, & Carnevale, 2001). The concept of partnership varies via the different horizontal levels of macro, meso, and individual service users. Partnerships at the macro-level of national or state level differ significantly from partnerships originating from the meso-level of local organizational service and final level of the individual (Wildridge et al., 2004). The values and beliefs inherent to the concept of partnership vary from level to level, as do the formal and informal structures and processes associated with each level (Wildridge et al., 2004). Multitudes of words and terms linked to the concept of partnership overlap the definition of partnership and have created further ambiguity; these words and terms have included: (Boland et al., 2010; Gallant et al., 2001; Sebastian, Davis, & Chappell, 1998; Wildridge et al., 2004)

- Clear communication
- Collaboration
- Cooperation
- Critical listening
- Empowerment
- Equity
- Genuineness
- Negotiation
- Power sharing
- Respect
- Responsiveness

- Self reflection
- Shared responsibility
- Sustainability
- Trust
- Win-win

Partnership behaviors. Described as the essence of partnership, distinct behaviors have been identified and described as being critical to the work of partnering relationships (Kinnaman & Bleich, 2004; Wildridge et al., 2004). These behaviors centered on competition, cooperation, coordination, collaboration, and co-evolution, with collaboration singled out as having cooperation and coordination components (Wildridge et al., 2004). The Bleich-Kinnaman Organizational Decision-Making Model specified toleration, coordination, cooperation, and collaboration as key interdisciplinary behaviors necessary for the creation of partnerships (Kinnaman & Bleich, 2004). Partnerships may involve some or all of the aforementioned partnership behaviors, depending upon the organizational context, the complexity of the situation or need, the desired outcome, certainty of the outcome, and agreements between the partners (Kinnaman & Bleich, 2004). However, most experts agreed that one powerful component solidifies the concept of partnership and, if missing, denoted dysfunction. That foundational component is relationships.

Synergistic Power of Collaborative Partnerships and Relationships

The literature makes it clear that collaboration and partnerships are tightly bound; indeed, one may not exist without the other. Mutual trust, respect, genuineness, and commitment support the relationships involved in collaborative partnerships (Sebastian et

al., 1998). The emphasis on not just the benefits, but also the risks involved in collaborative relationships, implies a shared commitment to the venture and demonstrates an optimistic uncertainty (Stanley et al., 2007). Built upon identified strengths and assets, partnerships develop a synergistic power that evolves directly from the integration of strong interprofessional relationships (Boland et al., 2010; West et al., 2006). The 21st Century demands innovative strategies and synergistic relationships in order to meet the challenges of a hyperturbulent health care environment (Sebastian et al., 1998). Collaborative academic-service nursing partnerships provide a reality based laboratory ideal for meeting these urgent demands and narrowing the academic-service-research gap (Sebastian et al., 1998)

Collaborative Academic-Service Nursing Partnerships

Translation, utilization, and unification are not static processes; they require the human interaction of nursing theorists, nursing researchers, and nursing practitioners. Collaborative academic-service partnerships exemplify this type of human interaction (Dean, 1995; Sebastian et al., 1998). Collaborative relationships take many forms, such as entrepreneurial linkage models, integrative nursing center models, unification models, or private practice models. Collaborative academic-service partnerships in nursing have many distinct features, which depend upon unique geographical settings, differing cultures, and diverse educational/clinical venues (Kirschling & Erickson, 2010). Each partner must understand the risks and the power of the many versus the benefits and the power of the few and examine the delicate balance between cost-benefit ratios before proceeding (De Geest et al., 2010; Kirschling & Erickson, 2010). Key features of past

successful collaborative efforts included: (Campbell & Jeffers, 2008; Horns et al., 2007; Kirschling & Erickson, 2010)

- Commitment to a shared mission, vision, goals, and unity of purpose
- Purposeful participation
- Leveraging strengths and resources
- Dependability and accountability
- Clear, open communication regarding expertise, needs, and limitations
- Recognizing opportunities and taking risks
- Time and timing
- Tact, talent, and trust

Clearly, successful academic-service partnerships embedded many of the aforementioned concepts and definitions of partnership and collaboration. However, how did these academic-service partnerships determine the critical components upon which to build their partnering model? What were the unique goals of past academic-service partnerships and are they still applicable to 21st Century nurses? Are new forms of academic-service partnerships emerging? The history of academic-service partnerships models provides the answers to these questions and underscores the importance of integrating collaborative models into the community of nursing (Cronenwett, 2004).

Academic-service partnerships. The evolution of academic-service partnerships runs parallel and intertwines with the evolution of modern professional nursing. Before World War II, physicians, nursing administrators, and nursing faculty provided the oversight for both the education and practice of student nurses and professional nurses (Ashley, 1976; Cronenwett, 2004; Malloch & Porter-O'Grady, 2006). The

undifferentiated lines of education and service housed within a common institutional setting of the hospital made partnerships unnecessary (Cronenwett, 2004). The split between nursing education and nursing service appeared in the 1930s, but World War II efforts of the U.S. Nurse Cadet Corps to educate 120,000 nurses from 1943 to 1946 camouflaged the tensions existing between academia and practice (Cronenwett, 2004; Judd et al., 2010). However, as nursing shifted from a practice-based education to a knowledge-based education, the split and its resulting divide between the two nursing worlds became visible (Berry, 2011; Cronenwett, 2004; Dean, 1995).

Between 1950 and 1975, academic nurses tended to be better educated than practice nurses; however, academic-based nurses tended to have less bedside experience than did service-based nurses (Cronenwett, 2004). The academic-service partnerships during this time period originated from educational institutions needing supervised clinical environments, while service organizations needed a steady pipeline of new graduate nurses as a strategy to counteract cyclic nursing shortages (Cronenwett, 2004; Judd et al., 2010). Academic-service partnerships framed their discussions around the (a) basic practice of nursing (change the work environment versus adapt to the work environment), (b) educational entry level to that practice (associate degree versus baccalaureate degree), and (c) difference between nursing and medicine (nurse practitioner programs) (Cronenwett, 2004).

The last 25 years of the 20th Century saw dramatic changes in the structure and activities of academic-service partnerships (Cronenwett, 2004). The results of these efforts begun after World War II to expand master and doctoral nursing education were now visible in the service sector, with an upward shift of both salaries and education of

professional nurses (Cronenwett, 2004; Judd et al., 2010). Nursing practice leaders had achieved power and influence seen as valuable to nursing scholars seeking practice settings for nursing research. For the first time since the origin of the decades-long separation of academic and service, academic-service partnerships consisted of peer-to-peer relationships. Practice-based nurses held faculty appointments, while nursing academics made educational programs more accessible to nursing staff. Mutual visions united nursing educators, nursing administrators, and clinical practice leaders in academic-service partnerships who developed innovations that included career ladders, primary nursing, shared governance models, and dissemination and use of RU and EBP (Cronenwett, 2004).

The first decade of the 21st Century continued the collaborative vision from the last century, with many academic-service partnerships attempting to bridge gaps and restore a collaborative community of nursing (Cronenwett, 2004; Kirshchling & Erickson, 2010). Academic-service partnerships have pooled their resources and leveraged their creative forces to better prepare nurses to care for patients at any entry point in the health care system (Cronenwett, 2004). Cronenwett (2004) stated 21st Century academic-service partnerships must be interprofessional, interdisciplinary, and include a variety of community, primary, and hospital settings (Cronenwett, 2004). However, cracks have again appeared between academia and practice. Senior faculty have little practice knowledge and clinical expertise, limiting their ability to role model clinical practice or speak to complex practice environment problems related to cost, safety and quality of patient care (Cronenwett, 2004). Stanley et al (2007) stated that strong academic-service partnerships have not been demonstrated recently (Stanley et al.,

2007). Service leaders and academic leaders must partner to provide the knowledge resources and clinical experiences needed to ensure professional nurses are competent in providing safe and high quality patient care (Cronenwett, 2004). Therefore, nursing scholars, nursing researchers, and nursing practice leaders must seize opportunities and overcome barriers to the academic-service partnership's collaborative endeavors to demonstrate its strength and meet Stanley et al.'s challenge.

Academic-Service Partnership Barriers, Benefits, and Drivers

Academic-service partnerships present an opportunity to collaboratively meet the challenges of 21st Century health care and restore the education-practice-research unity. However, a variety of obstacles and barriers may have impeded the development and success of academic-service partnerships. Identified barriers and obstacles included the following: (Kirshchling & Erickson, 2010)

- Differing service and academic value systems
- “Patient care driven” service setting versus “academic calendar driven” academic setting
- Ambiguous role expectations of service and academic partners
- Lack of recognition of the importance of clinical research by service partners
- Balancing clinical demands versus academic responsibilities
- Lack of trust
- Staffing shortages

Disparate systems, settings, demands, and ambiguity represent significant barriers and threaten the creation and sustainability of academic-service partnerships (Kirshchling & Erickson, 2010). Nevertheless, committed collaborative academic-service partnerships

have overcome these barriers and produced significant benefits, which have included: (American Association of Colleges of Nursing and University HealthSystem Consortium, 2003; Campbell & Jeffers, 2008; Glazer, Ponte, Stuart-Shor, & Cooley, 2009; Kirshchling & Erickson, 2010)

- Integrated partnerships combining best practices in education and clinical practice
- Improved working and clinical interactive learning environments
- Sharing relationships and expertise to develop professional nurses' competencies
- Efficient sharing of time, personnel, infrastructure, and scarce resources
- Fostering of interdisciplinary collaboration and trust
- Creation of knowledge transfer strategies
- Synthesizing research findings for translation into clinical practice

Successful academic-service partnerships achieved multiple linkages across the academic-to-service divide, as well as the research-to-practice gap, via the synergistic energies of academia's "ivory tower" world and service's "practical" world (Engelke & Marshburn, 2006; Kirshchling & Erickson, 2010). Furthermore, five imperative drivers have been identified as supporting these academic-service nursing partnerships, which are (a) care of elderly and chronically ill patients, (b) preparation and availability of the nursing workforce, (c) nursing's impact on patient outcomes via research, (d) patient safety and quality care, and (e) healthcare economics and policy (De Geest et al., 2010). These drivers supply the reality-based laboratory needed for academic-service partnerships to fulfill mutual goals, diffuse innovation, and translate research into practice (Mitchell, 2008; Sebastian et al., 1998). Academic-service partnerships provide the solution to the education-practice-research conundrum (Mitchell, 2008). However,

academic-service partnerships must achieve jointly agreed upon and measureable outcomes as a demonstration of the partnership's success. In other words, evaluation of the outcomes of a collaborative academic-service partnership rests upon the use of valid and reliable measurement instruments.

The Linchpin: Assessment and Rigor of Evaluative Measurement

Academic partners and practice partners must jointly and equally participate in the evaluation of academic-service partnership programs to ensure their initial and ongoing safety, effectiveness, and improvement (American Association of Colleges of Nursing, 2006; Fischer, 2003). The linchpin in this assessment process is the identification of targeted evaluative measures that reveal whether the outcomes have been achieved (Fischer, 2003; Kelly, 2007; Polit & Beck, 2008). The use of a website questionnaire, the logic model, and a SWOT analysis provides a triangulation of assessment measures and allows a deeper examination of the complex core functions essential for achieving the goals of the academic-service partnership. However, issues involving (a) structure-process-outcome linkages, (b) survey response burden, (c) social desirability, (d) deductive construction, and (e) inductive testing, have the potential to negatively impact the academic-service partnership if not handled in a proactive and systematic manner. Academic-service partnerships operating without a rigorous evaluation plan may find the program's structures, processes, and usability have been inadequately measured and assessed. Inadequate program assessment then results in poorly measured outcomes, partial or non-achievement of goals, and difficulty in program sustainability (Polit & Beck, 2008). In the end, the integration of nursing research, education, and practice demands a knowledge translation approach that

incorporates not only the power of relationships, but also the rigor of evaluative measurement (Cader et al., 2009; Mitchell, 2008; Tsai & Chai, 2005).

Summary & Conclusions: Using Partnerships to Enhance Practice

The turbulent ending decades of the 20th Century and first decade of the 21st Century resulted in dramatic and unpredictable changes in the health care environment (Sebastian et al., 1998). To meet these challenges, nursing professionals increasingly used innovative partnerships, technology, and networks with traditional and nontraditional social systems to obtain, translate, and disseminate knowledge (Barnard, 2002; Cader et al., 2009; Tsai & Chai, 2005). Nurses became the intersecting axis point of technology, healthcare environments, individuals, and communities. This unique perspective allowed nursing professionals to find hidden meaning within nursing praxis, technology, and the human experience (Barnard, 2002). As technology moved nurses away from the invisible role of communication/information conduit between organizational departments, it also led them back to the more visible leadership role of patient advocate (Ball et al., 2003; Barnard, 2002). However, nursing's leadership role involved more than integrating technology and social systems; it also included combining contemporary decision-making with innovative technology and social systems in order to translate knowledge into evidence-based nursing care (Ball et al., 2003; Jbilou et al., 2009).

The history of American nursing illustrates how the separation of education, practice, and research impacted both the world of academia and the world of practice, eventually leading to the territorial boundaries segregating one from the other (Ashley, 1976; Berry, 2011; Dean, 1995; Horns et al., 2007; Judd et al., 2010; Thompson et al.,

2010). A detailed examination of the literature concerning the generation and translation of knowledge, discovery-delivery gap, social systems, social networks, and academic-service partnerships has both illuminated and magnified the relevancy of CCIRES as a viable strategy for narrowing the education-practice-research gap and restoring the community of nursing (Baumbusch et al., 2008; Bordage, 2009; Kerner, 2006). As a community, the macrosystem of nursing is collectively responsible for the future of professional nursing (Benner et al., 2010).

Successful academic-service partnerships demonstrating the principles of homophily, heterophily, and hyperdyadic spread (Christakis & Fowler, 2009) illustrate how this nursing microsystem intersects and interconnects with the larger community of professional nursing to support nursing's social mandate of quality patient care (Bakken, 2006; Clements & Crane, 2006; Malloch & Porter-O'Grady, 2006). Examples of successful modern academic-service partnerships include the following:

- Local and national schools of nursing and medical center partnerships to facilitate clinical placements, collaborate on joint research projects, develop practice educators as affiliate faculty, and positively impact patient outcomes (MacPhee, 2009; Murray, Crain, Meyer, McDonough, & Schweiss, 2010; Stanley et al., 2007)
- A Chief Nursing Officer-School of Nursing Dean Advisory Council created by Sigma Theta Tau International (STTI) to review current academic-service collaborations and develop partnership strategies to advance the nursing profession (Kirshchling & Erickson, 2010)

- Creation of the Sister Model to structure a collaborative partnership between a school of nursing and a nursing home in order to allocate scarce resources, open lines of communication, highlight interactive learning, and use clinical experts to mentor nursing students (Campbell & Jeffers, 2008)

Past academic-service partnerships have placed an emphasis on clinical placements for nursing students, mentorship of student nurses, and development of clinicians as affiliate faculty (Kirshchling & Erickson, 2010; MacPhee, 2009; Murray et al., 2010). There are currently no education-practice-research collaborations using integrative reviews and evidence summaries as a concept for mutual gathering via the creation, translation, and dissemination of nursing knowledge (Baumbusch et al., 2008; Brouwers et al., 2010; Engelke & Marshburn, 2006; Kirshchling & Erickson, 2010). The fact that this type of collaboration has never before existed was paradoxically a weakness and a strength. Although no model existed for this type of academic-service pairing, the lack of a model presented CCIRES members with the opportunity to innovate without preconceived assumptions based on past partnership models as they developed the physical and virtual infrastructures, processes, and outcomes unique to the CCIRES collaborative.

Ultimately, the success of an academic-service partnership rests not upon the program, nor the measurement tools, but rather upon the humans who create, translate, diffuse, and disseminate knowledge. Innovative people, not ground-breaking technology nor pioneering institutions, form the critical chain of partnerships and the collaborative relationships created within these partnerships (Polit & Beck, 2008; Conklin et al., 2008). For it is the all-too human nursing theorists, nursing researchers, and nursing practitioners

who create the spark needed for an academic-service partnership such as CCIREs to come to life and whose collaborative breath upon this spark keeps it alive.

CHAPTER IV

METHODS

The triad of nursing education, practice, and research demands a knowledge translation approach (Mitchell, 2008). However, knowledge translation must break free of its current physical boundaries and be effectively mobilized for diffusion and dissemination (Brouwers et al., 2010). Nursing professionals are turning to nontraditional collaborative partnerships housed within innovative digital environments to obtain, translate, and disseminate knowledge (Cader et al., 2009; Tsai & Chai, 2005). Changing the knowledge trajectory mandates that siloed academic nursing scholars and nursing practice professionals unite for the creation, interpretation, and movement of knowledge. Only in this manner can professional nurses access and use knowledge to inform their clinical decision-making and provide safe evidence-based patient care (Brouwers et al., 2010). The joint efforts of academic-service partnerships and empowered nursing professionals have the potential to bridge the education-practice-research divide and create a unified and collaborative community of nursing (Cronenwett, 2004; Kirshchling & Erickson, 2010). The Collaborative Center for Integrative Reviews and Evidence Summaries (CCRIES) represents the type of nontraditional collaborative partnership 21st Century nurses are seeking.

This chapter describes the purpose and goals of CCIRES, capacity building and preparation of CCIRES, and activities and methods involved in the creation,

implementation, and evaluation of this innovative academic-service partnership program. The overarching purpose of CCIREs program was to create collaborative academic-service partnerships to narrow education-practice-research gaps through the translation and dissemination of nursing knowledge. The partnership's common goal centered upon the creation, translation, diffusion, and dissemination of knowledge to professional nurses so they could fulfill their role as knowledge workers and deliver evidence-based patient care (Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007). The specific purpose of this project was to demonstrate the creation of a platform for CCIREs within the Kaiser Permanente (KP) Southern California (SCAL) infrastructure, describe the implementation of CCIREs via the use of that infrastructure, and evaluate the implementation, structures, processes, and usability of CCIREs.

Professional KP and non-KP nurses evaluated the implementation, structures, and processes of the CCIREs innovation academic-service partnership program using a SWOT analysis and a logic model. A sample of KP staff nurses, nurse managers, handpicked professional colleagues, and nurse educator listserv members represented the main end users who hypothetically would voluntarily evaluate the CCIREs website repository using an online nursing website evaluation questionnaire via a web-based survey system. The investigation and interpretation of these data formed the formative and summative analysis of the successes and learnings of this innovative project. CCIREs's capacity building and preparation demonstrated that an academic-service partnership could advance the state of the art and the science of nursing knowledge and narrow the education-practice-research gap.

Capacity Building and Preparation

The conceptual creation of CCIRES occurred in January 2010. Preliminary activities involved establishing a collaborative academic-service partnership that secured sponsorship and support from the KP SCAL Regional Nursing Research Program for further development of CCIRES. In April 2010, an informal e-mail invited various nurses from both practice and academia to explore:

[*sic*]...the possibility of creating a community of like-minded souls who wish to examine the best evidence in order to answer important clinical questions.

(C. Crawford, RN, MSN April 15, 2010, personal e-mail communication)

The invitation explained the purpose and goals of CCIRES, as well as monthly time commitment, web-based meeting venue, and future development of a website repository. Four nurses accepted the invitation and, on May 6, 2010, CCIRES was born. The charter members included (a) a doctorally-prepared KP director of ambulatory nursing education and research, (b) a KP critical care clinical nurse specialist (CNS), (c) a doctorally-prepared academic nursing scholar and researcher, and (d) a KP project manager experienced in the conduction of integrative reviews and evidence summaries. Three months later a KP staff nurse joined the group. These five nurses formed the core membership of CCIRES, which remained stable to August 2011. A large part of CCIRES' initial stability was due to the innovative capacity building undertaken by the academic-service partners. In December 2011, the KP staff nurse resigned from CCIRES membership, citing academic, employment, and parental commitments.

The principles of capacity building were vital to the initial establishment of CCIRES. Capacity was the ability of individuals (CCIRES members), and organizations (KP SCAL and academic institutions), and organizational units (SCAL Regional Nursing

Research Program and colleges of nursing) to perform functions and produce outcomes in an effective, efficient, and sustainable manner (Enemark, 2003). The members of CCIRES, as housed within KP and academic environments, assessed their capacity in order to design coherent strategies needed for capacity development of a collaborative academic-service partnership program.

As the CCIRES members gathered to assess and develop capacity, they engaged in a process known as capacity building. Capacity building is the development of the knowledge, skills, commitment, structures, systems, and leadership needed to ensure and enable effective projects and programs (de Groot et al., 2010). Capacity building has been described as the “invisible work” taking place behind the scenes (Baillie, Bjarnholt, Gruber, & Hughes, 2008). This cyclic and iterative process improves the ability of a person or an entity to meet stated objectives or perform better and has the following five characteristics: (Brown, LaFond, & Macintyre, 2001; LaFond, Brown, & Macintyre, 2005)

1. Dynamic and continuous process
2. Measured via four mutually dependent society levels of system, organization, personnel, and individual and/or community
3. Leads to performance improvement
4. Influenced by the external environment and societal context
5. Contributes to sustainable behavior

Measurement and Evaluation of CCIRES: Issues and Considerations

Academic-service partnership programs need measurement instruments to evaluate the structures, processes, and usability of academic-service partnerships via

formative and summative evaluation procedures. Formative evaluation involves process analyses through rigorous assessment methods to discover various influences on the progress and/or the effectiveness of a program's implementation work (Patton, 2008; Polit & Beck, 2008; Stetler et al., 2006). Summative evaluation uses outcome analyses to assess the predetermined goals, objectives, and ultimate worth of the program (Patton, 2008; Polit & Beck, 2008). Narrative description outlines the extent to which goals and other positive outcomes were obtained (Polit & Beck, 2008). Measurement of these components meets several criteria used to determine the appropriateness of a measure - feasibility, transferability, and cost/benefit ratio. Successful adoption of outcomes measures often rests upon these simple principles (Polit & Beck, 2008). Decision-makers have used these types of evaluations to (a) understand a program's context, adaptation, and change, and (b) determine whether to adopt, modify, or discard part or all of an innovative program (Patton, 2008; Polit & Beck, 2008; Stetler et al., 2006).

Innovations such as academic-service partnership programs require multiple interrelated quantitative and qualitative metrics in order to measure and reflect the innovation's value (Porter-O'Grady & Malloch, 2007). These types of evaluative measures hold promise in the measurement of effective linkages between academic-service partnerships and health care initiatives, which is often a shared vision amongst academic-service partnership members (Conklin et al., 2008). Nevertheless, measuring the effectiveness of innovations involving knowledge transfer and knowledge translation has proven elusive, as vague definitions and descriptors have led to ambiguities in how innovative outcomes are measured (Conklin et al., 2008). In addition, little empirical evidence exists for direct linkages between structure measures, process measures, and

outcome measures (Chassin et al., 1999). Although imperfectly known, stronger ties exist between processes and outcomes than for ties between processes and structure characteristics (Chassin et al., 1999; Donabedian, 2003). The issues confounding the evaluation of structures, processes, and usability of academic-service partnerships have profound implications for the instruments chosen to measure the various components of collaborative partnerships. The instruments chosen to measure CCIREs were (a) a strengths, weaknesses, opportunities, and threats (SWOT) analysis, (b) the logic model, and (c) a website survey.

SWOT Analysis

SWOT (strengths, weaknesses, opportunities, and threats) analyses have been documented as providing formative evaluation via supplemental professional, organizational, environmental, and social contexts in order to form a complete program assessment (City of Kingston, 2000; Huerta, Balicer, & Leventhal, 2003). Used in business environments and community settings, the SWOT analysis has been used an effective, intuitive, and simple instrument for formative program evaluation and resultant decision-making (City of Kingston, 2000; Huerta et al., 2003). SWOT analyses have proven useful in determining a program's challenges, strengths, and untapped resources (City of Kingston, 2000; Huerta et al., 2003). Huerta et al. (2003) used a SWOT analysis to map the strengths and weaknesses, as well as opportunities for success and threats of failure, of an Israeli first responder smallpox revaccination program. Although subjective, the SWOT analysis captured the diverse dynamic forces of the smallpox program and also revealed hidden gaps; the analyses did not determine whether the program was "good" or "bad" (Huerta et al., 2003). Appropriate use of SWOT analysis

allows academic-service partnerships such as CCIRES to collaboratively channel their expert scholarship and practice experience as they reevaluate a program's safety, effectiveness, and areas of improvement (American Association of Colleges of Nursing, 2006; Fischer, 2003).

The Logic Model

A proper formative evaluation of any program includes describing current structures and processes, identifying the achievable outcomes, instituting evaluative monitoring systems, and ensuring sustainability of effective systems, with an eye towards cost-effective and high-quality patient outcomes (Donabedian, 2003; Kelly, 2007; Malloch & Porter-O'Grady, 2009; Patton, 2008). The logic model is a formative program evaluation tool that uses images or narration to describe the logical linkages between the situation, design (inputs), planning and implementation (outputs), and evaluation (outcomes) of projects such as CCIRES. It also identifies underlying assumptions and external factors influencing these projects (McCawley, 1997). The concept of the program logic model was first introduced in 1998 by the W.K. Kellogg Foundation and continues to be used by various organizations as a means of facilitating thinking, planning, and communicating a program's goals, objectives, and achievements (W.K. Kellogg Foundation, 2004; Patton, 2008).

MacPhee (2009) described the development of a practice-academic partnership logic model that illustrates these linkages. The MacPhee academic-service partnership used the logic model's building blocks as a means of visualizing the cause-and-effect process relationships involved between the inputs, outputs, outcomes, and activities of a collaborative partnership (MacPhee, 2009). The iterative testing and refinement of the

logic model took place over a 12-month time period and allowed successful delivery of the predetermined outputs and outcomes. However, the academic-service partnership considering the use of the logic model must be aware of the complexity of the model, the need for deductive model construction, and the necessity of inductive testing via key stakeholders over an extensive time period (MacPhee, 2009). Deductive construction and inductive testing also impacts the use of the SWOT analysis.

Website Questionnaire

Many professional nurses have shifted from using traditional information sources of books and journals to Internet-based websites in of their decision-making process (Cader et al., 2009). Nursing websites differ from other types of health-based websites and require different criteria for evaluation and outcome measurement (Cader et al., 2009; Tsai & Chai, 2005). Capturing nurses' perception of a nursing-focused website via summative evaluative processes rests upon valid and reliable measurement instruments for website usability (Ebenezer, 2003; Polit & Beck, 2008; Tsai & Chai, 2005). Health on the Net Foundation has cited eight criteria for nursing website evaluation, which include authority, complementarity, confidentiality, attribution, justifiability, transparency of authorship, sponsorship transparency, and honesty in advertising and editorial policy (Tsai & Chai, 2005). Tsai and Chai (2005) developed an instrument that has proven valuable in the website summative evaluative process (See Appendix C, Table 2 and Table 3).

This nursing website evaluation questionnaire measured the following six critical components of a nursing website: (Tsai & Chai, 2005)

- Webpage content validity

- Accessibility and convenience
- Speed and connection (download and page rendering speed)
- Overall impression
- Website function (services provided by website)
- Compatibility with various browsers

Academic-service partnerships increasingly employ websites as a means of (a) documenting their collaborative efforts, (b) digitally housing partnership documents, (c) providing tools and resources, and (d) globally interacting with the community of nursing (Adams & Titler, 2010; Simpson, 2001). Evaluation is critical for determining the functionality, quality, and value of nursing-focused academic-service partnership websites (Tsai & Chai, 2005). However, academic-service partnerships using a self-administered questionnaire (SAQ) to evaluate their website must understand that two issues could confound survey results – survey response burden and social desirability.

Survey response burden. Response burden is a real phenomenon. Originally coined and defined in 1978, survey response burden has been linked with the total time it takes to complete a self-administered questionnaire (SAQ), along with the additional factors of participant perceptions, questionnaire sponsor, survey design, stress triggered by sensitive questions, and the amount of effort to complete the SAQ (Jones et al., 2007). Questionnaire designers must pay close attention to survey burden during tool testing, as perceptions of survey burden have the potential to lower response rates, generate lower quality data, and increase errors. However, tool developers must also make a distinction between perceived burden and real burden, although there is a relationship between the two concepts. Measuring actual response burden involves collecting data from questions

asking (a) the time the survey sponsor spent collecting the information, (b) the time the survey sponsor spent collecting the survey takers' information (all participant time), and (c) the time the survey taker spent on filling in the SAQ. These three questions provide designers with a holistic account of the total time spent in responding to the survey (Jones et al., 2007). Academic-service partnerships must consider survey response burden for the administration of any SAQ.

Social desirability. Survey respondents may tend to answer SAQ items in such a manner as to present themselves in a socially desirable and favorable light, rather than based on the questionnaire's actual content (Waltz, Strickland, & Lenz, 2005). Individuals then misrepresent themselves and give answers based on perceived expectations and prevailing social norms (Polit & Beck, 2008). Experts have described social desirability preferences for a person's ability to respond as a function of adjustment level, self knowledge, and frankness (Waltz et al., 2005). Although difficult to control, the academic-service partnership can counteract the effects of social desirability response bias by creating a permissive environment and ensuring respondent anonymity (Polit & Beck, 2008). The complex concepts involved in social desirability and survey response burden also apply to the SWOT analysis and the logic model.

Trust and Capacity Building

Trust provided the underpinnings to CCIRES' successful capacity building (Cordasco, Eisenman, Glik, Golden, & Asch, 2007). The work of building trusting relationships laid the foundation of negotiating partnership roles. CCIRES members first learned to listen and then listened to learn during a combination of virtual and live monthly meetings. In this manner, any preconceived agendas of individual members

were abandoned in order to achieve the overarching agenda of CCiRES as a whole (McIntyre, 2008). Using a transparent process, CCiRES members then imparted the necessary cultural and contextual knowledge needed for all participants to assist with strategy development and support the implementation and dissemination of future academic-service partnership program results (Cordasco et al., 2007).

An initial strategy involved the creation of a charter document that outlined CCiRES' mission, vision, and member responsibilities. The initial April e-mail structured the key elements of the charter. The charter received KP sponsor approval in September 2010 (See Appendix B). CCiRES members updated the charter in April 2011 and again in December 2011, with corresponding KP sponsor approval in May 2011 and January 2012. The investigator developed the 2010 logic model; CCiRES members reviewed and unanimously accepted this logic model in November 2010. CCiRES members used the 2010 logic model as the basis for the development of the 2012 CCiRES Logic model. The use of the 2010 SWOT analysis and the 2010 logic model articulated CCiRES program components during November 2010. The interlinked elements of capacity building that needed the focused attention of CCiRES members included: (Baillie et al., 2008)

- Assessment of defined infrastructure, processes, and outcomes (Logic model and SWOT analysis)
- CCiRES development, planning and prioritization of a strategic mission and vision (CCiRES Charter)
- CCiRES implementation using existing resources or resources of others (KP webinars, KP SCAL Regional Nursing Research Website)

- Evaluation of the impacts of CCIREs activities (Logic model, and SWOT analysis)
- Evaluation of results to restart the capacity building cycle (modify CCIREs charter)

The aforementioned methods involved in CCIREs' capacity building mirror the cyclic and iterative spiral pattern of action research (McIntyre, 2008; O'Brien, 1998). Although CCIREs was not a research-based project, the rigorous and systematic assessment and evaluation of CCIREs was essential in determining the achievement of predetermined academic-service partnership goals. An evaluative process involving structured and analytical assessment methods examined the various dimensions of CCIREs capacity via the context of systems, as well as the specific entities and individuals within that system (Enemark, 2003). This assessment utilized a SWOT analysis, the logic model, and the Nursing Website Evaluation Questionnaire (NWEQ). These diverse data sources formed the methodological strategies needed to assess, monitor, and evaluate the infrastructure, interventions, processes, and outcomes involved in CCIREs' capacity building efforts (Brown et al., 2001).

CCIREs individuals, academic-service partnership collaborations, and ultimately the community of professional nursing, have the potential to develop capacity to increase their abilities to perform specific functions, solve complex problems, describe and achieve pre-determined goals, and understand and manage development needs in a broad context and sustainable manner (Enemark, 2003). The following detailed description of the methods employed for the design and deployment of this collaborative partnership

allows for a complete understanding of the assessment, measurement, and programmatic evaluation of CCIRES.

Methodology

Design

CCIRES used a formative and summative program evaluation design. The design, implementation, and evaluation of CCIRES used a six-month timeframe with monthly milestones. This detailed monthly timeline outlined key elements and deliverables considered important to understanding the feasibility, successes, and missteps of CCIRES, along with lessons learned (See Table 4) (Coley & Scheinberg, 2008). The pilot testing of CCIRES used two forms of evaluation, which are formative evaluation and summative evaluation. Both forms of evaluation were needed to determine if CCIRES was effective, if CCIRES program goals were achieved, and if the program was worth sustaining (Patton, 2008; Polit & Beck, 2008).

Table 4

CCIRES Design, Implementation, and Evaluation: Timeline, Key Milestones, and Deliverables

Phase	Time Period	Deliverables
1. Concept	1 month (November 2011)	<ul style="list-style-type: none"> • Conceptual Website Architecture
2. Definition	1 month (December 2011)	<ul style="list-style-type: none"> • Screen Mockups • Workflows
2. Development	1 month (parallel with Definition) (December 2011)	<ul style="list-style-type: none"> • CCIRES Products • Ranking/Grading Algorithm and Logic • System Environments
3. Testing	1 month (January 2012)	<ul style="list-style-type: none"> • Testing Plan • Testing Results • SWOT Analysis and Logic Model Email Invitation to CCIRES members
4. Pilot	1 month (February 2012)	<ul style="list-style-type: none"> • Pilot Data Collection <ul style="list-style-type: none"> ○ NWEQ Email invitation – Selected Population ○ SWOT Analysis – CCIRES members ○ Logic Model – CCIRES members
5. Analysis and Reporting	1 month (March 2012)	<ul style="list-style-type: none"> • Pilot Data Analytics • Summative Evaluation <ul style="list-style-type: none"> ○ NWEQ Usability Analysis • Formative Evaluation <ul style="list-style-type: none"> ○ SWOT Analysis ○ Logic Model Analysis • Project Evaluation Report • Lessons Learned Report • Sustainability Plan

Note. Detailed plan outlining the month-by-month phases and deliverable milestones for CCIRES over the projected six-month timeframe.

Three evaluation components make up the remainder of this chapter section: (1) the SWOT analysis, for the formative evaluation of the CCIRES innovation, (2) the logic

model, for the formative and summative evaluation of the CCIREs innovation, and (3) the NWEQ, for the summative evaluation of the CCIREs website. Discussion of each evaluation component includes a detailed description of the following topics and subtopics:

- Participants (SWOT analysis and logic model) or Representative population (NWEQ)
- Setting
- Sample size
 - Inclusion criteria (NWEQ only)
 - Exclusion criteria (NWEQ only)
- Human subjects protection
- Sample recruitment
- Data collection protocol
 - Data collection instrument
 - Data collection procedure
- Data analysis
 - Data analysis plan

SWOT Analysis: Formative Evaluation of the CCIREs Program

Process and implementation information make up the first formative evaluation of CCIREs by CCIREs members via an online SWOT analysis (Patton, 2008; Polit & Beck, 2008). Formative evaluation involved process analyses through rigorous assessment methods to discover various influences on the progress and/or the effectiveness of a program's implementation work (Patton, 2008; Polit & Beck, 2008;

Stetler et al., 2006). CCIRES members collaboratively channeled their expert clinical practice and scholarship as they evaluated the CCIRES program for safety, effectiveness, and areas of improvement (American Association of Colleges of Nursing, 2006; Fischer, 2003).

Participants. An expert panel of CCIRES members eligible to participate in the SWOT analysis online survey of the CCIRES program resulted in a convenience, nonrandomized sample for data analysis. CCIRES members responded to the SWOT analysis online survey and attended the logic model consensus-building webinar meeting. These core members spanned the patient care continuum and included (a) three KP SCAL professional registered nurses, (b) a project manager from the KP SCAL Regional Nursing Research Program, (c) a doctorally-prepared KP director of ambulatory nursing education and research, (d) a critical care clinical nurse specialist (CNS) from a KP SCAL medical center, and (e) a doctorally-prepared academic nursing scholar and researcher from a private university in California.

Setting. The vast virtual infrastructure of a large integrated health care system was the setting in which the CCIRES program was designed and housed, within the programmatic structure of a SCAL regional nursing research program. The SCAL region of the integrated health care system consisted of 13 medical centers, 405 medical office buildings, and 5 home health/hospice settings. For the SWOT analysis online survey, the setting was focused on a digital environment that was accessed from any home or workplace computer.

Sample size. The four expert members of CCIRES comprised the sample targeted for voluntary participation in the SWOT analysis online survey. The goal was to

obtain as close to 100 percent of the targeted population as possible for the sample. The unit of analysis for the formative evaluation was the individual CCIRES participant.

Human subjects protection. The primary investigator obtained approval from the Institutional Review Board of Western University of Health Sciences and the large integrated health care organization prior to participant recruitment. Participants completed the informed consent process, with informed consents signed prior to completion of the SWOT online survey. SWOT respondents responded via unlimited free text in text boxes to questions related to the strengths, weaknesses, opportunities, and threats to the CCIRES program. The investigator obtained the aggregate, de-identified summary responses for the SWOT online survey in an Excel document for statistical analysis from the online survey service. The SWOT Excel document was password protected, with the password used only by the investigator and the statistician. The statistician and investigator ensured the data for the SWOT survey were limited to one portable encrypted data device to allow for statistical analysis. The investigator maintained possession of final data results of the SWOT survey on a password protected laptop computer. Note: the investigator for this program evaluation was not a direct manager of any CCIRES member.

Sample recruitment. The four expert members of CCIRES comprised the sample targeted for voluntary participation in the SWOT analysis online survey. Current members were actively engaged in CCIRES activities; the investigator anticipated enthusiastic and voluntary participation. The primary investigator sent an email invitation of the CCIRES program evaluation and survey purpose (See Appendix D) to all possible representative population participants at the beginning of month three on the

timeline (See Table 4, page 105). The e-mail invitation contained access to the online survey via a hotlink provided in the body of the e-mail. Three weeks after the first e-mail, CCIRES members received a second duplicate e-mail invitation as a reminder. Members received this duplicate e-mail invitation only once.

Data collection protocol. For this portion of the formative evaluation, all data were collected via the online SWOT analysis (See Appendix E) to provide final programmatic evaluative measures involving process and implementation information. Seasonal influences, holidays, historical events, and/or celebratory events did not seem to influence the evaluation process or CCIRES outcomes.

Data collection instrument. CCIRES program data was collected via a SWOT analysis, a subjective evaluative instrument divided into intrinsic components of strengths and weaknesses, and the extrinsic components of opportunities and threats (See Appendix E) (Huerta et al., 2003). The SWOT online survey asked individual participants to respond via unlimited free text words, phrases, or sentences in a text box to these four questions:

- “In your own words, what are the strengths of the CCIRES program?”
- “In your own words, what are the weaknesses of the CCIRES program?”
- “In your own words, what are the opportunities of the CCIRES program?”
- “In your own words, what are the threats of the CCIRES program?”

Data collection procedure. The data generated by the CCIRES members were specific to CCIRES program goals and were collected during month three. The SWOT analysis online survey was electronically accessed through a web-based survey provider company. CCIRES members received an e-mail description of the CCIRES

program evaluation and survey purpose (See Appendix D) and gained access to the online survey via a hotlink provided in the body of the e-mail. Once the participant reached the web-based questionnaire, a cover letter explaining the study preceded the SWOT online survey. The SWOT online survey asked individual participants to respond via unlimited free text words, phrases, or sentences in a text box to the four aforementioned SWOT questions.

The time to complete the SWOT analysis was variable and dependent upon the number and length of responses per individual respondent. Estimated time for completion was between 10 to 20 minutes. Access to the website was open for four weeks. Three weeks after the first e-mail invitation, the aforementioned subjects received a second duplicate e-mail invitation as a reminder. CCIRES members received this duplicate e-mail only once. All four CCIRES members completed the SWOT online survey within the four-week time-period.

Logic Model Analysis: Formative and Summative Evaluation

The second evaluation of CCIRES used the logic model (See Figure 4) (Patton, 2008; Polit & Beck, 2008; Preskill & Tzavaras Catsambas, 2006). Formative and summative evaluation of the CCIRES program was conducted to in order to determine the effectiveness of implementation and improve the structures and processes of the CCIRES program (Patton, 2008; Polit & Beck, 2008; Stetler et al., 2006). Using their expert clinical practice and scholarship, CCIRES members collaboratively evaluated the effectiveness of the CCIRES program (American Association of Colleges of Nursing, 2006; Fischer, 2003).

Participants. An expert panel of interested CCIRES members was eligible to participate in the logic model analysis of the CCIRES program via group consensus during a scheduled CCIRES webinar meeting. Participation resulted in a convenience, nonrandomized sample for formative data analysis. The representative population included the following:

- Three Southern California KP professional registered nurses
- One Academic-service registered nurse partner

Setting. For the logic model, the setting was focused on a web-based meeting environment that expert panel members accessed from any home or workplace computer. The webinar meeting used Cisco WebEx, an interactive real time web conferencing platform that allowed desktop computer sharing through a web browser using phone conferencing and optional video.

Sample size. All four CCIRES member were invited for voluntary participation during the logic model analysis (See Figure 4) via group consensus during a scheduled CCIRES meeting. The unit of analysis for the formative and summative evaluation was the entire group of CCIRES members.

Human subjects protection. The primary investigator obtained approval from the Institutional Review Board of Western University of Health Sciences and the large integrated health care organization prior to participant recruitment. Participants completed the informed consent process, with informed consents signed prior to participation in the 2012 logic model analysis during a scheduled monthly webinar meeting of CCIRES. Participants voluntarily contributed to the group discussion and reached 100 percent consensus for the evaluation of the situation, patient population,

assumptions, external factors, and inputs, outputs, and outcomes of the CCIREs academic-service partnership program. Participants had the opportunity to decline to attend the web-based meeting or decline to contribute to the group discussion. The investigator formatted the logic model document for final CCIREs group consensus; no individual CCIREs members were identified on the final document. The investigator maintained possession of final results of the 2012 logic model on a password protected laptop computer. Note: the investigator for this program evaluation was not a direct manager of any CCIREs member.

Sample recruitment. Current members were actively engaged in CCIREs activities; the investigator anticipated enthusiastic and voluntary participation. CCIREs members were invited to participate in the logic model analysis during a scheduled monthly webinar meeting of CCIREs. One month before the planned meeting, CCIREs members received an e-mail invitation cover letter (See Appendix F), the consensus building process agenda (See Table 5, page 114), the 2010 logic model, and a blank 2012 logic model template (See Figure 4, page 111). Participants had the opportunity to voluntarily decline attending the web-based meeting, as well as decline to contribute to the group discussion.

Table 5

CCIRES Consensus Building Process Agenda

Schedule	Agenda Component	Description
One month prior to web meeting	E-mail invitation to CCIRES members	E-mail invitation contains <ul style="list-style-type: none"> • Cover letter, agenda, 2011 & 2012 logic model
Month Three: Web meeting (5 minutes)	<ul style="list-style-type: none"> • Investigator opens web-link • All members access web link 	<ul style="list-style-type: none"> • Functional web link and equipment
Introduction (10 minutes)	<ul style="list-style-type: none"> • Voluntary member participation • Facilitator elected by CCIRES members & opens meeting • Facilitator reviews process, agenda/purpose, & logic models • Investigator shares desk-top 	<ul style="list-style-type: none"> • Facilitator to (a) coordinate consensus building process and (b) function as timekeeper • Investigator manages all electronic documents
Consensus Building: Preliminary Activities (10 minutes)	<ul style="list-style-type: none"> • Facilitator will: <ul style="list-style-type: none"> ◦ Introduce model components ◦ Facilitate discussion ◦ Obtain group consensus ◦ Proceed to next component • Participants contribute to group discussion • Investigator records data on template 	<ul style="list-style-type: none"> • Each participant allowed one minute to discuss & contribute • Facilitator coordinates further group discussion • 100% group consensus for each model component • Participants may decline to contribute at any time
Consensus Building: The Logic Model (60 minutes)	<ul style="list-style-type: none"> • Situation • Patient Population • Assumptions • External Factors • Inputs • Outputs • Short Term Outcomes • Middle Term Outcomes • Long Term Outcomes 	<ul style="list-style-type: none"> • Facilitated iterative group discussion for all model components • New model themes identified • Existing model themes validated, modified, and/or deleted
Web meeting concludes (5 minutes)	<ul style="list-style-type: none"> • Facilitator closes meeting • Investigator finalizes & archives 2012 logic model 	<ul style="list-style-type: none"> • Web link terminated • 2012 logic model saved • Finalized sent model to CCIRES members

Note. Detailed plan outlining the step-by-step process for group consensus building of the CCIRES logic model during a web-based meeting at month five.

Data collection protocol. For formative evaluation, all data were collected via the 2012 logic model and provided programmatic evaluative measures involving process and implementation information. Seasonal influences, holidays, historical events, and/or celebratory events did not seem to influence the evaluation process or CCIRES outcomes.

Data collection instrument. As a formative and summative program evaluation tool, the logic model used images or narration to describe the logical linkages between the situation, design (inputs), planning and implementation (outputs), and evaluation (outcomes) of the CCIRES program. It also identified underlying assumptions and external factors influencing this program (McCawley, 1997). The baseline logic model's building blocks allowed for the visualization of the current cause-and-effect process relationships within CCIRES, which assisted CCIRES members in generating the 2012 logic model evaluation (MacPhee, 2009).

Data collection procedure. Data collected via the logic model provided the final formative evaluation of CCIRES. One week before the planned meeting, CCIRES members received an e-mail with a cover letter, the consensus building process agenda, the investigator-developed 2010 logic model, and blank 2012 logic model template. Group consensus building during the meeting was operationalized using the consensus building process agenda. The data generated by the CCIRES members during consensus building were specific to CCIRES program goals and were collected via group consensus during a monthly web-based meeting in month three. Comparison of the investigator-developed 2010 logic model to the 2012 logic model allowed the CCIRES members to identify new themes and validate, modify, and/or delete existing themes. Consensus building contributed to the iterative refinement and finalization of the logic

model (MacPhee, 2009). Completion of the 2012 logic model via group consensus was 90 minutes. One hundred percent of the CCIRES members participated in the consensus building of the 2012 logic model.

Limitations, Barriers, and Controlling Tactics

Formative and summative program evaluation designs have inherent limitations. Two limitations that may have presented barriers affecting the evaluation of the CCIRES program were survey response bias and social desirability. The concepts involved in social desirability and survey response burden apply to the summative evaluation of the CCIRES website and the hypothetical use of the NWEQ (See Appendices G, H, and I). These complex concepts may also have affected the formative evaluation of the CCIRES program using the measurement instruments of the SWOT analysis and logic model. Response burden and social desirability will be discussed in further detail in Chapter V.

Methodological Lessons Learned

The purpose of this chapter was to demonstrate the methodology used to evaluate the implementation, structures, processes, and usability of the CCIRES program. Although this investigator constructed a formative and summative evaluation methodology in mental isolation, these evaluative processes were to take place in a physical and virtual organizational reality. The investigator learned valuable methodological lessons involving this reality during the Institutional Review Board process and the CCIRES evaluation period. The subjects of these lessons included false assumptions, organizational barriers, evaluation timelines, and mental models.

Institutional Review Boards: Assumptions versus Reality

The investigator divided the CCIRES dissertation proposal into two parts to simplify the Institutional Review Board review process at Western University of Health Sciences. The first submitted Institutional Review Board proposal was specific for the evaluation of the CCIRES website and involved the use of the NWEQ as the evaluative instrument. The second submitted Institutional Review Board proposal involved the evaluation of the CCIRES program by an expert panel of academic and service partners via the SWOT analysis and the Logic Model. In addition to the Western University of Health Sciences Institutional Review Board review, the investigator also submitted the CCIRES program evaluation to the KP SCAL Regional Institutional Review Board for a Research versus Quality Improvement/Quality Assurance Assessment to determine whether the proposal constituted human subjects research that needed additional review procedures. In the past, this investigator has seen previous graduate students receive rapid Institutional Review Board approval from their academic institutions, while the KP Institutional Review Board review has taken from weeks to months to complete. The investigator assumed the process for the CCIRES proposal would mirror previous experiences; this assumption was a false one.

On October 19, 2011, the investigator submitted Part I of the CCIRES proposal to Western University of Health Sciences Institutional Review Board Department for an exempt review. On October 26, 2011, the investigator received an email stating that Part I of the CCIRES proposal was approved for exempt status. The investigator received a hard copy of the approval letter on October 28, 2011 (See Appendix J). On November 4, 2011, the investigator submitted the CCIRES dissertation proposal to the KP Institutional Review Board Department for a Research versus Quality Improvement/Quality

Assurance Assessment. On November 8, 2011, the investigator received an email stating the CCIRES dissertation proposal was determined not to be human subjects research as defined by 45 CFR 46.102 (d) and (f) and therefore KP Institutional Review Board review of this project was not necessary. A digital copy of the non-human subjects determination memo was attached to the email message (See Appendix K).

The investigator submitted Part II of the CCIRES proposal to Western University of Health Sciences Institutional Review Board for an exempt review on November 4, 2011. The investigator and her faculty advisor made weekly email contact with the academic institution's Institutional Review Board coordinator for status updates. On December 22, 2011, the investigator received an email from her faculty advisor stating that the CCIRES proposal had not been assigned a reviewer. Per the Institutional Review Board director's request, a reviewer evaluated the CCIRES proposal over the holiday break. On January 4, 2012, the investigator received an email stating that Part II of the CCIRES proposal was approved for exempt status. The investigator received a hard copy of the approval letter on January 5, 2012 (See Appendix L). The investigator initiated the data collection for the 2012 logic model and SWOT online survey per timeline.

The investigator anticipated that Western University of Health Sciences Institutional Review Board would approve Part II of the CCIRES dissertation proposal as quickly as Part I. Instead, the review was delayed for several weeks. The investigator also anticipated that the KP Institutional Review Board assessment of the CCIRES dissertation would take several weeks; instead, the assessment was completed within four business days. The assumption that one institution would process the proposal more rapidly than another institution was a false one. The investigator also assumed that the

Western University Institutional Review Board had delivered the CCIRES dissertation proposal to the reviewer. A proactive request by the investigator to verify this action would have shortened the timeline. This investigator's assumptions did not match the reality of the Institutional Review Board process.

CCIRES Timelines and Organizational Barriers

The investigator and web master designed the CCIRES website during November/December of 2011, with final website construction completed first week of January 2012. The KP Compliance Department of Privacy and Security reviewed the website and determined that the website did not contain proprietary information, Protected Health Information, or organizational data. The KP Domain group required website transfer from HostMonster to KP oversight during February 2012. However, the CCIRES website could not "go live" for NWEQ evaluation in January 2012 due to a still pending review by the KP SCAL Regional IT Department. Therefore, the investigator made the decision not to include the NWEQ evaluation as part of the CCIRES dissertation project.

The investigator assumed that the regional departments of KP SCAL would review the CCIRES website more quickly than institutional processes could support. However, the inability of the investigator to engage the KP IT Department resulted in the elimination of the NWEQ as part of the CCIRES program evaluation. Proactive contact with the KP IT Department before the design and implementation of the website might have allowed the investigator to meet the timeline milestones. Institutional support is an important factor for the translation and implementation of evidence-based practice (EBP) (Baumbusch et al., 2008; Goode et al., 2011; Olade, 2004; Pravikoff et al., 2005).

Organizational support is an important factor for CCIRES' mission of enabling nurses to access and deliver evidence-based patient care (Baumbusch et al., 2008; Goode et al., 2011). Although the investigator assumed the proposed timelines were adequate for evaluation of the CCIRES website by various KP departments, this assumption did not match institutional reality.

The Final Lesson: Mental Models versus The Real World

Organizational barriers have been identified as impacting outcomes research (Verhoef, Mulkins, Kania, Findlay-Reece, & Mior, 2010). These barriers include organizational culture, organizational resources, organizational environment, and logistical challenges (Verhoef et al., 2010). The investigator's mental model of evaluation timelines and organizational procedures formed her assumptions. These predetermined assumptions magnified some areas and overshadowed other areas of the CCIRES evaluation process. It is now obvious that the investigator's assumptions did not align with academic or health care institutional realities. Making accurate assumptions, and having mental models that fit these assumptions, are the final methodological lessons learned during the CCIRES program evaluation.

Summary & Conclusions: Rigor and Flexibility

The evolving program of CCIRES required testing using formative and summative evaluation. The evaluation process demanded a rigorous and systematic process that considered valid and reliable tools, realistic protocols, specific timeframes, representative populations, appropriate data collection procedures, and ethical protection of human subjects (Kleinpell, 2009; Polit & Beck, 2008; Welch, 2010). The actual evaluation process differed from the proposed evaluation process and required the

investigator to remain fluid and flexible in order to obtain the desired formative and summative evaluation results (Polit & Beck, 2008). CCIRES potential outcomes address vulnerable nurse and patient population issues and seek to improve patient safety, quality, and efficiency via knowledge translation informing evidence-based patient care (Baumbusch et al., 2008; Ebenezer, 2003). Ultimately, the integration of CCIRES into a health care system's organizational infrastructure could provide the foundation for targeted short-term, medium-term, and long-term goals and trigger behavioral change within altered organizational, professional, and patient environments (McCawley, 1997).

Innovative academic-service partnership programs are inherently risky; nurse leaders implementing these programs must understand the risks involved (Kirshchling & Erickson, 2010; Sowell, 1996). Designing and implementing a collaborative center for academic-service partnerships and the translation of nursing knowledge represents this type of innovative risk. CCIRES may succeed or fail. Regardless of the outcome, the results will provide "lessons learned" for further innovative programs seeking to establish collaborative partnerships within a virtual environment.

CHAPTER V

FINDINGS

The systematic process of knowledge development begins with discrete data, such as quantitative statistical or qualitative descriptive data (Polit & Beck, 2008; Sandelowski, 2000). Data are then organized to obtain facts and data-produced facts are analyzed and synthesized to create meaningful information that can be extracted as knowledge (Greenhalgh, 2010; Polit & Beck, 2008). Diverse data sources are needed to obtain the information necessary to assess, monitor, and evaluate the infrastructure, interventions, processes, and outcomes of complex programs and clinical practice (Brown et al., 2001; Patton, 2008; Polit & Beck, 2008). Innovative academic-service partnership programs require multiple interrelated data metrics in order to measure and reflect the innovation's value (Porter-O'Grady & Malloch, 2007).

Academic-service partnership programs such as the Collaborative Center for Integrative Reviews and Evidence Summaries (CCIRES) require these rich data sources to understand and inform the complex collaborative partnerships involving nurses across the patient care continuum (Cronenwett, 2004; Kirshchling & Erickson, 2010; Polit & Beck, 2008; Stommel & Wills, 2004). The core CCIRES members who provided these data sources did indeed span the patient care continuum and included three Southern California KP professional registered nurses and one academic-service registered nurse partner.

Previous chapters have described CCIREs as a novel strategy to advance the state of the art and the science of nursing knowledge in an effort to narrow the education-practice-research gap. The specific purpose of the CCIREs program was to create a platform for CCIREs within the Kaiser Permanente (KP) Southern California (SCAL) infrastructure, implement CCIREs via the use of that infrastructure, and evaluate the implementation, structures, processes, and usability of CCIREs via the analysis of evaluative data. An academic-service partnership committed to the CCIREs program was crucial in achieving these ambitious goals.

This chapter describes the formative and summative data analysis results of the CCIREs academic-service partnership program. Formative data results focused on process and implementation analyses aiming to describe and/or improve the CCIREs program, while summative data results assessed CCIREs goals, outcomes, and the worth of the academic-service partnership program (Polit & Beck, 2008). The presentation of the data analysis results will include the following:

- Narrative description of the identified themes and related exemplars generated from the Strengths, Weaknesses, Opportunities, and Threats (SWOT) online survey
- Tables demonstrating common themes and exemplars associated with each SWOT category
- Table organizing SWOT themes into a structure, process, outcome format
- Pictorial information generated from the SWOT online survey, such as tag clouds and word trees
- Narrative description of the key components of the 2012 CCIREs logic model

- Graphic image of the 2012 CCIREs logic model

CCIREs Outcome Results

Primary data outcome results came from two methods of evaluation – the SWOT analysis and the logic model. The SWOT analysis examined implementation, resources, and performance improvement for the CCIREs program, while the logic model focused on the alignment of structure, process, and outcome components (Lane & Martin, 2005; Valentin, 2001). The data were sourced from CCIREs members who responded to the SWOT analysis online survey and attended the logic model consensus-building webinar meeting. The evaluative process also revealed several serendipitous findings and other outcomes deemed relevant to the CCIREs program (Fine & Deegan, 1996; Meyer & Turner, 2002). These data results illustrate that both planned and unplanned data outcomes and findings should be anticipated by the researcher and program evaluator (Fine & Deegan, 1996; Meyer & Turner, 2002).

SWOT Methodology and Data Management

The investigator systematically examined the data results from the online SWOT survey using a qualitative descriptive methodology involving content analysis. This method of analysis allowed a straightforward description of the categorical data organized in a comprehensive summary and presented in everyday language (Sandelowski, 2000). The SWOT survey components of Strengths, Weaknesses, Opportunities, and Threats questions were the pre-determined coding categories that structured the text-based analysis (Krippendorff, 2004; Sandelowski, 2000).

Data storage and management. NVIVO 9.2.81.0 was the qualitative data analysis software program chosen for SWOT data storage and management. All

materials related to the SWOT online survey and its analysis were imported and/or formatted via the NVIVO internal database system, with one project file containing all project information and documents (Lewins & Silver, 2007). The investigator retrieved a PDF document containing the de-identified unlimited free text responses for each SWOT component from the web-based survey service at the close of data collection. A direct import of the PDF document then permitted the “cut and paste” coding of the source data into the pre-determined categories of Strengths, Weaknesses, Opportunities, and Threats. Placing the responses into these separate groups facilitated the independent management of data specific to each SWOT category; no responses were moved from one category to another (Krippendorff, 2004).

Data analysis. The investigator analyzed the SWOT data in order to determine strengths, opportunities, and hidden gaps revealed by the weaknesses and threats. Responses given to the aforementioned four categories formed the basis of the SWOT data analysis. Text frequency queries of the top 25 words per SWOT category structured the next step of the data analysis (Streubert Speziale & Carpenter, 2007). The investigator eliminated words that did not have contextual relevance, lacked meaning, or seemed redundant (Krippendorff, 2004). Direct links back to the original source material permitted the investigator to validate the coded data during each phase of data management and data analysis while determining major themes for each SWOT category, thus ensuring systematic text explorations (Krippendorff, 2004). The investigator placed similar responses under common themes, with each theme defined.

Exemplar responses populated the themes for each SWOT category. Three nurses experienced in qualitative content analysis independently examined themes, definitions,

and exemplars. This independent examination ensured the definitions matched the themes, the exemplars matched the definitions, and that the results were meaningful (Polit & Beck, 2008; Streubert Speziale & Carpenter, 2007). The investigator calculated a simple frequency count of each subject's exemplar responses within each theme (Polit & Beck, 2008). A Structure-Process-Outcome table was created to illustrate the various components of the CCIRES program and to explore the interconnections of the common themes, seen in Table 6 (Donabedian, 2003; Krippendorff, 2004).

Table 6

Themes for SWOT Categories: Structure, Processes, and Outcomes

Structures	Processes	Outcomes
Virtual & Physical Infrastructure	Translational Research Activities	Narrowing Gaps <ul style="list-style-type: none"> • Academic-service gap • Research-practice gap
Human Capital	Diffusion of Innovation	
Organizational Sponsorship	Collaboration	
Competencies: Knowledge, Attitudes, & Skill Sets		
Budgetary Constraints		

Finally, NVIVO's powerful visualization techniques created tag clouds and tree maps to explore "hunches" and illustrate key patterns and connections formed from the SWOT data analysis (Lewins & Silver, 2007; Polit & Beck, 2008; Streubert Speziale & Carpenter, 2007).

SWOT Data Analysis Results: Strengths

Five subjects submitted unlimited free text responses to the question, "In your own words, what are the strengths of the CCIRES program?" This is the only SWOT

category in which five participants responded; all other SWOT categories contained four participants. The responses of participant #5 seemed incomplete and strikingly similar to the responses of participant #2, suggesting that this participant started the online survey, stopped, then returned to complete the survey. The investigator assumed that the survey respondents included the academic nursing scholar and the three CCIRES members employed by KP SCAL. The responses to the Strengths category of the SWOT online survey generated four themes. The four themes, their definitions, and select exemplars (Funk & Wagnalls, 1966) consisted of the following (See Appendix M, Table 7):

Virtual and physical infrastructure theme. The first Strength theme is Virtual and Physical Infrastructure, defined as a permanent foundation or essential elements of a structure, system, or plan of operations. This major theme was supported by 80% of the respondents. Physical infrastructure consisted of the CCIRES charter, research/evidence tools, resources, and training materials, partnerships between KP system and the community, and the CCIRES academic-service partnership. CCIRES members described the virtual infrastructure as consisting of KP's current research website, online electronic databases, webinar meetings, Internet support, and the design of the CCIRES website repository. Select exemplars include:

- “Charter with clear objectives”
- “Website repository designed”
- “Evidence review tools and training materials available to the community”
- “Collaborative program – service and academia”

Human capital theme. The second Strength theme is Human Capital, defined as any human resource or circumstance that can be utilized for an ambitious objective. This

major theme was supported by 100% of respondents. Human Capital exemplars described the various roles, relationships, talents, and perspectives of the CCIREs members. The partnership itself was called out as a key strength of the CCIREs program, which SWOT respondents described as “diverse,” “powerful,” “collaborative,” and “engaging.” The fact that a committed core group still existed after two years was expressed as a strength, with CCIREs members possessing various levels of expertise from different nursing fields. The benefits of mutual exchange between staff nurses, nurse leaders, nurse researchers, advance practice nurses, and nurse scholars was highlighted as being key to the CCIREs mission of translating research to practice and answering clinical practice questions. The multiple exemplars demonstrated the power of human capital and the role strong relationships play in academic-service partnerships (Boland et al., 2010; Horns et al., 2007; West et al., 2006). Select exemplars include:

- “Committed core CCIREs group”
- “Collaborative academic-service partnership committed to high quality and evidence-based patient care”
- “Diverse perspectives of various nurses, such as nurse leaders, nurse researchers, nurse educators, APNs, and academic scholars”
- “Engaging experts, including staff nurses, advanced practice nurses, nurse leaders, nurse researchers, and nurse educators in translating research to practice and answering key practice questions”

Translational research activities theme. The third theme of Strengths is defined as activities pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s)

sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008). This major theme was supported by 100% of respondents. The component of collaborative partnerships was also present in the third theme. The bringing together of service partners and academic partners and their expertise contributed to the development of mutual partnerships. CCIRES members also felt the opportunity to learn new skills and develop new instruments was a CCIRES program strength. The exemplars described clinical inquiry, integrative reviews, and review analyses as major activities supporting and strengthening the CCIRES program. These separate activities were viewed as an “opportunity to participate in research activities in a very specific way,” “engage in generative dialogue to bring diverse perspectives,” and link clinical questions to answers. The exemplars can be linked to the CCIRES Charter, which proposed to advance the state of the art and science of evidence reviews and provide expertise and resources to develop nurses’ evidence review competencies. Additional select exemplars include:

- “Link clinical questions (inquiry) and answers more closely together for staff nurses, advanced practice nurses, clinical educators, and nurse leaders in their daily practices”
- “The opportunity to participate in research activities in a very specific way”
- “Evidence Leveling System designed & tested”
- “Table of Evidence modified with rules for article review”

Organizational sponsorship. The fourth and last Strengths theme is Organizational sponsorship, defined as an organization acting as a sponsor; to vouch for or be responsible for a person, entity, or group. This theme was articulated as a strength

by 20% of the respondents. Although the sponsors consisted of KP and community organizational leaders, the Kaiser System in particular was described as being critical for the success of the CCIRES program, as it “advances evidence-based practice and has a well established research department to support this process.” Organizational support has been identified as playing a significant role in evidence-based activities and collaborative endeavors (Goode et al., 2011). Select exemplars include:

- “Sponsorship by Executive Organizational leaders (KP + Community)”
- “Kaiser System advances evidence-based practice and has a well established research department to support this process”
- “Service partnership infrastructure into the Kaiser system”

Strengths tag clouds and word tree maps. The investigator eliminated 16 redundant, nonrelevant, and unmeaningful words within the Strengths category. The nine remaining words were group, core, nurse, collaborative, integrative, charter, nurses, development, and infrastructure (See Table 8). A tag cloud was then generated via an NVIVO text frequency query on the remaining words (See Figure 5). Four word tree maps illustrated key exemplars from the Strengths category, which were collaborative, group, infrastructure, and partnership (See Figure 6).

Table 8

Strengths: Nine Remaining Words and Frequency Count

Strengths Remaining Words	Frequency Count
Group	7
Core	6
Nurse	6
Collaborative	5
Integrative	5
Nurses	4
Charter	3
Development	3
Infrastructure	3



Figure 5. Tag cloud used of the nine remaining words for the Strengths category. The larger and bolder the word, the more often it was mentioned by the SWOT respondents.

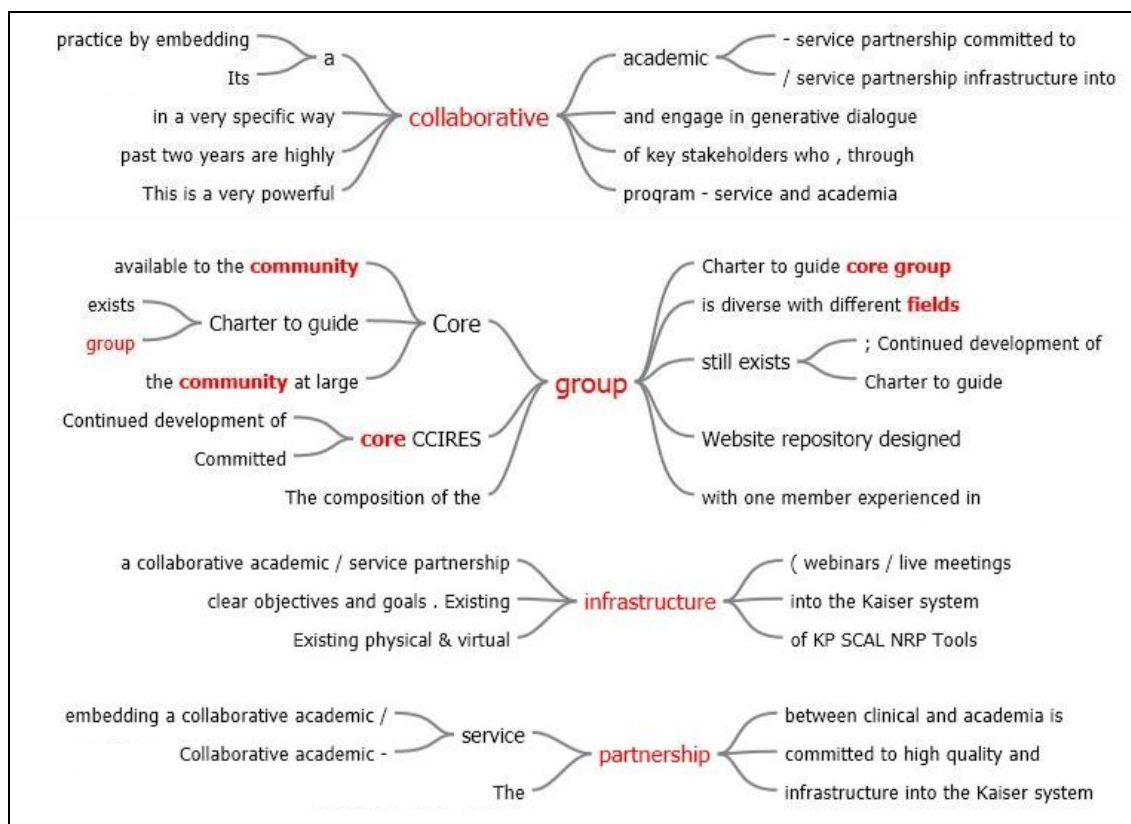


Figure 6. Word trees generated for Strengths category of SWOT analysis.

SWOT Data Analysis Results: Weaknesses

Four subjects submitted unlimited free text responses to the question, “In your own words, what are the weaknesses of the CCIRES program?” The responses to the Weaknesses category of the SWOT online survey generated four themes. A structured analysis of the respondent’s words and phrases determined the exemplars for each theme of the Weaknesses category. The complete exemplars for each Weaknesses theme of the SWOT analysis are contained in Appendix N, Table 9. The four themes, their definitions, and select exemplars (Funk & Wagnalls, 1966) consisted of the following:

Virtual and physical infrastructure theme. The first Weaknesses theme is virtual and physical infrastructure, defined as a permanent foundation or essential elements of a structure, system, or plan of operations. This major theme was supported

by 75% of the respondents. The Virtual and Physical Infrastructure exemplars highlighted the weaknesses CCIRES members felt were present in physical and virtual attributes of the CCIRES program. Physical infrastructure weaknesses were articulated as “few tested tools and resources for searching, gathering, and appraising evidence” and the inability to share evidence results with the outside community. CCIRES members described the virtual infrastructure weaknesses as the lack of a central repository and a website waiting to “go live” in order to house the repository. The website was seen as “vaporware,” as it did not exist. SWOT respondents felt this “non-institutionalized program” had the feeling of “Never been done before,” which was voiced as a weakness rather than an opportunity. These exemplars illustrated the uncertainties CCIRES members have experienced after two years of involvement in the CCIRES program and the importance they place on a website repository as a central gathering place for information, instruments, and resources. Select exemplars include:

- “No central resource repository until website is a reality”
- “Few tested tools & resources for searching, gathering, & appraising evidence”
- “Non-institutionalized program”
- “Inability to share to the outside world the summary and recommendations”

Human capital. The second Weaknesses theme is Human Capital, defined as any human resource or circumstance that can be utilized for an ambitious objective. This major theme was articulated by 75% of the respondents. Although Human Capital was identified as a collaborative strength, it was also seen as a weakness. A common thread running through the Human Capital exemplars was the underrepresentation of staff

nurses and academic scholars. The volunteer nature of CCIRES membership, along with the conflicts and logistics of scheduling, compounded the weaknesses found by the lack of staff nurse representation and difficulties recruiting qualified academic partners. SWOT respondents also described the dearth of experience most CCIRES members had in conducting a full integrative review, with “4 of 5 members naïve to integrative review process.” A 2012 goal of the CCIRES program was for the CCIRES members to conduct an independent integrative review in order to address this identified weakness. Select exemplars include:

- “Not enough representation especially from the nurse at the bedside”
- “Volunteer membership”
- “4 of 5 members naïve to integrative review process”
- “Hard time recruiting qualified academic scholars due to their work commitments”

Translational research activities. The third Weaknesses theme is Translational Research Activities, defined as pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008). This major theme was supported by 75% of the respondents. As mentioned in Human Capital, conducting an integrative review was discussed in-depth by respondents. Although CCIRES members felt the opportunity to learn new skills and develop new instruments was a CCIRES program strength, SWOT respondents voiced concern that their skills were “not fully enhanced,”

as they had only completed one review to date. One exemplar described the integrative review process as “mysterious and intimidating.”

The “inability to continuously do an integrative review on a topic unless requested,” coupled with the inability to share the review results with the outside community, revealed a certain amount of frustration over the limited autonomy and independence of CCIRES. The 2012 goal of CCIRES members conducting their own independent integrative review may alleviate certain translational research activity weaknesses and enhance academic-service partners’ review experience and skills. KP legal review will assist in determining the process for sharing these evidence reviews with the community. Additional select exemplars include:

- “Integrative review process seen as mysterious and intimidating”
- “Only one review conducted by the CCIRES group”
- “We are still in our early stage and need more experience to refine our skills and process”
- “Inability to continuously do an integrative review on a topic unless requested, thus the skills are not fully enhanced”

Narrowing gaps. The fourth and last theme of Weaknesses is Narrowing Gaps (Academic-Service Gap; Research-Practice Gap), defined as a breach or chasm, a break in continuity, and/or a range of phenomena about which nothing is known. This theme was supported by 25% of respondents. This theme had only two exemplars of “Existing academic-to-service gap” and “Existing research-to-practice gap.” Although the exemplars were few, this theme was identified as a key weakness, as narrowing the

education-practice-research gap was deemed central to the mission, vision, and goals of the CCIRES program, as stated in the CCIRES Charter (See Appendix B).

Weaknesses tag clouds and word tree maps. The investigator eliminated 16 redundant, nonrelevant, and unmeaningful words within the Weaknesses category. The nine remaining words were integrative, academic, nurse, experience, gap, inability, membership, skills, and website (See Table 10). A tag cloud was then generated via an NVIVO text frequency query on the remaining words, seen in Figure 7 on page 135. Three word tree maps illustrated key exemplars from the Weaknesses category, which were nurse, review, and gap (See Figure 8, page 135).

Table 10

Weaknesses: Nine Remaining Words and Frequency Count

Weaknesses Remaining Words	Frequency Count
Integrative	4
Academic	3
Nurse	3
Experience	2
Gap	2
Inability	2
Membership	2
Skills	2
Website	2



Figure 7. Tag cloud used of the nine remaining words for the Weaknesses category. The larger and bolder the word, the more often it was mentioned by the SWOT respondents.

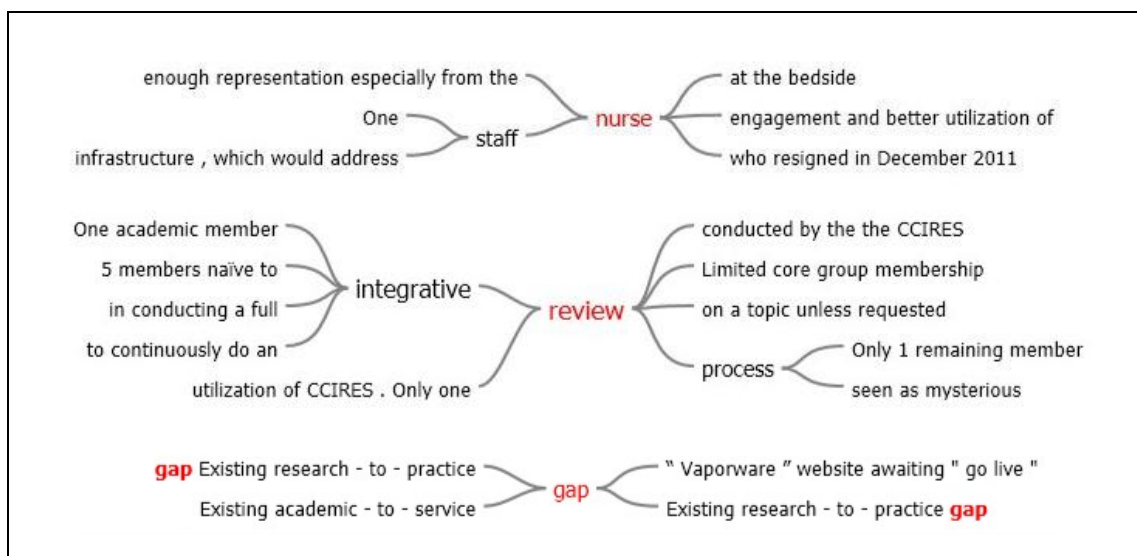


Figure 8. Word trees generated for Weaknesses category of SWOT analysis.

SWOT Data Analysis Results: Opportunities

Four subjects submitted unlimited free text responses to the question, “In your own words, what are the opportunities of the CCIRES program?” The responses to the Opportunities category of the SWOT online survey generated seven themes. A structured analysis of the respondent’s words and phrases determined the exemplars for each theme of the Opportunities category. The complete exemplars for each Opportunities theme of

the SWOT analysis are contained in Appendix O, Table 11. The seven themes, their definitions, and select exemplars (Funk & Wagnalls, 1966) consisted of the following:

Virtual and physical infrastructure. The first Opportunities theme is Virtual and Physical Infrastructure, defined as the permanent foundation or essential elements of a structure, system, or plan of operations. This theme was supported by 25% of the respondents. The three exemplars describing the theme highlighted potential marketing strategies, securing grant monies, and creating a 24/7 open access virtual website repository. These three exemplars stressed a stable infrastructure in order for CCIRES to become an institutionalized and sustainable program within the KP system. The three exemplars were:

- “Create a 24/7 open access virtual website repository for reviews, tested tools, & resources”
- “Secure grant funds to become a self-sustaining & institutionalized KP entity”
- “Marketing strategies of the CCIRES program”

Human capital. The second Opportunities theme is Human Capital, defined as any human resource or circumstance that can be utilized for an ambitious objective. This major theme was described by 75% of the respondents. Human Capital exemplars mirrored the Strengths exemplars as it explored the possible roles and relationships of this “community of like-interested people.” The exemplars described the expansion of CCIRES membership and the inclusion of a medical life science librarian. Although CCIRES currently has only one academic member, a respondent felt that “the role of the academic scholar is clearly delineated.” One exemplar stated there was an opportunity for a “greater pool of academic members” as more DNP scholars enter the workforce,

with greater collaboration between DNP and PhD academics. As CCIRES membership grows, this collaboration could be of great importance in building future relationships.

The various exemplars demonstrated multiple opportunities for academic-service partnerships, including staff nurses enrolled in “master’s or doctoral level” programs. The Human Capital exemplars demonstrated that this “community of like-interested people” has the potential to restore relationships between the academic world and the professional practice world (Baumbusch et al., 2008; Kerner, 2006). Detailed select exemplars include:

- “A community of like-interested people”
- “Expansion of CCIRES membership with increased academic and staff nurse participation”
- “Membership to include a medical life science librarian”
- “As more DNP scholars come into the workforce, there will be more opportunities for collaboration between DNP/PhD scholars. This should also provide a greater pool of academic members”

Translational research activities. The third theme of Opportunities is Translational Research Activities, defined as pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008). This major theme was supported by 100% of the respondents. The chance to “Learn by Doing” was emphasized in this theme. CCIRES members felt that information sharing, integrative review tool development and testing were opportunities offered by the CCIRES program. The

exemplars described how opportunities to “participate in integrative reviews” and “work on and answer clinical questions” would “positively impact patient outcomes.” Other exemplars discussed the available tutorials on how to “conduct an integrative review, summarize the findings, and make recommendations” offered opportunities to “Demystify” the integrative review process. One visionary statement outlined a possible partnership opportunity between CCIREs and National KP Patient Care Services to “assist in design and development” of a National KP Nursing Research Program. As in the Strengths themes, the Opportunities exemplars reflected the CCIREs Charter. Select exemplars include:

- “Opportunity to work on and answer clinical questions that will positively impact patient outcomes”
- “Learn by Doing”
- “Demystify review process for all professional nurses”
- “Develop and test more integrative review related instruments and tools”

Narrowing gaps. The fourth theme of Opportunities was Narrowing Gaps (Academic-Service Gap; Research-Practice Gap), defined as a breach or chasm, a break in continuity, and/or a range of phenomena about which nothing is known. This theme was articulated by 25% of the respondents and was previously identified as a theme in the Weaknesses category. Only one exemplar was included in this theme, which was stated as “Develop strategies to narrow the academic-service gap and research-practice gap.” The Opportunities theme of Narrowing Gaps balanced the Weaknesses theme of Narrowing Gaps by offering an opportunity to develop solutions to the identified weaknesses of the CCIREs program.

Competencies: Knowledge, attitudes, and skill sets. The fifth theme of Opportunities is Competencies: Knowledge, Attitudes, and Skills Sets, defined as qualified persons exercising judgment based upon experience and practical ability. This theme was supported by 50% of the respondents. This theme articulated the learning of new skills in order to continue the “development of nurses’ integrative review skills and competencies” within the “core CCIRES group.” By developing “structures and processes for the dissemination of nursing knowledge,” “CCIRES is establishing a process that works to include the multiple sources of knowledge about nursing practice.” Although somewhat similar to Translational Research Activities, the Competencies exemplars were grounded in the knowledge, attitudes, and skills sets necessary for CCIRES members to become competent in the integrative review process, as outlined in the CCIRES Charter. Select exemplars include:

- “Develop structures & processes for the dissemination of nursing knowledge”
- “Develop new skills & competencies for core CCIRES group”
- “CCIRES is establishing a process that works to include the multiples sources of knowledge about nursing practice”

Diffusion of innovations. The sixth theme of Opportunities is Diffusion of Innovations, defined as a theoretical framework illustrating the spread of knowledge and innovations involving the four main elements of the diffusion process, by which (a) a particular innovation is (b) communicated through various channels (c) over a time period (d) via members of a specific social system (Greenhalgh et al., 2004; Rogers, 2003). This theme was articulated by 75% of the respondents. This major theme touched upon the Diffusion of Innovations (DoI) theoretical framework, which was central to the

CCIRES program. The Diffusion of Innovations statement from Chapter II described the CCIRES program: “CCIRES (innovation) can be accessed via a dedicated website (communication channel) on a 24/7 basis (time) by the community of professional nurses (social system) seeking to create, translate, mobilize, and/or disseminate knowledge for clinical decision making.” SWOT respondents described a chance to “develop an innovative nursing collaborative and model” that could present “opportunities for collaboration beyond nursing.” By asking how a collaborative model could “evolve and expand with other academic scholars,” CCIRES members described the opportunity for this model to “ ‘go global’ with collaboration on research translation around the world.” The website repository is central to this global opportunity, as is communication to various groups about the “...existence of the CCIRES program, its goals and objectives, and the process of requesting...” an integrative review on an area of clinical inquiry.

Other opportunities exist to “develop structures and processes for the dissemination of nursing knowledge,” market strategies for the CCIRES program, and “Demystify review process for all professional nurses.” SWOT respondents positioned the CCIRES program at the “ ‘...cutting edge’ of the Future of Nursing Initiative,” with future presentations and publications having “...an impact not only on Kaiser and the communities served by Kaiser, but beyond.” The multiple exemplars outlined the basic foundational elements of DoI as CCIRES members articulated the separate components of innovation, communication channel, time, and social system as moments of opportunity. Additional select exemplars include:

- “Presentations and publications from this project will have an impact not only on Kaiser and the communities served by Kaiser, but beyond”

- “Once the website is available, this model has the opportunity to "go global" with collaboration on research translation around the world”
- “Communicate to different groups the existence of the CCIREs program, its goals and objectives; and process of requesting for an integrated review on a clinical topic”

Collaboration. The Opportunities seventh and final theme was Collaboration, defined as to labor or cooperate with another, especially in literary or scientific pursuits (Dougherty & Larson, 2010). This theme was supported by 50% of the respondents. This was the only SWOT category in which Collaboration appeared, a surprising result for an academic-service partnership program designed to build upon collaboration. CCIREs members may have felt full collaboration was a goal not yet reached. The underrepresentation of staff nurses and nursing scholars in the CCIREs program may have influenced this theme.

Exemplars explored the opportunities available for collaborative development between academic and service, and DNP and PhD scholars, as well as the boundaries for collaboration. Questions were asked regarding “how could this collaborative model evolve and expand with other academic scholars?” and suggested the possibility of a “community-based collaborative?” SWOT respondents felt CCIREs could ““Go Global” with collaboration on research translation around the world” and potentially “Contribute to the collective practice wisdom through collaboration” with research studies conducted by other disciplines and health care systems. The collaborative opportunities described by the exemplars extended well beyond the current borders of the CCIREs Charter and

offered a more global mission for the CCIRES members to consider. Select exemplars include:

- “Contribute to the collective practice wisdom through collaboration with the research conducted by other professions and health systems research”
- “ ‘Go global’ with collaboration on research translation around the world”
- “The collaboration between academia and service needs further development”
- “Boundaries and parameters, opportunities for two-way collaboration to be explored”

Opportunities tag clouds and word tree maps. The investigator eliminated 13 redundant, nonrelevant, and unmeaningful words within the Opportunities category. The 12 remaining words were collaboration, academic, develop, integrative, development, skills, beyond, collaborative, community, competencies, gap, and impact (See Table 12, page 143). A tag cloud was then generated via an NVIVO text frequency query on the remaining words, as seen in Figure 9, page 143. Four word tree maps illustrated key exemplars from the Opportunities category, which were collaboration, develop, integrative, and gap (See Figure 10, page 144). Interestingly, the word trees for “develop” and “integrative” each contain an identical stem exemplar of “develop and test more integrative reviews.” The key words of “develop” and “integrative” were the terms used for the two separate NVIVO text searches. The text search results then created the two separate word trees that sourced the same stem exemplar.

Table 12

Opportunities: Twelve Remaining Words and Frequency Count

Opportunities Remaining Words	Frequency Count
Collaboration	7
Academic	5
Develop	5
Integrative	4
Development	3
Skills	2
Beyond	2
Collaborative	2
Community	2
Competencies	2
Gap	2
Impact	2



Figure 9. Tag cloud used of the twelve remaining words for the Opportunities category. The larger and bolder the word, the more often it was mentioned by the SWOT respondents.

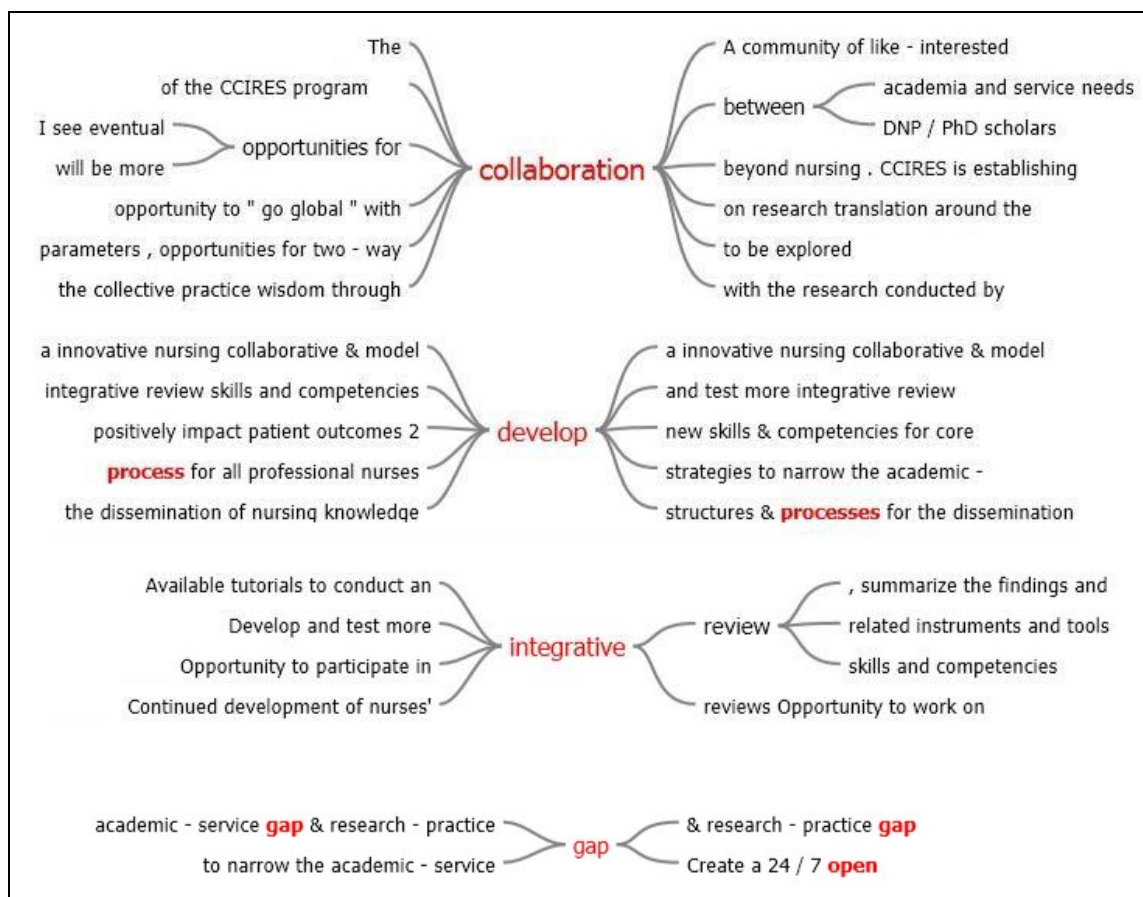


Figure 10. Word trees generated for Opportunities category of SWOT analysis.

SWOT Data Analysis Results: Threats

Four subjects submitted unlimited free text responses to the question, “In your own words, what are the threats of the CCIRES program?” The responses to the Threats category of the SWOT online survey generated seven themes. A structured analysis of the respondent’s words and phrases determined the exemplars for each theme of the Threats category. The complete exemplars for each Threats theme of the SWOT analysis are contained in Appendix P, Table 13. The seven themes and their definitions (Funk & Wagnalls, 1966) consisted of the following:

Virtual and physical infrastructure. The first Threats theme is Virtual and Physical Infrastructure, defined as permanent foundation or essential elements of a

structure, system, or plan of operations. This theme was articulated by 50% of the respondents. This theme highlighted the threats CCIRES members felt were present in physical and virtual attributes of the CCIRES program. However, the exemplars described systems elements of “infrastructure support,” “organizational bureaucracy,” and “organizational agendas” as having the potential to “overwhelm CCIRES agenda.” The complexities of the CCIRES program, the lack of technical expertise for website design/support, and the absence of a guiding model for this new collaborative group were cited as additional threats to the CCIRES program. The exemplars demonstrated CCIRES members’ sophisticated understanding of organizational systems and their thoughtful assessment and evaluation of the CCIRES program. Select exemplars include:

- “New collaborative group with no guiding model”
- “No technical expertise in web development & maintenance”
- “CCIRES Program complexity”
- “Organizational bureaucracy”

Human capital. The second Threats theme is Human Capital, defined as any human resource or circumstance that can be utilized for an ambitious objective. This theme was supported by 50% of the respondents. This theme is linked to the Human Capital theme for Weaknesses, with exemplars describing time availability, time schedules, changing job roles, and the “continuing challenges for engaging staff nurses and academic scholars.” As in Weaknesses, a common thread running through the Human Capital exemplars was the underrepresentation of staff nurses and academic partners. A 2012 CCIRES goal is targeted recruitment of professional staff nurses and

nursing scholars as CCIREs members seek to strengthen the diversity of the CCIREs program. Select exemplars include:

- “Time availability for CCIREs members”
- “Changing job roles for CCIREs members”
- “Staff nurses underrepresented “
- “Academic partners underrepresented”

Translational research activities. The third theme of Threats is Translational Research Activities, defined as pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008). This major theme was supported by 75% of the respondents. The exemplars articulated the insightful thoughts needing further exploration by the CCIREs members. One exemplar described the “Possibility of it appearing that we would expect everyone to send their integrative reviews to us to ‘approve’ or correct.” This exemplar underscored the unease a SWOT respondent felt about a CCIREs Charter component stating that CCIREs members will “Evaluate integrative reviews as requested by the Chair and provide feedback, comments, expertise, and guidance.”

There was also concern that the academic-service partnership would not be “maximized to the fullest” or “utilized by clinicians or academic practitioners” if clinical or academic outcomes are not demonstrated. Although CCIREs seeks to narrow the education-practice-research gap, there is often difficulty linking patient and organizational outcomes to evidence-based efforts demonstrating the narrowing of these

gaps (Chassin et al., 1999; Conklin et al., 2008; Donabedian, 2003). Select exemplars include:

- “Possibility of it appearing that we would expect everyone to sent their integrative review to us to ‘approve’ or correct”
- “Little knowledge in tool testing or tool development”
- “CCIRES program may not be maximized to the fullest or may not be utilized by clinicians or academic practitioners if there is no demonstrated clinical or academic outcomes from accessing to its services”

Organizational sponsorship. The fourth Threats theme is Organizational Sponsorship, defined as an organization acting as a sponsor; to vouch for or be responsible for a person, entity, or group. This theme was supported by 25% of the respondents. This theme was first encountered in the Strengths category, with exemplars describing it as being a critical component for the sustainability and success of the CCIRES program. The lone exemplar illustrated that “Loss of organizational sponsorship” for research programs is a realistic threat in fiscally challenged health care environments (Verhoef et al., 2010). Strategic alignment of CCIRES’ translational research activities with institutional initiatives and priorities could lessen the threat of organizational sponsorship loss (Porter-O’Grady & Malloch, 2007; Verhoef et al., 2010).

Competencies: knowledge, attitudes, and skill sets. The fifth Threats theme is Competencies: Knowledge, Attitudes, and Skills Sets, defined as qualified persons exercising judgment based upon experience and practical ability. This theme was supported by 25% of respondents. A single but powerful exemplar of “Rapid acquisition of new knowledge and skills sets” described the anxiety CCIRES members faced when

first introduced to the integrative review process. The CCIRES 2012 goal of conducting an independent integrative review over a twelve-month time period could go far in mitigating this threat, as CCIRES members thoughtfully and incrementally develop their evidence review competencies.

Diffusion of innovations. The sixth Threats theme is Diffusion of Innovations, defined as the theoretical framework illustrating the spread of knowledge and innovations involving the four main elements of the diffusion process, by which (a) a particular innovation is (b) communicated through various channels (c) over a time period (d) via members of a specific social system (Greenhalgh et al., 2004; Rogers, 2003). This theme was supported by 25% of the respondents. Although first explored in the Opportunities category, Diffusion of Innovations also appeared as a theme in the Threats category. The two exemplars highlighted this theme, which described the CCIRES "...structures and processes for information dissemination" as untested and expressed concern that "Disseminated information will not be valued or used." CCIRES members may overcome this threat by ensuring that disseminated knowledge and information has meaning for the professional staff nurse (Brouwers et al., 2010; Malloch & Porter-O'Grady, 2006; Mitchell, 2008; Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007; Sowell, 1996).

Budgetary constraints. The seventh and final Threats theme is Budgetary Constraints, defined as confining or restraining fiscal expenditures; compel to inaction. This theme was articulated by 50% of respondents. The three exemplars expressed the threats of "Unfunded program," "Budget (sic) support," and "Anything research-related has challenges in tight economics." The last exemplar seemed related to the theme of

Organizational Sponsorship and its potential loss. The same strategic alignment of institutional priorities with CCIRES' translational research activities could lessen the threat of CCIRES being an unfunded program seeking budgetary support from organizational sponsors (Porter-O'Grady & Malloch, 2007; Verhoef et al., 2010). A 2012 CCIRES goal to seek grant fund monies is an additional strategy to offset this threat.

Threats tag clouds and word tree maps. The investigator eliminated 11 redundant, nonrelevant, and unmeaningful words within the Threats category. The 14 remaining words were academic, organizational, development, information, knowledge, nurses, time, tool, underrepresented, accessing, acquisition, availability, budget, and bureaucracy, seen in Table 14, page 149. A tag cloud was then generated via an NVIVO text frequency query on the remaining words (See Figure 11, page 1150). Three word tree maps seen in Figure 12 on page 150 illustrated key exemplars from the Threats category, which were CCIRES, nurses, and organizational.

Table 14

Threats: Fourteen Remaining Words and Frequency Count

Threats Remaining Words	Frequency Count
Academic	4
Organizational	3
Development	2
Information	2
Knowledge	2
Nurses	2
Time	2
Tool	2
Underrepresented	2
Accessing	1
Acquisition	1
Availability	1
Budget	1
Bureaucracy	1



Figure 11. Tag cloud used of the fourteen remaining words for the Threats category. The larger and bolder the word, the more often it was mentioned by the SWOT respondents.

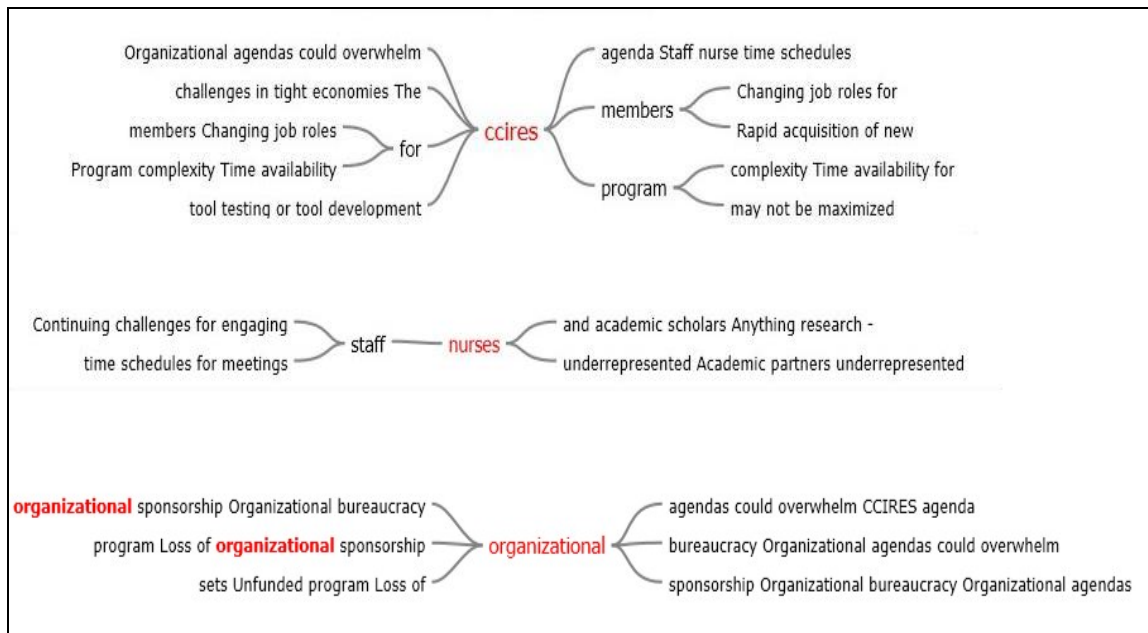


Figure 12. Word trees generated for Threats category of SWOT analysis.

SWOT Data Analysis Results: Theme Commonalities

Themes generated from the data analysis emerged from within individual SWOT categories, with three themes cutting across SWOT categories (See Table 15, page 151).

Virtual and Physical Infrastructure, Human Capital, and Translational Research Activities were themes common to all four SWOT categories. Organizational Sponsorship was a theme identified for the categories of Strengths and Threats, while the theme of Narrowing Gaps was common to Weaknesses and Opportunities. Competencies: Knowledge, Attitudes and Skills, and Diffusion of Innovation were themes seen in the categories of Opportunities and Threats. Interestingly, two themes appeared only once – the theme of Collaboration in the Opportunities category and the theme of Budgetary Constraints in the Threats category.

Table 15

Themes Within and Across Strengths, Weaknesses, Opportunities, and Threats Categories

Strengths	Weaknesses	Opportunities	Threats
Virtual & Physical Infrastructure	Virtual & Physical Infrastructure	Virtual & Physical Infrastructure	Virtual & Physical Infrastructure
Human Capital	Human Capital	Human Capital	Human Capital
Translational Research Activities	Translational Research Activities	Translational Research Activities	Translational Research Activities
Organizational Sponsorship			Organizational Sponsorship
	Narrowing Gaps <ul style="list-style-type: none"> • Academic-service gap • Research-practice gap 	Narrowing Gaps <ul style="list-style-type: none"> • Academic-service gap • Research-practice gap 	
		Competencies: Knowledge, Attitudes, & Skill Sets	Competencies: Knowledge, Attitudes, & Skill Sets
		Diffusion of Innovations	Diffusion of Innovations
		Collaboration	Budgetary Constraints

SWOT Data Analysis Results: Final Considerations

Although subjective, SWOT data results were not used to determine whether a program is “good” or “bad” (Huerta et al., 2003). Rather, the SWOT data analysis will assist CCIRES members in determining the robustness of the CCIRES program, as well as the program’s challenges, strengths, and untapped resources (City of Kingston, 2000; Huerta et al., 2003). Data analysis results will be presented to the CCIRES members during a scheduled web-based meeting during month seven as a decision making tool for program modification and continuation (Huerta et al., 2003). Chapter VI will describe the possible nursing and patient implications of the SWOT data analysis.

Logic Model Methodology and Data Management

Group consensus during a regularly scheduled CCIRES webinar meeting was the formative and summative data analysis technique for each item and category component of the 2012 CCIRES logic model (MacPhee, 2009). A consensus building process agenda structured the 90-minute meeting and involved the academic nursing scholar and the three CCIRES members employed by KP SCAL. The logic model focused on the alignment of structure, process, and outcome components of the CCIRES program (Valentin, 2001). CCIRES members analyzed the individual components of the logic model in order to determine gaps and commonalities. Group consensus generated the finalized logic model components reported as the formative evaluation of the CCIRES program. The investigator digitally documented the finalized components and elements on a logic model template during the webinar meeting.

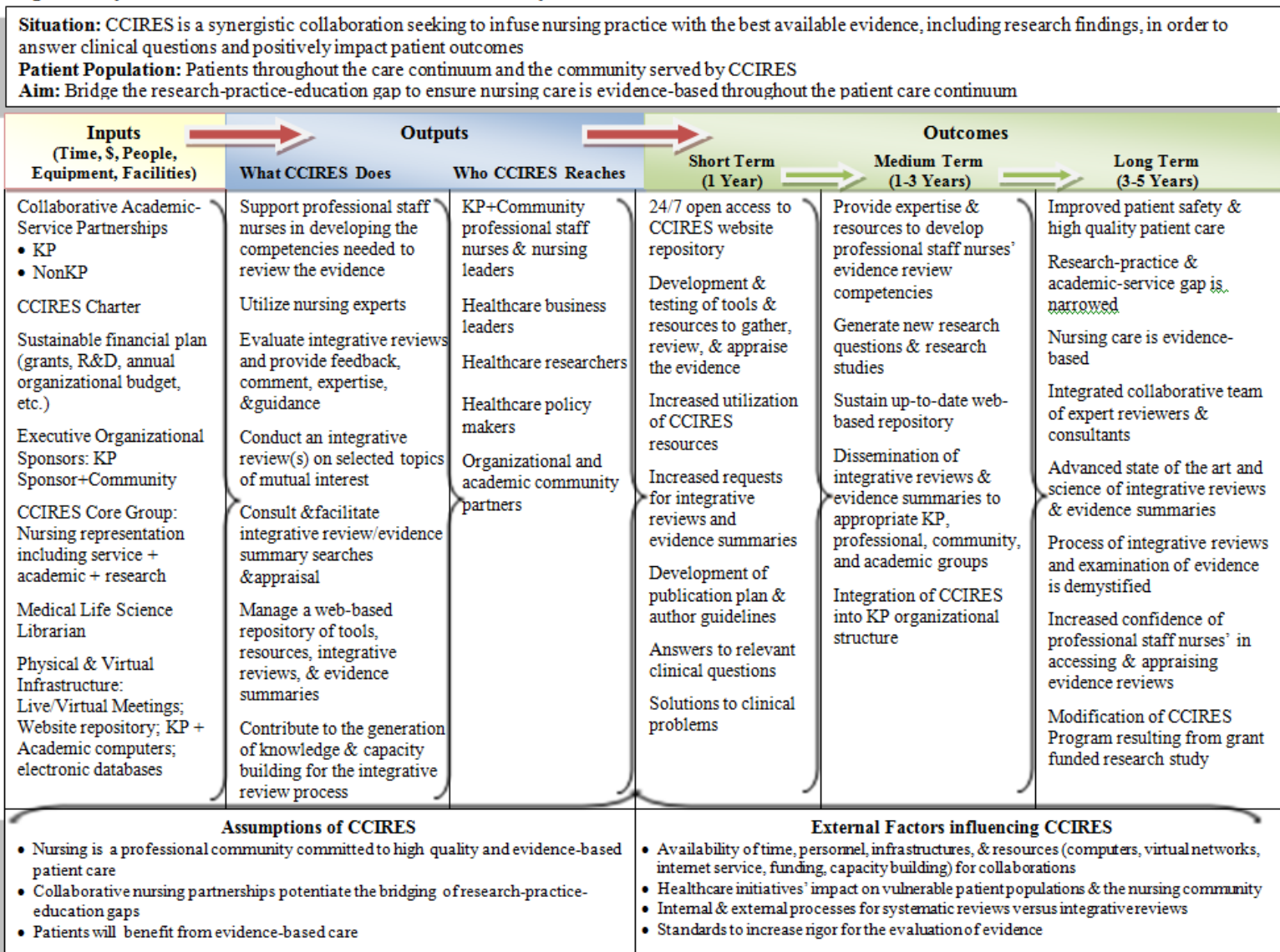
Logic Model Data Analysis Results

CCIRES members examined the components of the investigator-developed 2010 CCIRES Logic Model, which were Situation, Patient Population, Assumptions, External Factors, Inputs, Outputs, Short Term Outcomes, Medium Term Outcomes, and Long Term Outcomes. A logic model template captured the results of the group consensus data analysis results. Major components and their elements will be described in the proceeding sections.

Situation, patient population, and aims. The first activity of the logic model evaluation was to determine the Situation and Patient Population components (Hayes, Parchman, & Howard, 2011; McCawley, 1997). Group consensus determined that the Situation component remained unchanged from the investigator-developed 2010 logic model. However, CCIRES members agreed to change the description of the Patient Population component from “Bridge the research-practice gap to ensure nursing care is evidence-based throughout the patient care continuum” to “Patients throughout the care continuum and the community served by CCIRES.” An “Aims” component was added that stated, “Bridge the education-practice-research gap to ensure nursing care is evidence-based throughout the patient care continuum” in order to better articulate the goals of the CCIRES program. CCIRES members determined that these three major components were essential for the remaining construction of the 2012 CCIRES Logic Model (See Figure 13, page 154).

Figure 13.

Logic Model for CCIREs. 2012, Kaiser Permanente, Southern California



Assumptions and external factors. The identification of the underlying assumptions and external factors influencing the CCIRES program was a key factor for CCIRES program evaluation (Patton, 2008). The logic model component of Assumptions of CCIRES left the original two elements unchanged. However, CCIRES members added a third element of “Collaborative nursing partnerships potentiate the bridging of education-practice-research gaps.” The three elements were then reorganized. Group consensus determined that all three elements within the component of External Factors influencing CCIRES required updating, with an additional element added to reflect recent mandates for an increase in the rigor for evidence evaluation (Deutschman, Ahrens, Cairns, Sessler, & Parsons, 2012). The final elements were:

- Availability of time, personnel, infrastructures, & resources (computers, virtual networks, Internet service, funding, capacity building) for collaborations
- Healthcare initiatives’ impact on vulnerable patient populations & the nursing community
- Internal & external processes for systematic reviews versus integrative reviews
- Standards to increase rigor for the evaluation of evidence

Inputs. Committed human and fiscal resources populated the next logic model component of Inputs (MacPhee, 2009). CCIRES members examined the elements of Time, Money, People, Equipment, and Facilities individually and made significant modifications to this section of the logic model. Three elements remained unchanged, which were Executive Organizational Sponsors, Medical Life Science Librarian, and

Physical & Virtual Infrastructure. CCIRES members unanimously added the CCIRES Charter as a critical new element to Inputs. CCIRES members' past experience in building and sustaining the infrastructure necessary for an academic-service partnership program either simplified or expanded the following updated elements:

- Collaborative Academic-Service Partnerships
 - KP
 - NonKP
- Sustainable financial plan (grants, R&D, annual organizational budget, etc.)
- CCIRES Core Group: Nursing representation including service + academic + research

Outputs. What CCIRES does and who CCIRES reaches determined the major component of Outputs (MacPhee, 2009; Patton, 2008). Under “What CCIRES Does,” CCIRES members' evaluation determined that five of the original six elements remain unchanged and added the element of “Utilize nursing experts.” One element was modified to include the word “consult” for the element of “Facilitate integrative review/evidence summary searches & appraisal.” Under “Who CCIRES Reaches,” CCIRES members' evaluation determined that three of the original four elements remain unchanged and added the separate element of “Health care researchers.” The CCIRES group agreed to modify the fourth original element by adding nursing leaders to “KP+Community professional staff nurses” in order to capture both academic and practice nursing leaders.

Outcomes. The final logic model component of Outcomes was divided into three subcomponents of Short Term Outcomes, Medium Term Outcomes, and Long Term

Outcomes (McCawley, 1997). CCIRES members examined each component and their elements to determine if each outcome goal was appropriate, measurable, and achievable (MacPhee, 2009; McCawley, 1997; Patton, 2008).

Short Term Outcomes. The members of CCIRES did not modify the four original Short Term Outcomes, but did add three new outcome goals, which were:

- Enhanced utilization of CCIRES resources
- Increased requests for integrative reviews and evidence summaries
- Development of publication plan & author guidelines

Medium Term Outcomes. CCIRES members did not add any new Medium Term Outcomes, nor did they modify the five original outcome goals.

Long Term Outcomes. The members of CCIRES did not modify the seven original Long Term Outcomes, but did add an outcome goal of “Modification of CCIRES Program results from grant-funded research study.”

Logic Model Data Analysis Results: Final Considerations

The individual components aided CCIRES members in synthesizing the updated logic model as a whole via summative analysis to assess academic-service partnership program goals, outcomes, and the effectiveness of the CCIRES program (Polit & Beck, 2008). Synthesis of the logic model included determining the critical linkages between the various components of the logic model (MacPhee, 2009; McCawley, 1997; Patton, 2008). Thus, group consensus allowed CCIRES members to examine the complex structures, processes, goals, and outcomes deemed essential for achieving the goals of CCIRES and served as a decision-making tool for CCIRES program modification and continuation (MacPhee, 2009; Polit & Beck, 2008). Chapter VI will describe the possible

nursing and patient implications of the logic model's formative and summative evaluation.

Survey Response Burden

Survey response burden may have impacted the completion of the SWOT analysis. The SWOT online survey required individual participants to respond via unlimited free text words, phrases, or sentences to the four aforementioned SWOT survey questions. CCIRES members may have declined to participate or may have only partially completed the online SWOT analysis if they perceived responding to these four survey questions via free text as burdensome and time consuming. The completion of the logic model may also have been subject to response burden. However, CCIRES members did not seem to find the logic model burdensome and/or time consuming. All members of the core group attended the webinar meeting, freely participated during the meeting, reached 100-percentage consensus for each logic model component, and did not leave the meeting until its conclusion.

Tactics used to counteract the effects of response burden for the actual use of the SWOT online survey and the hypothetical use of the NWEQ included (a) an easy-to-navigate online environment, (b) responses that were of equal effort, (c) simple survey wording, (d) clear survey instructions, and (e) ensuring respondent anonymity (Jones et al., 2007; Polit & Beck, 2008). Controlling the response burden for the completion of the logic model evaluation of the CCIRES program was more complex. Allowing all CCIRES members to have an equal voice during group consensus while facilitating a meeting respectful of time elements seemed to engage respondents' participation and possibly reduced perceived response burden.

Social Desirability

SWOT online survey respondents may have answered survey items in order to present themselves in a socially desirable and favorable light, rather than based on the survey's actual content (Waltz et al., 2005). It is possible that SWOT respondents misrepresented themselves and gave answers based on perceived expectations and prevailing social norms for the CCIREs program (Polit & Beck, 2008). Social desirability response bias could also have affected the CCIREs members' participation in completing the logic model. The use of group consensus may have introduced perceived peer pressure and subtly compelled select CCIREs members to conform to certain social expectations during the evaluation of the CCIREs program (Waltz et al., 2005). All of these issues could also impact the future completion of the NWEQ for the evaluation of the CCIREs website.

Although difficult to control, possible tactics used to counteract the effects of social desirability response bias for the actual SWOT online survey included creating a secure online survey environment and ensuring respondent anonymity (Polit & Beck, 2008). Controlling the social disability response bias for the actual completion of the logic model evaluation of the CCIREs program was difficult to manage. Previous CCIREs capacity building activities and trusting relationships formed during those activities may have counterbalanced responses based upon social desirability and peer pressure (Cordasco et al., 2007; Polit & Beck, 2008). CCIREs members have deeply immersed themselves in CCIREs collaborative activities for the past year. These four members were therefore the best respondents to evaluate the CCIREs program.

Serendipitous Findings and Other Outcomes of the CCIREs Program

The SWOT analysis and construction of the 2012 CCIREs Logic Model revealed multiple unexpected findings and other outcomes relevant to the evaluation of the CCIREs academic-service partnership (Meyer & Turner, 2002; Fine & Deegan, 1996). An extensive discussion of the serendipitous findings and other outcomes of the CCIREs program and their practice implications will be presented in Chapter VI. Exemplars illustrating these secondary outcomes will include:

- Increased CCIREs Membership
- CCIREs Website
- Increased Evidence Review Competencies of CCIREs Members
- Development of Resources and Testing of Tools

Summary & Conclusions: Interconnections

The data analysis of the CCIREs academic-service partnership program was detailed and complex. CCIREs formative and summative evaluation involved data analyses that examined current structures, processes, and outcomes, as well as the systems supporting the CCIREs program's processes and outcomes (Donabedian, 2003; Kelly, 2007; Malloch & Porter-O'Grady, 2009; Patton, 2008). Results of the SWOT formative analysis allowed a deeper examination of the complex core functions considered essential for achieving the goals of CCIREs and the likelihood of CCIREs succeeding as a program (Huerta et al., 2003). The 2012 CCIREs Logic Model evaluation revealed the interrelated components and elements necessary for the design, implementation, and evaluation of an academic-service partnership program such as CCIREs (MacPhee, 2009; McCawley, 1997; Patton, 2008). These multiple and

interconnected data sources were necessary in order to measure and determine the value and worth of the CCIRES Program (Polit & Beck, 2008; Porter-O'Grady & Malloch, 2007). The next chapter will explore the interpretation and implications of the SWOT analysis, 2012 CCIRES Logic Model, Serendipitous Findings, and Other Outcomes as a means of determining the strengths and limitations of the CCIRES Program, the program's sustainability, and whether the academic-service partnership program should be continued.

CHAPTER VI

DISCUSSION AND IMPLICATIONS

The overarching purpose of this dissertation project was to design a collaborative center for integrative reviews and evidence summaries (CCIRES) as a novel strategy to advance the state of the art and the science of nursing knowledge and narrow the education-practice-research gap. The specific purpose of the CCIRES program was to create a platform for CCIRES within the Kaiser Permanente (KP) Southern California (SCAL) infrastructure, implement CCIRES via the use of that infrastructure, and evaluate the implementation, structures, processes, and usability of CCIRES via data analysis. An academic-service partnership committed to the CCIRES program was established in order to achieve these ambitious aims. CCIRES created an environment that provided linkage across academic-to-practice and practice-to-research divides through this innovative academic-service partnership.

Previous chapters outlined the difficulty nurse knowledge workers have in accessing, gathering, translating, and disseminating the information they need in order to deliver evidence-based patient care. Theoretical frameworks and conceptual models illustrated the complexities involved in facilitating the creation, reframing, and delivering knowledge meaningful to both the nurse and the patient (Mitchell, 2008). An in-depth discussion of the literature captured the history of the education-practice-research gap and the use of translational research to support evidence-based nursing practice. The literature also examined social networks and technology, academic-service partnerships,

and the measurement instruments needed to evaluate the structures, processes, and usability of academic-service partnerships. A detailed, rigorous, and systematic methodology involving formative and summative evaluation structured the data collection and analyses of the CCIREs program. Both forms of evaluation were needed to determine if CCIREs was effective, if CCIREs program goals were achieved, and if the program was worth sustaining (Patton, 2008; Polit & Beck, 2008). This final chapter examining the totality of the CCIREs dissertation project is comprised of the following:

- Review of major findings of the CCIREs program
- Review of serendipitous findings and other outcomes of the CCIREs program
- Practice implications of the CCIREs program findings
- Cost/benefit analysis of the proposed expansion of the CCIREs program
- Linkages of data analysis outcomes to the theoretical framework and conceptual models that supported the CCIREs program
- Lessons learned
- Final reflections on the CCIREs academic-service partnership

Highlights of CCIREs Data Analyses

The SWOT analysis and the logic model were the two primary methods of evaluation that provided the data outcome results. The evaluative process also revealed other findings and outcomes deemed relevant to the CCIREs program (Fine & Deegan, 1996; Meyer & Turner, 2002). To analyze the data, the investigator drew on self awareness and reflection in order to recognize the subjective influences that might impact the interpretation of these data (Streubert Speziale & Carpenter, 2007). This allowed the investigator to “dive into the data pool and swim in the data” as part of the analytical

process. However, the investigator also maintained an awareness of premature closure and delayed closure, which is a common problem for research neophytes (Polit & Beck, 2008; Streubert Speziale & Carpenter, 2007). Climbing out of the data pool too soon can result in a lack of breadth and depth necessary for data interpretation and theme generation (Beck, 2003; Polit & Beck, 2008). Swimming too long in the data pool speaks to the research novice's fear of producing low quality data results, as well as having a large volume of high quality data (Beck, 2003; Streubert Speziale & Carpenter, 2007). The richness of data provided by the SWOT analysis responses and the consensus-generated logic model strengthened the data analysis, synthesis, and interpretation processes and offered additional insights into the evaluation of the CCIREs program.

CCIREs Strengths, Weaknesses, Opportunities, and Threats

The SWOT analysis examined implementation, resources, and performance improvement for the CCIREs program (Valentin, 2001). Results of the SWOT formative analysis allowed a deeper examination of the complex core functions deemed essential for achieving the goals of CCIREs and the likelihood of CCIREs succeeding as a program (Huerta et al., 2003). The written text responses to the SWOT questions were taken from the CCIREs members who participated in SWOT analysis online survey. The exemplars for each theme within each SWOT category highlighted the value of the survey participants' words and gave voice to their experiences of being a CCIREs member. These experiences were critical in the development and definition of each theme (Streubert Speziale & Carpenter, 2007). Table 15 in Chapter V on page 151 presents the major themes elicited from the data within each of the SWOT categories.

Strengths. Four themes emerged from the Strengths category of the SWOT analysis: Virtual and Physical Infrastructure, Human Capital, Translational Research Activities, and Organizational Sponsorship. Exemplars illustrated the strong structural supports of the CCIRES program, as perceived and voiced by the SWOT survey respondents. The overall strengths of CCIRES were the infrastructures used to support the mission, vision, and goals of a collaborative academic-service partnership, which involved the partnership's human capital and translational research activities, as supported by the KP system and the scholarly community.

The multiple exemplars demonstrated the power of human capital and the role strong relationships play in academic-service partnerships (Boland et al., 2010; Horns et al., 2007; West et al., 2006). The Strengths word trees illustrated four components described in exemplars – collaborative, group, infrastructure, and partnership. These four words were stems for various Strengths exemplars within the word trees (See Figure 6 in Chapter V). Although there were many strengths to the CCIRES program, an overarching strength appeared to be synergistic interactions between the Strengths themes and their components.

Weaknesses. Four themes emerged from the Weaknesses category of the SWOT analysis: Virtual and Physical Infrastructure, Human Capital, Translational Research Activities, and Narrowing Gaps: (Academic-Service Gap; Research-Practice Gap). Interestingly, the first three Weaknesses themes were also identified as the first three Strengths themes (See Table 15, page 151). A common thread running through the Human Capital exemplars was the underrepresentation of staff nurses and academic scholars. The themes of Infrastructure, Human Capital, and Translational Research

Activities seemed to be linked to the new theme of Narrowing Gaps. The central mission of the CCIREs program to narrow the education-practice-research gap may be progressively impacted by these three weaknesses if they are not addressed in a timely manner. Narrowing the education-practice-research gap was deemed central to the mission, vision, and goals of the CCIREs program, as stated in the CCIREs Charter (See Appendix B). A 2012 goal of the CCIREs program was for the CCIREs members to conduct an independent integrative review in order to address this identified weakness.

The Weaknesses word trees illustrated three components described in exemplars by the SWOT respondents – nurse, review, and gap. These three words were stems for various Weaknesses exemplars within the word trees (See Figure 8, Chapter V). The word tree exemplars explored infrastructure “vaporware” website issues, CCIREs membership representation, integrative review experience and skills, and narrowing gaps. The CCIREs strengths were counterbalanced with the aforementioned identified weaknesses, whose interactions could undermine the mission, vision, and goals of the CCIREs program.

Opportunities. Seven themes were developed from the Opportunities category of the SWOT analysis. The first three themes were identical to themes found in Strengths category and Weaknesses category: Virtual and Physical Infrastructure, Human Capital, and Translational Research Activities (See Table 15, page 151). The fourth theme of Narrowing Gaps (Academic-Service Gap; Research-Practice Gap) was also the fourth theme in Weaknesses category. The remaining new themes were Competencies: Knowledge, Attitudes, and Skills Sets, Diffusion of Innovations, and Collaboration. The Opportunities word trees illustrated four key components described in exemplars by the

SWOT respondents – collaboration, develop, integrative, and gap. These four words were stems for various Opportunities exemplars within the word trees (See Figure 10, Chapter V). The Opportunities exemplars offered balance and some potential solutions to the demonstrated CCIRES program weakness of Narrowing Gaps. They also described opportunities to reinforce the strengths of the CCIRES program through collaboration partnerships, development of competencies, and integrative review activities.

Exemplars stressed that a stable infrastructure was needed for CCIRES to become an institutionalized and sustainable program within the KP system. A dominant thread running through the Opportunities themes was the chance for the CCIRES program to “go global” and consider basing its influence, resources, and expertise within a more international perspective. As in the Strengths themes, the Opportunities exemplars reflected the CCIRES Charter and the basic foundational elements of Diffusion of Innovations as CCIRES members articulated the separate components of innovation, communication channel, time, and social system as moments of opportunity.

Threats. Seven themes emerged from the Threats category of the SWOT analysis, which were Virtual and Physical Infrastructure, Human Capital, Translational Research Activities, Organizational Sponsorship, Competencies: Knowledge, Attitudes, and Skills Sets, Diffusion of Innovation, and Budgetary Constraints. The first three Threats themes were also identified as the first three themes in all other SWOT categories (See Table 15, page 151). The Threats word trees illustrated three key components described in exemplars by the SWOT respondents – CCIRES, nurses, and organizational.

These three words were stems for various Threats exemplars within the word trees (See Figure 12, Chapter V).

The Threats exemplars contained within the word trees illustrated the concerns about organizational systems, engagement of underrepresented nurses, rapid acquisition of new knowledge, program complexity, and fiscal issues. An overarching insight was the sophisticated discussion concerning organizational realities in modern health care environments. Maximizing the described strengths and opportunities presented through the SWOT analysis could offset the potential threats to the CCIRES program. The 2012 CCIRES goal of targeted recruitment addresses the issue of underrepresented nurses, while the conduction of an independent integrative review mitigates concerns regarding competencies and acquisition of new knowledge.

Structure, processes, and outcomes. A Structure, Processes, and Outcomes matrix further categorized the SWOT themes (See Table 6, page 124). Virtual and Physical Infrastructure, Human Capital, Organizational Sponsorship, Competencies: Knowledge, Attitudes, and Skill Sets, and Budgetary Constraints were deemed five critical structures needed for the CCIRES program. Translational Research Activities, Diffusion of Innovation, and Collaboration were seen as the three vital processes needed for CCIRES to achieve the one Outcome component of Narrowing Gaps: Academic-Service Gap/Research-Practice Gap. There was alignment between the SWOT analysis results, the CCIRES Charter, and the Inputs, Outputs, and Outcomes of the 2012 CCIRES Logic Model. The CCIRES Charter has outlined the mission, vision, structures, processes, and role responsibilities of the CCIRES program since its inception in 2010. The linkages between these two data sources to the CCIRES Charter demonstrated a

unified focus and collaborative commitment to the academic-service partnership program by CCIREs members.

SWOT analysis limitations. The SWOT analysis may have reflected the various biases of the survey respondents. The members of CCIREs employed by KP may have had a vested interest in seeing the CCIREs program succeed within the KP environment. During the second year of the CCIREs program, the academic member of CCIREs became the director of the DNP program in which the investigator was a student. The academic member may have had a vested interest in wanting this student to succeed. The survey respondents were also privy to insider knowledge related to organizational sponsorship, KP infrastructure, and institutional barriers. Insider knowledge and personal biases may have influenced CCIREs members' responses as they completed the SWOT analysis survey.

SWOT analyses have multiple shortcomings. Although experts cite the SWOT analysis as an excellent first step in examining personal development and/or organizational activities due to its unencumbered process and simple format (Pearce, 2007), others believe that the question-based system is too easy (Valentin, 2001). Valentin (2001) stated that a conventional SWOT survey offering checklist styled questions yields subjective, shallow, and misconstrued results that do not provide insightful organizational strategies (Pearce, 2007; Valentin, 2001). These one-dimensional outcomes may distract CCIREs members from the critical issues that must be faced in order for the academic-service partnership to grow and become sustainable (Valentin, 2001). Therefore, academic-service partners and organizational sponsors

should view the CCIRES program SWOT analysis results as offering guidance, rather than presenting a strategic roadmap (Pearce, 2007).

SWOT analysis results for decision-making. CCIRES members will use the SWOT data analysis to examine the strengths, challenges, resources, and opportunities for growth of the CCIRES program (City of Kingston, 2000; Huerta et al., 2003). Data analysis results were presented to the CCIRES members during a scheduled web-based meeting during month seven (Huerta et al., 2003). The organizational sponsors will determine the next steps for the CCIRES program when they are presented with the results of the SWOT analysis and the CCIRES members' recommendations.

Logic Model

Group consensus during a regularly scheduled CCIRES webinar meeting was the formative and summative data analysis technique for each item and category component of the 2012 CCIRES logic model (MacPhee, 2009). CCIRES members examined the ten components of the investigator-developed 2010 CCIRES Logic Model, which were Situation, Patient Population, Assumptions, External Factors, Inputs, Outputs, Short Term Outcomes, Medium Term Outcomes, and Long Term Outcomes. A consensus building process agenda structured the 90-minute meeting and involved the academic nursing scholar and the three CCIRES members employed by KP SCAL. The 2012 CCIRES Logic Model focused on the alignment of structure, process, and outcome components of the CCIRES program (Valentin, 2001). CCIRES members analyzed the individual components of the logic model in order to determine gaps and commonalities. The 2012 CCIRES Logic Model evaluation revealed the interrelated components and elements necessary for the design, implementation, and evaluation of an academic-

service partnership program such as CCIRES (MacPhee, 2009; McCawley, 1997; Patton, 2008).

Situation, patient population, and aims. The Situation component remained unchanged from the investigator-developed 2010 logic model. However, CCIRES members changed the description of the Patient Population component to “Patients throughout the care continuum and the community served by CCIRES.” An “Aims” component was added that stated, “Bridge the education-practice-research gap to ensure nursing care is evidence-based throughout the patient care continuum” in order to better articulate the goals of the CCIRES program. These three major components were essential for the remaining construction of the 2012 CCIRES Logic Model. Linkages can be made from the Situation, Patient Population, and the Aims components to the SWOT themes of Human Capital, Translational Research Activities, Narrowing Gaps, and the CCIRES Charter.

Assumptions and external factors. The identification of the underlying assumptions and external factors influencing the CCIRES program was a key factor for CCIRES program evaluation (Patton, 2008). Two original Assumptions remained unchanged, with an added element of “Collaborative nursing partnerships potentiate the bridging of education-practice-research gaps.” All three elements within the component of External Factors required updating, with an additional element highlighting recent mandates for an increase in the rigor for evidence evaluation (Deutschman et al., 2012). Linkages can be made from the Assumptions and External Factors components to the SWOT themes of Infrastructure, Human Capital, Translational Research Activities,

Narrowing Gaps, Competencies, and Organizational Sponsorship and the CCIREs Charter.

Inputs. Committed human and fiscal resources populated the logic model component of Inputs (MacPhee, 2009). CCIREs members examined the elements of Time, Money, People, Equipment, and Facilities and made significant modifications. Three elements remained unchanged, which were Executive Organizational Sponsors, Medical Life Science Librarian, and Physical and Virtual Infrastructure, with the CCIREs Charter added as a critical new element. CCIREs members' past experience in building and sustaining the infrastructure necessary for an academic-service partnership program had a significant impact on the updated elements. The SWOT themes of Infrastructure, Human Capital, Organizational Sponsorship, and Budgetary Constraints were evident in this section of the 2012 CCIREs Logic Model.

Outputs. What CCIREs does and who CCIREs reaches determined the major component of Outputs (MacPhee, 2009; Patton, 2008). CCIREs members added the element of "Utilize nursing experts" to "What CCIREs Does" and modified one element to reflect CCIREs consultation activities for integrative review and evidence summaries. Under "Who CCIREs Reaches," CCIREs members added "Health care researchers." An original element of "KP+Community professional staff nurses" was modified and added nursing leaders in order to capture both academic and practice nursing leaders. The original and modified Output elements were reflected in the CCIREs Charter and in the SWOT themes of Infrastructure, Human Capital, Translational Research Activities, and Organizational Sponsorship.

Outcomes. The final logic model component of Outcomes was divided into three subcomponents of Short Term Outcomes, Medium Term Outcomes, and Long Term Outcomes (McCawley, 1997). CCIRES members examined each outcome element to determine if the goals were appropriate, measurable, and achievable (MacPhee, 2009; McCawley, 1997; Patton, 2008). CCIRES members added three new short-term outcome goals to articulate the utilization of CCIRES resources, increased requests for integrative reviews and evidence summaries, and the development of a publication plan with author guidelines. Medium-term outcomes remained unchanged from the five original outcome goals. CCIRES members did not modify the seven long-term original outcomes, but did add an outcome goal of “Modification of CCIRES Program results from grant-funded research study.” These outcomes components demonstrated linkages to the central mission, vision, and goals of the CCIRES Charter, as well as all of the SWOT themes.

Logic model limitations. The logic model was an outcome-focused model that provided CCIRES members with a method of examining the rationale, goals, inputs, outputs, and outcomes of the CCIRES program (Parker, Burrows, Nash, & Rosenblum, 2011). This program assessment tool has been cited as an excellent method of communicating and informing program planning, implementation, monitoring, and management that crosses professional disciplines (Hayes et al., 2011; Lane & Martin, 2005; Parker et al., 2011; Reinert, Carver, Range, & Bobrycki, 2004). Described as being grounded in reality, the logic model provides a simple and linear visual guide that systematically examines the relationships and linkages between a program’s objectives and its desired accomplishments (Lane & Martin, 2005; Parker et al., 2011; Reinert et al., 2004). However, some experts believe that the logic model has limited usefulness,

particularly for programs seeking to capture unintended outcomes and explore the processes that produced the intended outcomes (Parker et al., 2011). Feedback mechanisms necessary for collaborative work were missing from the traditional linearly structured CCIRES logic model (Patton, 2008). This omission may hinder CCIRES members' ability to reflect on the iterative processes needed for the achievement of higher-level short-term, medium-term, and long-term outcomes required for sustainability of the CCIRES program (Parker et al., 2011; Patton, 2008).

Logic model results for decision-making. Group consensus allowed CCIRES members to examine the complex structures, processes, goals, and outcomes deemed essential for achieving the goals of CCIRES and served as a decision-making tool for CCIRES program evaluation (MacPhee, 2009; Polit & Beck, 2008). CCIRES members will use the individual components of the 2012 logic model to assess academic-service partnership program goals, outcomes, and the effectiveness of the CCIRES program (Polit & Beck, 2008).

An examination of the critical linkages between the aforementioned components of the logic model by CCIRES members will complete the final synthesis of the logic model (MacPhee, 2009; McCawley, 1997; Patton, 2008). The interconnections between the 2012 CCIRES Logic Model, the SWOT Analysis, and the CCIRES Charter demonstrated alignment with the mission, vision, and goals of the CCIRES program. A complete evaluation of the components deemed essential for achieving the goals of CCIRES will be presented to the organizational sponsors for determination of CCIRES program modification and continuation (MacPhee, 2009; Polit & Beck, 2008).

Serendipitous Findings and Other Outcomes

Multiple unexpected findings and other outcomes relevant to the evaluation of the CCIREs academic-service partnership were made clear during the SWOT analysis and the construction of the 2012 CCIREs Logic Model (Fine & Deegan, 1996; Meyer & Turner, 2002). Although some of these findings and outcomes were anticipated by the investigator and other CCIREs members, other outcomes were unplanned and pleasant surprises (Fine & Deegan, 1996; Meyer & Turner, 2002). The following narrative summary outlines secondary findings and other outcomes of the CCIREs program, with select pictorial information and images. The following exemplars illustrate the continued growth and development of the CCIREs program.

Increased Membership of CCIREs

The addition of a KP staff nurse, a KP department nurse manager, and medical life science librarian addressed the 2012 CCIREs Logic Model component of Inputs, under the element of Medical Life Science Librarian and CCIREs Core Group membership, as well as concerns expressed in the SWOT analysis regarding underrepresented staff nurse members.

CCIREs Website

The investigator and webmaster designed the CCIREs website during November/December of 2011, with final website construction completed the first week of January 2012. CCIREs members reviewed the website design, format, and content in December 2011 during a CCIREs webinar meeting. The website consists of eight major menu items: Home, Academic-Service Partnership, Education, Integrative Reviews, Tools, FAQ, Links, and Contact, as seen in Figure 14 on page 179. Each menu item

contains content appropriate to the topic, as well as tools and resources relevant to the content. The website addresses several 2012 CCIRES Logic Model components found in Inputs, Outputs, and Outcomes (Short-Term and Medium-Term) and speaks to several SWOT comments. As discussed in Chapter IV, the investigator will conduct this website evaluation separately from this dissertation project after the website has become active. The website will be located at the url <http://ccires.org>

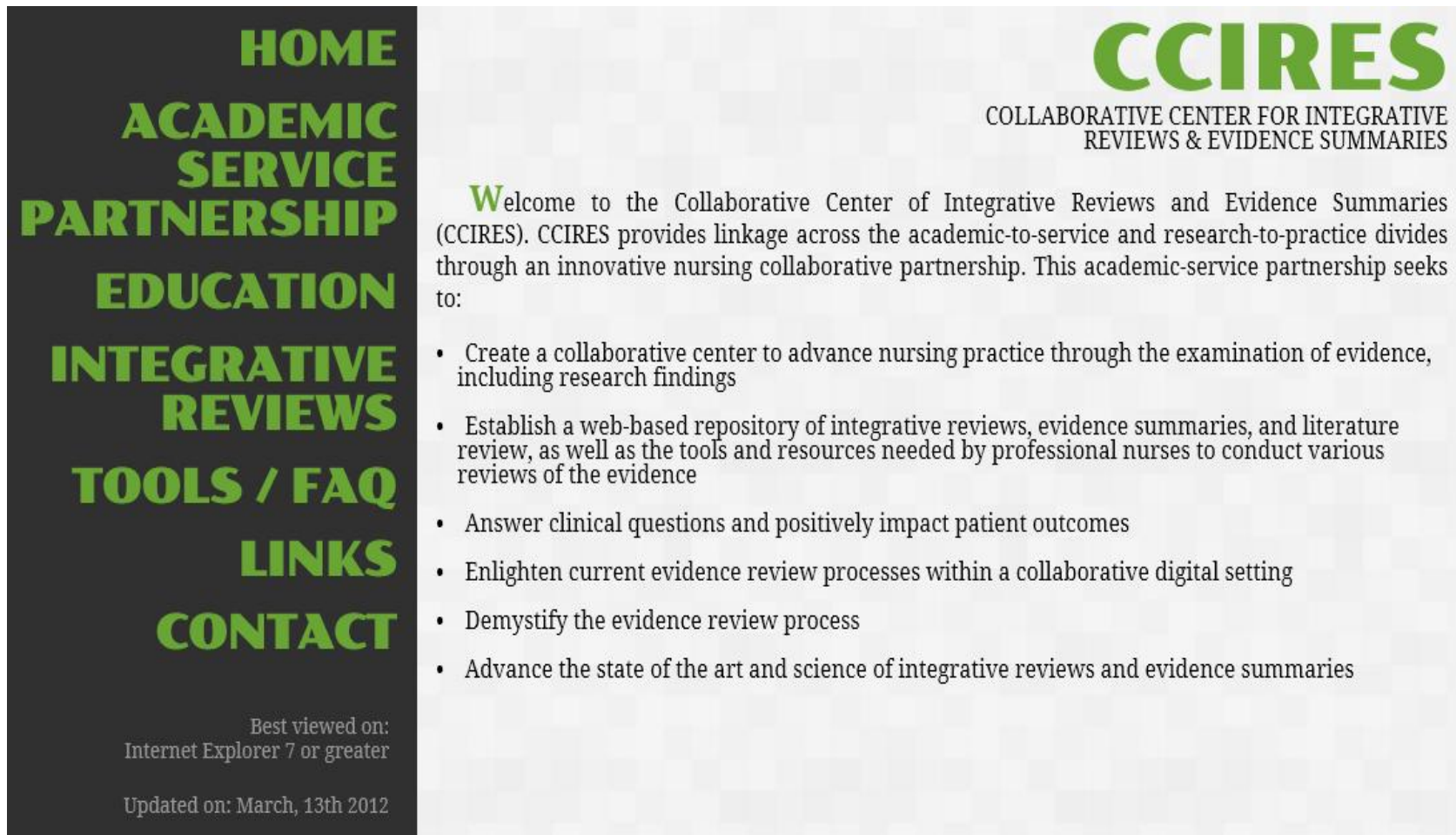


Figure 14. Home Page of CCIRES Website

Increased Competencies of CCIRES Members

Both the SWOT analysis and the 2012 CCIRES Logic Model revealed the desire of CCIRES members to develop their competencies to gather and appraise the evidence, particularly for integrative reviews. The members have committed to a 2012 CCIRES goal of completing an integrative review on the quantity, quality, and consistency of the evidence for a pain resource nurse program in the acute care setting. An original member of CCIRES, the critical care CNS from a local medical center, has volunteered to coordinate this integrative review. This review of the evidence will be used by the KP SCAL Regional Nursing Program as a key information source for the future construction of a Pain Consortium. The original CCIRES member has also translated the skills she developed over the past two years to her Doctor of Nursing Practice (DNP) program and states it was critical in the development of her DNP project (Emma C., personal communication, January 25, 2012). The pain resource nurse integrative review and the DNP project fulfill elements found in the CCIRES Logic Model for the components of Outputs and Outcomes (Short Term, Medium Term, and Long Term) and SWOT feedback.

CCIRES members continued to enhance their evidence review competencies by critiquing an integrative review generated by a local KP SCAL medical center's nursing research committee. Using a structured and systematic method, CCIRES members analyzed the integrative review's individual components and offered suggestions for enhanced quality, methods, and usefulness (Stetler & Marram, 1976). This activity specifically addressed the 2012 CCIRES Logic Model Output component of "Evaluate integrative reviews and provide feedback, comment, expertise, and guidance."

Development of Resources and Testing of Tools

Both the SWOT analysis and the 2012 CCIRES Logic Model reflected the need to develop tools and resources to support nurses' ability to gather, review, and appraise the evidence. Over the past two years, CCIRES members have developed several tools and resources.

CCIRES evidence leveling system. The KP SCAL Regional Nursing Research Program adapted a tool from the 2001 Canadian Medical Association and Centre for Evidence-Based Medicine to rank the level of the evidence (Canadian Medical Association & Centre for Evidence-Based Medicine, 2009). CCIRES members, which at the time included the KP staff nurse, tested this KP tool, as well as the American Association of Critical Care Nurses 2009 evidence leveling tool (Armolda et al., 2009). Neither tool allowed CCIRES members to fully rate the level and quality of the evidence (Jones, 2010). In 2011, a CCIRES Evidence Leveling System (ELS) was designed that used key elements from both of the aforementioned evidence ranking system tools.

CCIRES members agreed to conduct interrater reliability testing for the ELS tool. Interrater reliability is defined as the reliability between measures made by different raters (Dawson & Trapp, 2004). Five CCIRES members, including the KP staff nurse, tested this tool as they individually ranked eleven research and nonresearch articles. Krippendorff's alpha coefficient was used to calculate the interrater reliability scores. Krippendorff's alpha is a statistical measure of seeking a level of agreement between analysis units (Krippendorff, 2004). This statistical calculation is adjustable for small sample size, as in the case of the five CCIRES members. Krippendorff's alpha results were between 0.64 to 0.67, considered a moderate correlation (Krippendorff, 2004). Interclass correlation was also calculated as a second measure to examine how well

CCIRES members as a whole agreed on the ranking of articles (Harris & Taylor, 2009). The intraclass correlation for the ELS tool calculated between CCIRES members was 0.65, also a moderate correlation. A mean intraclass correlation score for the ELS tool was calculated at 0.88, which translates into a strong correlation for average measure reliability (Harris & Taylor, 2009; Polit & Beck, 2008).

Table of evidence with rules. Many CCIRES members expressed frustration in completing the Table of Evidence (TOE) matrix during their evidence reviews. A nursing scholar was invited to a CCIRES webinar meeting in 2011 to discuss the creation of “rules” for each section of the TOE. Her suggestions were incorporated in the updated TOE tool. CCIRES members will test the revised TOE during 2012 and modify if necessary.

Group consensus for selecting an evidence grading tool. Current evidence grading tools were not meeting CCIRES members’ needs, as most were designed to grade quantitatively based research and did not include descriptive studies, qualitative studies, and other types of evidence. An 18-month long evaluation of various grading tools led the group to select the Strength of Recommendations Taxonomy (SORT) Tool as a patient-focused instrument to grade the evidence (Ebell et al., 2004). This tool supports the CCIRES Logic Model components of Outputs and Outcomes (Short Term, Medium Term, and Long Term). CCIRES members will test this tool during 2012.

Crawford KP model of conducting integrative reviews. The 2010 Crawford Model for Conducting Integrative Reviews was nicknamed “The Tornado Model” by CCIRES members, as it featured a tornado-like image illustrating the integrative review process. However, several nurses felt this visual model illustrated chaos and destruction,

rather than the iterative process of evaluating and disseminating the evidence. Evaluation by staff nurses in 2011 revealed that professional staff nurses and clinical nurse specialists disliked the model, as they found it confusing and unusable. In February 2012, the investigator revised the “Tornado Model” to the “Hour Glass Model,” which was critiqued by CCIRES members (See Figure 15, page 184). CCIRES members will continue to evaluate and test this model throughout 2012.

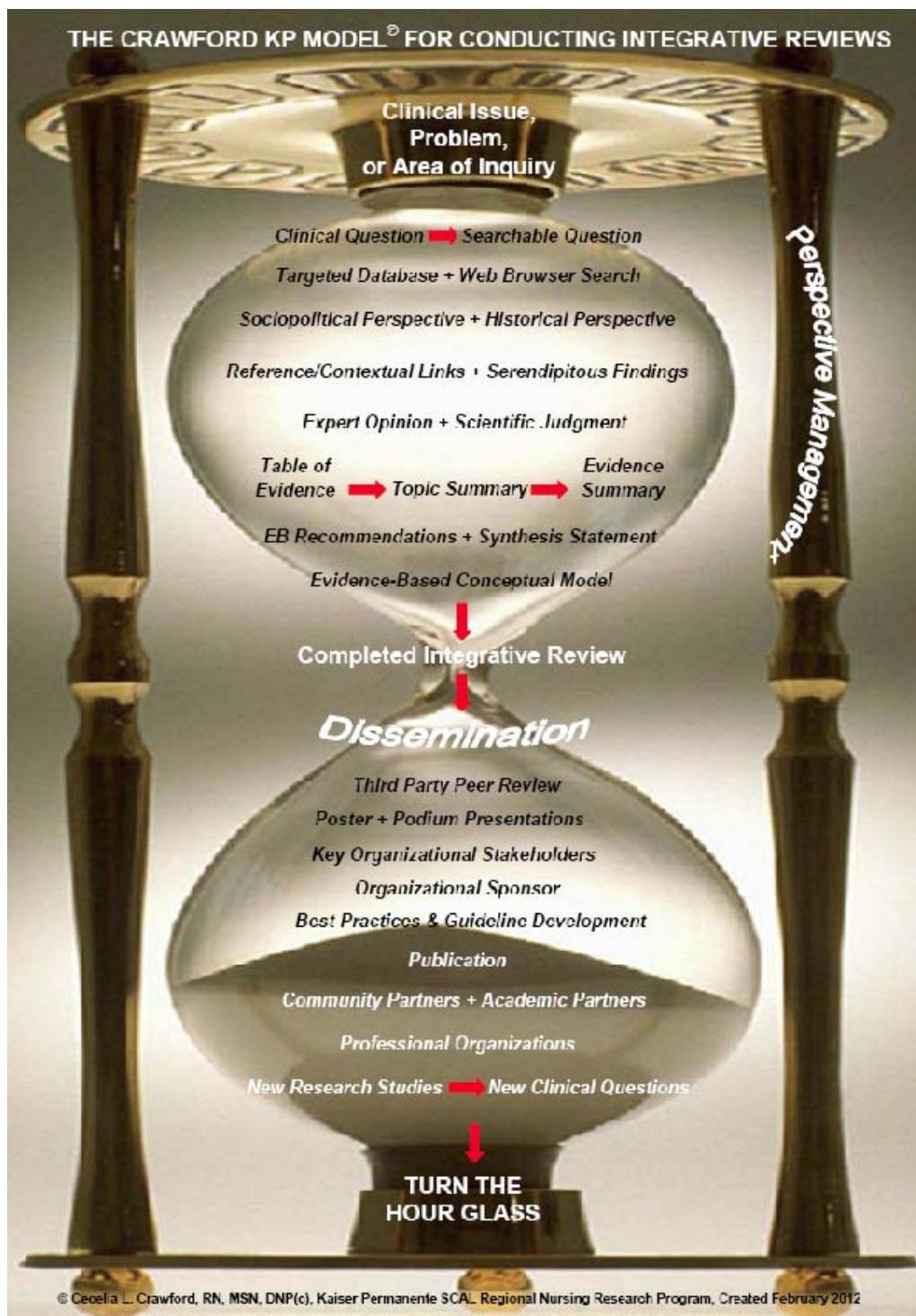


Figure 15. Crawford KP Model for Conducting Integrative Reviews. Available at <http://ccires.org> Copyright 2010 by KP SCAL Regional Nursing Research Program. Used with permission from KP SCAL Regional Nursing Research Program.

Practice Implications: Translation into Nursing Practice

The SWOT analysis and Logic Model construction were needed to determine if CCIRES was effective, if CCIRES program goals were achievable, and if the program was worth sustaining (Patton, 2008; Polit & Beck, 2008). Although the organizational sponsors will make the final determination, the data results of the formative and summative evaluations demonstrate the worth and value of academic-service partnership like the CCIRES program. The strengths and opportunities of CCIRES have the potential to counter the effects of the weaknesses and threats and transform CCIRES into an international powerhouse of translational research activities. The unpredictable changes in the health care environment present challenges that CCIRES and other collaborative groups are meeting with innovative partnerships, technology, and networks with novel social systems to gather, translate, and disseminate knowledge (Barnard, 2002; Cader et al., 2009; Sebastian et al., 1998; Tsai & Chai, 2005).

The academic-service partnership commitment in CCIRES provides linkage across the academic-to-service and research-to-practice divides (Porter-O'Grady, 2003; Porter-O'Grady & Malloch, 2007). Decreasing the existing gaps in the education-practice-research triad via more efficient use of time, resources, knowledge, and information will potentially impact the effectiveness of high-quality patient care (Donabedian, 2003; Titler, 2010). Academic-service partnership programs such as CCIRES can demonstrate nursing's contribution to evidence-based care by illustrating how clinical metrics can be influenced by relevant and meaningful bench-to-bedside knowledge (De Geest et al., 2010; Schifalacqua, Soukup, Kelley, & Mason, 2012). A 2011 integrative review by CCIRES titled "Effective Strategies for Fall Prevention/Prevention of Harm from Falls" has been used by several KP groups to

enhance fall prevention programs. Nursing experts have estimated one patient fall as costing \$4,233.00 per fall occurrence (Schifalacqua et al., 2012). Disseminating and applying the best available evidence throughout an entire regional health care system can potentially result in savings in health care dollars and resources, as well as improvement in patient mortality and quality of life measures (Finkler, Kovner, & Jones, 2007; Schifalacqua et al., 2012).

Meaningful knowledge is needed by nurses seeking to practice evidence-based and safe patient care (Brouwers et al., 2010; Malloch & Porter-O'Grady, 2006). CCIRES' collaborative goal of narrowing the discovery-delivery gap restores the education-practice-research triad and facilitates the creation and dissemination of meaningful knowledge into the caring hands of professional nurses (Mitchell, 2008; Titler, 2007).

The practice implications for the CCIRES program have particular resonance for hospitals and health care systems seeking Magnet status (Goode et al., 2011; Ingersoll et al., 2010). Magnet hospitals must demonstrate deeply embedded translational research and evidence-based practice structures and processes that monitor and directly impact achievable and measureable patient-related outcomes (Ingersoll et al., 2010). A collaborative center for integrative reviews and evidence summaries would be a strategic and innovative program to aid in the development of Magnet-specific components to encourage and nurture a culture of research and evidence-based practice while also mentoring new nurse leaders (Byrne & Keefe, 2001). Health care institutions using SWOT analyses and logic models would have both an initial planning strategy and evaluation framework for the design, implementation, and evaluation of a program such

as CCIRES. Magnet hospitals would then have the evaluative methods needed to examine the interrelated components and elements necessary for the success and sustainability of their academic-service partnership programs (MacPhee, 2009; McCawley, 1997; Patton, 2008).

Translation of CCIRES to vCCIRES: A Cost/Benefit Analysis

Twenty-first Century nurse knowledge workers must have 21st Century tools and resources for the safe and effective delivery of evidence-based patient care (Porter-O'Grady, 2003). Although the innovative CCIRES environment seems to bridge both the 20th and 21st Centuries, the CCIRES mindset and infrastructure remain firmly in the 20th Century. CCIRES currently exists within a physical and virtual infrastructure, with many of its tools, instruments, and processes based in the physical world. Although the computer age has allowed documents to move from a paper format to an electronic format, the mere transformation of the physical to the virtual does not magically alter the way in which a person uses or interacts with that document. To date, CCIRES continues to conduct integrative reviews with heavy reliance upon pen-and-paper or desktop computer documentation of database search methodology, results, and appraised findings via static electronic forms (Brouwers et al., 2010). The obvious “next step” for CCIRES is to advance the state of the art and science of integrative reviews by developing web-based and mobile digital tools and resources to gather, appraise, and disseminate the evidence. Only in this manner can CCIRES become readily available, sustainable, and remain meaningful to 21st Century nurse knowledge workers. It is time for CCIRES to make a futuristic leap and become vCCIRES – the virtual Collaborative Center for Integrative Reviews and Evidence Summaries.

Translating vCCIRES

vCCIRES proposes to create a digital investigative framework with tools and resources to gather, examine, and appraise the best available evidence using mobile technologies housed/delivered via web-based and mobile systems with 24/7 access by the CCIRES members and nurse end users. Using the intellectual investment of the academic-service partnership, vCCIRES members would manage the sustainable creation, storage, and distribution of evidence-based materials, tools, documents, and other intellectual property. Proposed innovations housed within the vCCIRES' web-based and mobile virtual environment include the following examples:

- Use interactive digital tablets and other mobile technologies to rapidly search electronic databases in order to obtain the desired data and information
- Utilize mobile technologies to directly enter data and information into digitalized evidence review sheets
- Digitally link qualitative and quantitative evidence review sheets to a table of evidence matrix so that information entered into the evidence review sheet automatically pre-populates the table of evidence
- Create virtual versions of the evidence ranking system, the qualitative grading schema, and quantitative grading schema, which pre-populate the table of evidence
- Create a digital integrative review report template and virtually link the report template to all of the above documents so that the template is pre-populated as each step of the integrative review process is completed

- Create a Twitter account to increase access to and communication with vCCIRES to better support and mentor nurse end users as they gather, appraise, synthesize, disseminate, and apply their new knowledge and information

The aforementioned examples stress a more progressive integrative review process within a modern digital architecture. This 21st Century environment allows clinical questions to be answered “just-in-time,” with a savings in time, effort, related financial costs, and negative patient outcomes.

Web-based Systematic Reviews: Doctor Evidence

To date, no commercial alternatives are available that meet the described clinical needs of nurse knowledge workers. However, a software company has developed a systematic review application that manages and analyzes clinical evidence. Based on the Institute of Medicine’s methodology standards, the Doctor Evidence Systematic Review Platform uses comparative effectiveness analysis to answer medically focused clinical questions (Doctor Evidence, 2012). Doctor Evidence states its application resources are capable of quantitative data storage/management and evidence synthesis, which are useful for examining the evidence for medically-focused questions supported by randomized controlled trials and higher level studies.

Full utilization of Doctor Evidence requires individuals or teams to spend hundreds of hours to search, analyze, and create quantitative-based evidence databases, which are ultimately owned and managed by the software company. The cost of Doctor Evidence runs into the thousands of dollars for one evidence summary and remains incapable of examining and answering nursing questions from a qualitative worldview or

a descriptive study paradigm. The investment involved in developing high-cost proprietary databases over a several month timeline does not fit into vCCIRES members' workflow or resource bandwidth. Thus, the cost/benefit scale does not balance for nurse end users seeking cost-effective rapid access and synthesis of evidence needed for high quality patient care.

Translational Components

In addition to answering “just-in-time” clinical questions, vCCIRES must also demonstrate efficiencies in time, effort, and related financial costs that are ultimately linked to the optimization of patient care effectiveness (Coopey & Nix, 2006; Donabedian, 2003; Kelly, 2007; Malloch & Porter-O'Grady, 2009; Patton, 2008). Setting specific, measurable, and attainable goals that are realistic and time-bound ensures that the vision of vCCIRES can be reached (Patton, 2008; Spitfire Strategies, n.d.). Using a 26-week timeframe (See Appendix Q, Table 16), a detailed outlining of the structures, processes, and effective and efficient outcomes of vCCIRES provides the basis of a cost/benefit analysis, as seen in Table 17.

Table 17

vCCIRES Structure, Processes, and Outcomes Cost/Benefit Analysis

Structure + Processes	Cost	Benefit
KP Internal vCCIRES Project Team <ul style="list-style-type: none"> • Project management, evaluation, sustainability • Solution consulting, analysis, system design team • Development & testing team 	\$119,864.00	21 st Century tools for mobile technologies to access and search electronic databases Sustainable virtual infrastructure Capacity building within an academic-service partnership
Equipment costs: System environments, iPads, other mobile devices	\$20,000.00	Interactive & linked digitalized tools
Nursing Expert: Academic consultant <ul style="list-style-type: none"> • Professional services fee 	\$5,000.00	Capacity building
Nursing Expert: 0.75 vCCIRES KP Innovations Manager <ul style="list-style-type: none"> • Project content/process expert, evaluation & sustainability • Product development & testing team 	\$55,136.00	Capacity building Guide product development, testing, evaluation, and sustainability
Nursing Experts: In-Kind Contributions for vCCIRES Testing/Evaluation <ul style="list-style-type: none"> • Staff nurses: 2 KP, 2 nonKP • CCiRES members: 5 KP, 1 nonKP 	\$2552.00	Capacity building End-user testing and evaluation
0.25 KP Web-Master (Hourly rate x130 hrs x 26 weeks x Employee Benefits)	\$3832.00	Contribute to the generation of knowledge
	\$11,310.00	Capacity building Sustainable virtual infrastructure
Total	\$217,694.00	
Outcomes: Effectiveness & Efficiencies		
24/7 access to vCCIRES website		Accessible website for EBP tools & resources
Answers to relevant clinical questions		“Just-in-time” new knowledge & information
Solutions to clinical problems		Narrow education-practice-research gaps

Note: vCCIRES Cost/Benefit Analysis based upon a 26-week timeline per Appendix Q

The translational components involved in the cost/benefit analysis of vCCIRES include leadership and capacity building, policy/compliance issues, and drivers for instituting and sustaining a required system change. Academic-service partnerships such as vCCIRES must pay careful attention to financial considerations and the linkage of these translational components in order to strengthen and sustain the collaborative partnerships needed to improve outcomes of care (Donabedian, 2003; De Geest et al., 2010; Patton, 2008; Porter-O'Grady & Malloch, 2007).

Leadership and capacity building. Each vCCIRES member, as well as all persons partnering in the design and implementation of vCCIRES, must understand the projected risks and benefits and examine the delicate balance between cost-benefit ratios before proceeding (De Geest et al., 2010; Kirschling & Erickson, 2010). vCCIRES will extend beyond the original core group of academic scholars and practice nurses to include medical life science librarians, a web master, and KP Information Technology (IT) experts. All members will contribute to the power of capacity building in order to make vCCIRES a sustainable reality. Leaders from academia, practice, and KPIT will be expected to partner with KP knowledge brokers and KP sponsors for vCCIRES to be a success. The ability to listen and be flexible will be crucial during the design, implementation, testing, and evaluation of vCCIRES (McIntyre, 2008). Knowledge of vCCIRES goals and commitment to the vCCIRES program are vital; only in this manner can leaders develop the structures and systems needed to create effective and sustainable projects and programs (de Groot et al., 2010).

Leadership must be made evident when creating research and evidence-based practice programs (Byrne & Keefe, 2001; Goode et al., 2011). Visible leadership must

come from all members of vCCIRES, particularly from the underrepresented groups of staff nurses and nurse academics. As suggested by the SWOT analysis, the development of a strategic plan to market vCCIRES could heighten the visibility of the partnership program, highlight the leaders within the program, and offer an opportunity for membership recruitment. Marketing and recruitment strategies may include poster and podium presentations at key academic and professional nursing conferences, as well as establishing a Twitter account. Group, peer-to-peer, and traditional protégé mentoring of vCCIRES members could go far in developing both leadership skills and evidence review competencies (Byrne & Keefe, 2001; Goode et al., 2011). Embedding a deliberate design within vCCIRES to build and strengthen leadership and human capacity is vital, as these components could ultimately determine the success and utility of the academic-service partnership.

Policy and compliance issues. The KP Compliance Department of Privacy and Security will need to review the website to ensure that it does not contain proprietary information, Protected Health Information, or organizational data. All vCCIRES tools and resources will be open to the community of nursing except for past KP-generated integrative reviews. KP legal experts must determine how these evidence reports can be shared via community access. Currently these integrative reviews are located behind a corporate “firewall” and can only be accessed by a KP employee on an authorized KP computer. Compliance training during orientation to vCCIRES will involve the discussion of proper distribution of KP intellectual property, including integrative reviews. vCCIRES members should not see these corporate policies and compliance standards as barriers to the implementation of vCCIRES, but rather as an opportunity to

engage and enlighten a health care system seeking to reinvent itself for 21st Century end users. KP corporate education and compliance training address real and hypothetical security gaps involving technology, security policies, employee responsibilities, deterrent procedures, and consequences for abuse (Shaw & Fischer, 2005).

Systems change. Nurses need 21st Century tools and resources for the safe and effective delivery of evidence-based patient care (Porter-O'Grady, 2003). Health care professionals must collaborate with technology experts to reinvent existing 20th Century tools used for the creation, translation, diffusion, and dissemination of knowledge and information (Williamson, Fineout-Overholt, Kent, & Hutchinson, 2011). The reinvention of modern tools and resources housed within a 24/7 repository will require a systems change involving moving to a more virtual infrastructure and updating current gathering/appraisal processes. Evidence review experts must mentor professional nurses in the competencies needed to access the tools and resources within the new infrastructure and spread the new knowledge beyond virtual boundaries (Byrne & Keefe, 2001; Kirshchling & Erickson, 2010; Pipe et al., 2008; Titler, 2010). The success of this two-pronged strategy will require a systems approach to the design, implementation, and sustainability of vCCIRES in order to narrow current education-practice-research gaps and enhance the delivery of bench-to-bedside knowledge (Enemark, 2003; Kitson, 2009; Kline, 2007; Titler, 2010). A systems approach involves small shifts in behaviors that interact with small organizational changes to produce large repercussions. An understanding of the interactions of vCCIRES may have a larger impact than the retooling of an entire system (Patton, 2008; Porter-O'Grady & Malloch, 2007).

Theoretical and Conceptual Linkages

The evaluation of the CCIRES program revealed multiple references and linkages to the theoretical framework of Diffusion of Innovations (DoI) and the conceptual models of the Model of Diffusion in Service Organizations (MoDSO) (See Chapter II) and the Colorado Patient-Centered Interprofessional Evidence-Based Practice Model, also known as the Colorado Model (See Chapter II). The DoI theoretical perspectives, coupled with the viewpoints of the two conceptual models, informed the structures and processes necessary for design, implementation, and evaluation of the CCIRES innovation (Bordage, 2009; Wilkinson et al., 2011).

Diffusion of Innovations

Diffusion of Innovations (DoI) was used to frame the CCIRES program and stated that “CCIRES (innovation) can be accessed via a dedicated website (communication channel) on a 24/7 basis (time) by the community of professional nurses (social system) seeking to create, translate, mobilize, and/or disseminate knowledge for clinical decision making.” Multiple exemplars from the SWOT analysis outlined the traditional DoI elements. The exemplars offered by CCIRES members described the separate components of innovation, communication channel, time, and social system as representing moments of opportunity and potential threats to the CCIRES program. The CCIRES Charter also articulated these individual components. Diffusion of Innovations elements were present in the 2012 CCIRES Logic Model, including the following:

- Innovation: Inputs - Collaborative Academic Service Partnerships
- Communication Channel: Inputs - Infrastructure of website
- Time: Outcomes - 24/7 open access website

- Social System: Outputs - Who CCIREs Reaches

The Model of Diffusion in Service Organizations (MoDSO)

The Model of Diffusion in Service Organizations (MoDSO) outlined 11 key attributes of service innovations in health care (See Chapter II) (Greenhalgh et al., 2004). The first five perceived standard attributes of innovations were described by Rogers (2003) as relative advantage, compatibility, complexity, trialability, and observability. Greenhalgh et al (2004) augmented Rogers' work with the six additional attributes of potential for reinvention, fuzzy boundaries, risk, task issues, natures of required knowledge, and technical support. The SWOT analysis, 2012 CCIREs Logic Model, and CCIREs Charter were present in all attributes of the MoDSO and included the following:

Relative advantage. The CCIREs innovation presented several obvious and readily adopted advantages (Greenhalgh et al., 2004; Rogers, 2003). CCIREs provides a model for enhanced academic-service relationships, while a 24/7 open access website offers improved tools, resources, and processes, as related to the SWOT themes of Infrastructure, Human Capital, and Narrowing Gaps. These themes were also present in the 2012 CCIREs Logic Model and CCIREs Charter.

Compatibility. The CCIREs program is consistent with the values, professional norms, and perceived needs of the community of nursing (Greenhalgh et al., 2004; Rogers, 2003). The CCIREs innovation provides nurses with the meaningful knowledge they need to deliver high quality patient care within a culture of safety (Baumbusch et al., 2008; Goode et al., 2011; Porter-O'Grady & Malloch, 2007). This attribute is present in the CCIREs Charter and the Logic Model.

Low complexity. The CCIRES innovation is complex. SWOT respondents highlighted these complexities as a potential threat to the success of the CCIRES program (See Appendix P, Table 13). Ensuring that CCIRES is accessible and usable by the nurse adopters could overcome the complex nature of the CCIRES innovation (Greenhalgh et al., 2004; Rogers, 2003).

Trialability and potential for reinvention. Easy reinvention and experimentation of innovations by nurses increases organizational adoption and assimilation rates (Greenhalgh et al., 2004; Rogers, 2003). A review of CCIRES tools by KP staff nurses revealed modifications were needed to increase adoption and use of these important resources. CCIRES members experimented with reinvention as they created, modified, and/or tested the following evidence review tools: (Rogers, 2003)

- Evidence Leveling System
- Table of Evidence with Rules
- Crawford KP Model for Conducting Integrative Reviews (See Figure 15)

These and other reinvented tools allowed CCIRES members to meet specific user needs while also potentially improving the rate of diffusion and dissemination of CCIRES resources. Trialability and reinvention were present in the CCIRES Charter, the 2012 CCIRES Logic Model, and SWOT themes of Translational Research Activities and Diffusion of Innovations.

Observability. The ability of CCIRES to create and deliver just-in-time evidence was seen in the adoption and spread of the 2011 integrative review by CCIRES titled “Effective Strategies for Fall Prevention/Prevention of Harm from Falls.” Various groups within regional and national KP have used this integrative review to enhance fall

prevention programs and assist in the development of fall prevention initiatives.

Observability was present in the SWOT themes of Diffusion of Innovations, Narrowing Gaps, and Collaboration, as well as being a central component of the CCIREs Charter.

Fuzzy boundaries. Complex innovations such as CCIREs have a “hard core” of critical elements surrounded by a “soft periphery” or fuzzy boundary. These boundaries represented the organizational infrastructure and systems needed for CCIREs implementation (Greenhalgh et al., 2004). Often linked to reinvention, the undefined boundaries of CCIREs were evaluated to determine a innovation-system fit and if the KP system was ready for the CCIREs innovation (Greenhalgh et al., 2004). The key concepts of fuzzy boundaries were present in the 2012 CCIREs Logic Model Inputs and Outputs components, as well as the SWOT themes of Organizational Sponsorship and Infrastructure.

Risk. Innovative programs such as CCIREs are inherently risky (Kirshchling & Erickson, 2010; Sowell, 1996). The SWOT analysis explored the risks and benefits of the CCIREs program. SWOT data results previously described that a balance between the strengths/opportunities and the weaknesses/threats of the CCIREs program was necessary if the CCIREs innovation was to be adopted and sustained within the KP system (Greenhalgh et al., 2004).

Task issues. CCIREs must be workable, usable, and feasible for successful assimilation by nurse adopters (Greenhalgh et al., 2004). The CCIREs Charter, the 2012 Logic Model, and the SWOT analysis described that demystifying the integrative review process was central to the mission of the CCIREs innovation.

Nature of knowledge required. The knowledge generated by CCIRES must be codified and transferred from one context to the next to ensure easy adoption by nurse end users (Greenhalgh et al., 2004). Incorporation of this critical attribute was present in the structure and processes of CCIRES during design, implementation, and evaluation phases, as seen in the CCIRES Charter and 2012 CCIRES Logic Model.

Technical support. The CCIRES website designed customized technological features, training, and resources to promote easy adoption by nurse end users (Greenhalgh et al., 2004). CCIRES members utilized the services of a software developer for the CCIRES website design. Training presentations, a frequently asked questions (FAQs) menu item, and the ability to e-mail feedback to CCIRES members are in place to enhance the adoption process. The attribute of technical support is present in the 2012 CCIRES Logic Model, the CCIRES Charter, and the SWOT theme of Virtual and Physical Infrastructure.

Colorado Model for Evidence-Based Practice

The Colorado Model's framework is composed of four essential attributes for establishing an evidence-based practice environment: organizational support, leadership, mentorship, and facilitation (Goode et al., 2011). This model also emphasizes evidence-based nursing practice through the "ask, acquire, appraise, apply, and assess" evidence cycle (Goode et al., 2011). The CCIRES Charter, 2012 CCIRES Logic Model, and SWOT analysis articulated the components of the Colorado Model and will be discussed individually.

Organizational sponsorship. This attribute is present in the CCIRES Charter under the "Sponsorship" statement and in the 2012 CCIRES Logic Model components of

Inputs (Executive Organizational Sponsors) and Outputs (Who CCIREs Reaches). The SWOT theme of Organizational Sponsorship directly reflects this key component. As discussed previously, organizational sponsorship was an important determinant of the CCIREs sustainability plan and related directly to the preliminary success of the CCIREs Innovation (Goode et al., 2011).

Leadership. Leadership was highlighted in the 2012 CCIREs Logic Model component of Outputs (Who CCIREs Reaches), but was only briefly articulated in the SWOT theme of Human Capital and was missing all-together in the CCIREs charter. Although CCIREs members are viewed as leaders by their peers, this leadership component is critical to establishing an evidence-based practice environment and must be made more visible within the CCIREs program (Goode et al., 2011).

Mentorship. CCIREs members demonstrated different levels of role modeling within and outside of the KP environment as they mentored professional staff nurses in the gathering, appraisal, and translation of the best available evidence (Goode et al., 2011). The mentorship attribute was present in the CCIREs Charter under “Purpose” and “Strategic Infrastructure” statements and in the 2012 CCIREs Logic Model components of Outputs (What CCIREs Does) and Outcomes demonstrating development of evidence review competencies. The SWOT themes of Translational Research Activities and Competencies spoke directly to this key attribute.

Facilitation. The CCIREs program sought to create an easily navigated integrative review process by strategically engaging key stakeholders and offering evidence review consultant and resources (Goode et al., 2011). The CCIREs Charter articulated facilitation structures and processes under “Purpose” and “Strategic

Infrastructure” statements. The 2012 CCIRES Logic Model had direct links to facilitation, as found in Inputs (Sponsors, CCIRES Core Group), and Outcomes demonstrating tools, resources, and development of evidence review competencies. The SWOT themes of Human Capital, Organizational Sponsors, Translational Research Activities, and Competencies supported by this attribute.

Evidence cycle. Evidence-based nursing practice was supported through CCIRES version of Goode’s “ask, acquire, appraise, apply, and assess” evidence cycle (Goode et al., 2011). The Crawford KP Model for Conducting Integrative Reviews was a striking visualization of this evidence cycle, which outlined each iterative step needed to complete and actively disseminate the results of integrative reviews.

Colorado model’s use of evidence. The Colorado Model makes use of research and nonresearch evidence to answer clinical questions. Nonresearch evidence supplements current research evidence if it is lacking or does not fully answer the clinical question (Goode et al., 2011). CCIRES members incorporated this basic premise of the Colorado Model when they created the CCIRES Evidence Leveling System to fully rate the level and quality of research and nonresearch evidence. CCIRES member also found that current evidence grading tools only graded quantitatively based research and did not include descriptive studies, qualitative studies, and other types of evidence. In 2012, CCIRES members will adapt a tool that integrates research and nonresearch evidence as part of the evaluation and grading process. These activities supported the CCIRES Logic Model components of Outputs and Outcomes components involving evidence appraisal. The CCIRES Charter (Strategic Infrastructure) and SWOT theme of Translational Research Activities reflected this vital component of the Colorado Model.

Summary of Theoretical Perspectives

The use of theoretical frameworks and conceptual models assisted in deconstructing some of the intricacies involved in the work of CCIREs as members sought to translate evidence into meaningful knowledge and establish an innovative academic-service partnership program (Bordage, 2009). However, CCIREs members may have viewed passive diffusion activities as more doable than active dissemination activities, due to time constraints, role responsibilities, and organizational barriers. The active complexities of the MoDSO model could prevent the spread of the CCIREs innovation, which increases the likelihood that the passive nature of the DoI model will dominate (Greenhalgh et al., 2004). The simplicity of the Colorado Model could interact with the passive characteristics of the Diffusion of Innovations (DoI) framework by emphasizing the active cycle of asking, acquiring, appraising, applying, and assessing evidence (Goode et al., 2011). The use of DoI, MoDSO, and the Colorado Model underscore the complex nature of the CCIREs innovation. These complexities frame the final “Lessons Learned” of the CCIREs collaborative experience.

Lessons Learned: The Complexities of CCIREs

From the original vision and mission, to the assumptions and external factors, and the final descriptions of structures, processes, and outcomes, CCIREs sought to create, implement, and evaluate the structures, processes, and usability of an academic-service partnership program via formative and summative data. At first, the specific purposes of the CCIREs program seemed to be complicated issues needing linear processes; the use of the logic model as an evaluative tool emphasized these linear processes (Patton, 2008). However, this investigator soon discovered that the development and translation of

evidence and knowledge was a complex issue (Berry, 2011). CCIRES mirrored this discovery as it transcended the complicated and became increasingly complex.

Complicated versus Complex

Complicated problems can be broken down in distinct stages and segments and solved in a linear fashion (Patton, 2008), like putting a child's bicycle together using step-by-step instructions and a diagram. Although one or two people might need to make critical decisions to coordinate achieving the finished product, the procedural framework for bicycle assembly is specific and clear (Patton, 2008). The development of the CCIRES Evidence Leveling System was a complicated but successful activity, due to the CCIRES members' ability to break down the process into separate steps and complete each step before moving to the next.

Complex problems cannot be broken down into linear stages, segments, or components; there are no detailed recipes, explicit assembly plans, or step-by-step guidelines that will guarantee a reproducible product or outcome (Patton, 2008). It is difficult, if not impossible, to separate the whole of a complex problem from its parts, as the essence of the problem's complexities are the interactions and relationships of the whole and its parts (Patton, 2008). The unique relationships and interactions that typify complex situations arise out of seemingly unrelated systems and processes that may eventually become clear over time (Patton, 2008; Porter-O'Grady & Malloch, 2007).

The design, implementation, and evaluation of the CCIRES academic-service partnership was complex, as it involved human relationships, capacity building, technology integration, recognition of organizational boundaries, and determining relational "ground rules," all of which shifted over time (Patton, 2008; Porter-O'Grady &

Malloch, 2007). The ever-changing aspect of CCIREs required members to adjust and adapt, become fluid and flexible, and learn to recognize patterns and contrasts as the academic-service partnership matured (Patton, 2008; Porter-O'Grady & Malloch, 2007).

Future Complexities

The creation of the CCIREs academic-service partnership involved personal tacit knowledge, explicit codified knowledge, human capacity, social networks, technology, 21st Century health care environments, and nursing's social mandate (Bakken, 2006; Clements & Crane, 2006; Goode et al., 2011; Sanchez, 2004). If the CCIREs innovation was complex, the proposed vCCIREs innovation is even more complex, as the academic-service partnership program and its resulting website repository and resources require increasingly sophisticated technologies within a 21st Century infrastructure. vCCIREs members must understand the intersection of humans, technology, and caring in order to translate the complexities of the vCCIREs innovation within and outside of the KP environment (Anderson & Aydin, 2005; McNeely & Wolverton, 2008). Ensuring that vCCIREs is comprehensive and accessible for nurse end users is key to the success and sustainability of the academic-service partnerships' goals (Rogers, 2003).

Final Reflections: A Call to Action

CCIREs members identified "CCIREs program complexity" as a threat to the CCIREs Program. Over the past two years, academic-service partners became aware of these complexities as the politics of evidence-based practice and the multifaceted nature of translating knowledge were made evident. CCIREs members learned that how health care professionals label, ask, and answer a clinical question was as significant the question's context and who was asking it (Guyatt et al., 2008; Holmes, Perron, &

O'Byrne, 2006; Titler, 2010; Upshur et al., 2001). Nursing questions often differ from medical questions, as nursing's central philosophy focuses on the care of people (Bakken, 2006; Clements & Crane, 2006; Malloch & Porter-O'Grady, 2006), while medicine's central philosophy traditionally focuses on curing disease (De Valck, Bensing, Bruynooghe, & Batenburg, 2001). Even if the same evidence is sourced, the answers to nursing questions versus medical questions and how they are applied in clinical practice often reflect the two differing worldviews (Holmes et al., 2006; Stein, 1967; Upshur et al., 2001).

CCIRES members were well aware that randomized controlled trials (RCTs) have long been considered the “gold standard” to test many patient care problems and that both medicine and nursing regularly stressed the value of research over the value of authority (Guyatt et al., 2008; Holmes et al., 2006; Porter & O'Halloran, 2009; Rubenfeld & Scheffer, 2010; Upshur et al., 2001). Until recently, the medical world often viewed descriptive studies, qualitative empirical studies, and other lower level forms of research as “poor” or “insufficient” evidence as compared to RCTs (Holmes et al., 2006; Marston & Watts, 2003; Porter & O'Halloran, 2009; Upshur et al., 2001). However, past and current nursing questions frequently involved vulnerable patient populations (e.g., patients at high risk for falls) (Healey, Oliver, Milne, & Connelly, 2008; Polit & Beck, 2008). Many nursing researchers considered RCT-based research involving these types of vulnerable patient populations as unethical. Rather than structure research studies with control and/or placebo groups for vulnerable patient populations, researchers sought to answer these types of nursing questions using research involving descriptive studies

and/or qualitative empirical studies (Healey et al., 2008; Polit & Beck, 2008; Resnik, 2008).

Nursing's refusal to limit its evidence base solely to RCTs pushed the community of nursing beyond the quantitative empirical world of RCTs and into a world rich with various types of research and nonresearch evidence (e.g. quality improvement and risk data, Center for Disease Control statistics, and cost effectiveness analyses), as guided by patient values and clinical experts (Benner et al., 2010; Cullen et al., 2008; Goode, 2000; Goode et al., 2011; Malloch & Porter-O'Grady, 2006). Research experts often use the aforementioned nonresearch evidence to supplement current research evidence if it is lacking or does not fully answer the clinical question (Goode et al., 2011). Nevertheless, CCiRES members have seen many health care professionals, including nurses, use the words "poor" and "insufficient" as hard stops to the testing and evaluation of new treatments, procedures, and processes, rather than using these words as a springboard for further discussion. Insufficient evidence should not delay testing and evaluating a practice change if the reported evidence is strong enough to make concluding recommendations when guided by scientific judgment, clinical expertise, and patient preferences (Jones, 2010; Rawlins, 2008). CCiRES could be one of the springboards needed to move past the hard stops of evidence and introduce a new venue for the discussion, exploration, and translation of evidence.

Nurses, physicians, and other health care professionals has realized that the time has come to reevaluate the current evidence hierarchies, the existing evidence grading systems, and the processes for appraising the evidence in order to move past the gold standard of RCTs and seriously consider the inclusion of other types of evidence (Guyatt

et al., 2008; Holmes et al., 2006; Upshur et al., 2001). A call to action has been issued that challenges all of health care to expand the evidence and accept observational studies, qualitative studies, and other types of evidence that reflect the real world of patients (Fleurence, Naci, & Jansen, 2010; Guyatt et al., 2008; Holmes et al., 2006; Upshur et al., 2001).

CCIRES members are ready to answer the recently issued challenge for researchers to modernize the traditional method of producing “reliable knowledge” and instead produce “socially robust knowledge” that has been generated by society-science partnerships (Woods & Magyary, 2010). However, this challenge omits an important voice from the discussion of knowledge – that of the patient (Porter & O'Halloran, 2009). Although many health care professionals would argue that patient inclusion is implied in the aforementioned statement, the inclusion of patients and their values, preferences, and experiences must be made plain (Porter & O'Halloran, 2009). Therefore, the challenge for 21st Century researchers is to produce “patient-centered and socially robust knowledge” that has been generated and driven by society-patient-science partnerships and scientific judgment. This call to action offers the community of nursing an opportunity to collaborate with a diverse group of academic and health service experts in evidence methodology at the local and national level. Groups spearheading this patient-focused movement include the Patient-Centered Outcomes Research Institute (PCORI), the Agency for Healthcare Research and Quality (AHRQ), and the National Institutes of Health (NIH).

CCIRES members are part of the “patient-centered and socially robust knowledge” movement, as demonstrated by the development and testing of the CCIRES

Evidence Leveling System, which incorporated quantitative, qualitative, and other types of evidence as part of the system's central design. CCIRES members are currently evaluating an evidence grading system to appraise the quality of patient-oriented evidence in order to ensure that clinical expertise and patient values and preferences are considered alongside RCTs, systematic reviews, meta-analyses, and meta-syntheses (Ebell et al., 2004; Guyatt et al., 2008).

These actions and other collaborative activities fulfill CCIRES' mission of advancing nursing practice through the examination of various types of evidence in order to answer clinical questions and positively impact patient outcomes. CCIRES next bold step is to leave the insular community of nursing and begin to partner with other influential national and international groups seeking to increase the breadth, depth, and rigor of the evidence (Committee on Standards for Systematic Reviews of Comparative Effectiveness Research, 2011; Deutschman et al., 2012), such as the Cochrane Collaborative, the Centre for Reviews and Dissemination, and PICORI.

The evaluation of CCIRES and its relationships, interactions, and linked systems and processes, demonstrated that the whole of CCIRES is greater than the sum of its interrelated parts. Although the CCIRES program is complex, CCIRES' technological innovations and collaborative academic-service partnerships realize the 2010 Institute of Medicine's *Future of Nursing* recommendations. This revolutionary report proposes expanded opportunities for nurses to lead and diffuse collaborative improvement efforts, ensure nurses engage in lifelong learning, and prepare and enable nurses to lead change to advance health care (IOM, 2010). The 21st Century nurse knowledge worker must have 21st Century tools and resources for nursing's societal mandate of safe and effective

delivery of evidence-based patient care (Porter-O'Grady, 2003). The academic-service partnership continues to form the synergistic core of CCIRES. This committed partnership unites the “ideal world” of academia with the “practical world” of service and seeks to make relevant knowledge available for scientific decision-making and narrow the education-practice-research gap (Rawlins, 2008; Upshur et al., 2001). CCIRES and its society-patient-science members are poised to answer the call for action and synthesize a new whole as it reinvents nursing knowledge that has meaning for the two people who seek it and need it most – the nurse and the patient (Mitchell, 2008).

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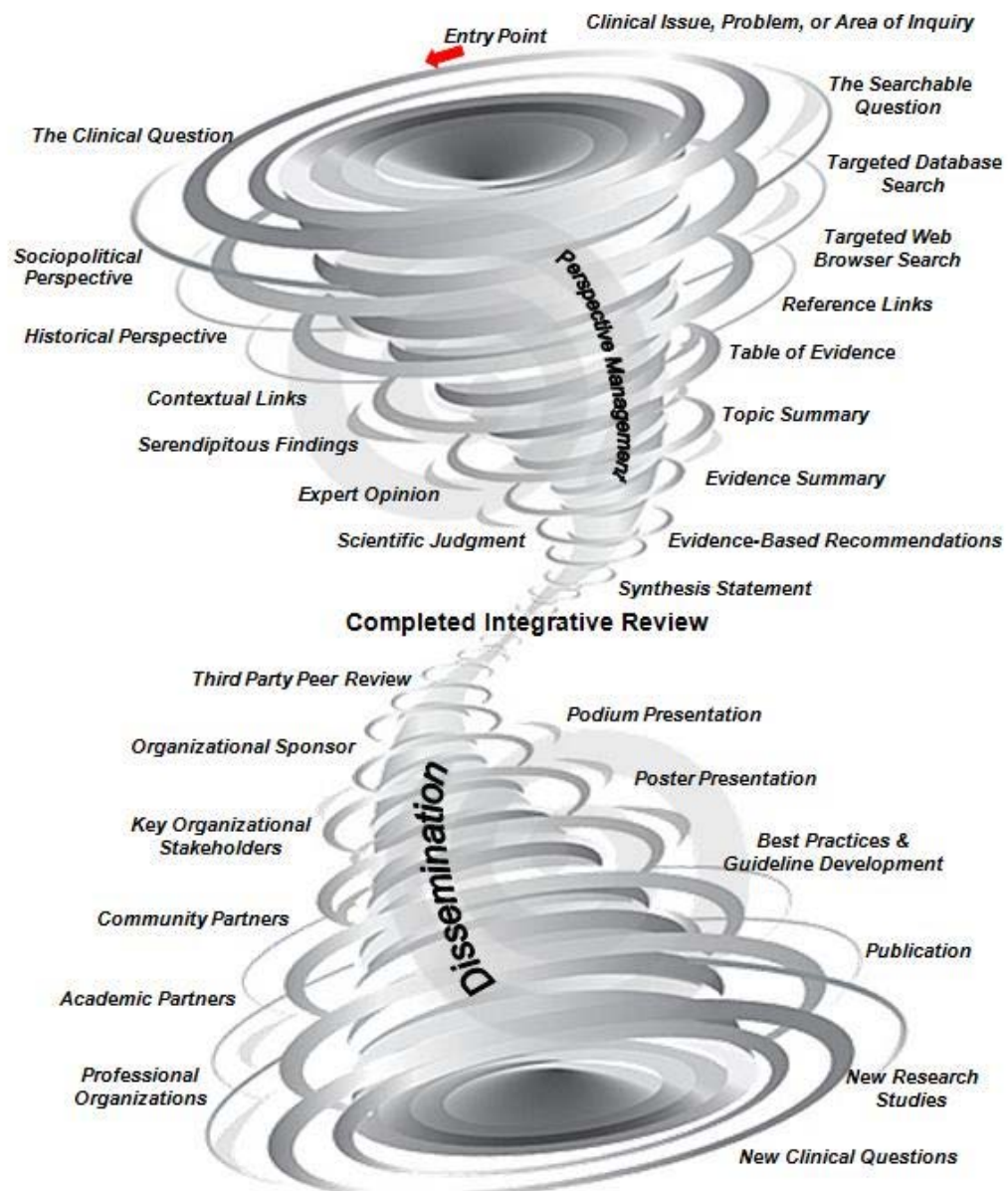
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APPENDIX A

2010 KP CRAWFORD MODEL

THE CRAWFORD MODEL® FOR CONDUCTING INTEGRATIVE REVIEWS



© Cecelia L. Crawford, RN, MSN, Kaiser Permanente SCAL Regional Nursing Research Program, Created May 2010, April 2011

APPENDIX B

CCIRES CHARTER

Collaborative Center for Integrative Reviews and Evidence Summaries CCIRES Charter, Page 1 May 2011

Mission Statement

Create a collaborative center to advance nursing practice through the examination of evidence, including research findings, in order to answer clinical questions and positively impact patient outcomes

Purpose

- Develop a collaborative team of expert nurse reviewers and consultants
- Advance the state of the art and science of integrative reviews and summaries of evidence
- Demystify the systematic and iterative processes of integrative reviews and examination of evidence
- Provide evidence-review expertise and resources to develop professional staff nurses' evidence review competencies

Sponsorship

- Executive Sponsorships
 1. Kaiser Permanente SCAL Regional Nursing Research Program
- Organizational Partners

Strategic Infrastructure

- Evaluate integrative reviews as requested by the Chair and provide feedback, comments, expertise, and guidance
- Conduct an integrative review(s) on selected topics of mutual interest
- Develop tools to facilitate integrative review/evidence summary searches and appraisal
- Create a web-based repository of integrative reviews and evidence summaries, as well as the tools and resources needed to conduct evidence reviews
- Contribute to the generation of knowledge and capacity building for the integrative review process
- Support professional staff nurses in developing the competencies needed to review and use the evidence

Membership Representation

New members are nominated by existing CCIRES members. Invitations are extended by the CCIRES Chair after group consensus.

CCIRES Member Responsibilities

- Attend a minimum of six monthly meetings per year via live, web-based, or telephone meetings
- Agree to at least a two-year tenure on committee
- Disseminate integrative review and evidence summary findings to appropriate committees, as well as interested academic and professional groups.

APPENDIX C

NURSING WEBSITE EVALUATION QUESTIONNAIRE

Table 3

Part I. Please score objectively after browsing the CCIRES web page.

Items	Worse	Bad	Medium	Good	Excellent
	1	2	3	4	5
1. Clear topic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Clear and reasonable arrangement of ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Visual effect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Waiting time for opening website	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Back and forth speed between web pages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Correlation between website name and content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Website can be linked with other websites via common search engine		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. es have accompanying text to assist ption	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Pictures can be opened conveniently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Suitable printed page of single web page for easy browsing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Effectively links with other websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Linked websites provide useful information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Methods are provided for reader's interaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Provided correct information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Provided complete information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Content is valuable for reference	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Data is objective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table 4

Part II. Please score objectively after browsing the CCIRES web page.

Please check these items below by using Yes and No.

Items	1	2
	Yes	No
1. Each page provided a link back to each level of the webpage or to the front page	<input type="checkbox"/>	<input type="checkbox"/>
2. Content was updated regularly with the current date	<input type="checkbox"/>	<input type="checkbox"/>
3. Provided the source of published data	<input type="checkbox"/>	<input type="checkbox"/>
4. Readers' frequently asked questions and the related answers provided	<input type="checkbox"/>	<input type="checkbox"/>
5. Shown the author's name	<input type="checkbox"/>	<input type="checkbox"/>
6. Describing the professional background of the website administrator	<input type="checkbox"/>	<input type="checkbox"/>
7. Professional background of the website administrator related to website content	<input type="checkbox"/>	<input type="checkbox"/>
8. Provided neutral and unbiased health information	<input type="checkbox"/>	<input type="checkbox"/>
9. Having data search function in the website	<input type="checkbox"/>	<input type="checkbox"/>
10. Having a discussion area	<input type="checkbox"/>	<input type="checkbox"/>
11. Having service mailbox	<input type="checkbox"/>	<input type="checkbox"/>
12. Leaving message	<input type="checkbox"/>	<input type="checkbox"/>
13. Labeled the best version of the browser	<input type="checkbox"/>	<input type="checkbox"/>
14. Web browser was compatible to the website function	<input type="checkbox"/>	<input type="checkbox"/>

Note. From "Developing and validating a nursing website evaluation questionnaire," by S. Tsai and S. Chai, 2005, *Methodological Issues in Nursing Research*, 49(4), 406-413. Copyright 2005 by Sing-Ling Tsai and Sin-Kuo Chai. Used and adapted with permission from S. Tsai.

APPENDIX D

SWOT COVER LETTER

To Members of the Collaborative Center for Integrative Reviews and Evidence Summaries (CCIRES):

You now have the opportunity to participate in the evaluation of an academic-service partnership program known as CCIRES. Evaluation of the strengths, weakness, opportunities, and threats (SWOT) pertaining to this collaborative partnership is needed to better understand the CCIRES program. Through completing the SWOT survey, the effectiveness of the CCIRES program will be evaluated and modified to better serve the programs end users of registered nurses and other health care professions.

The survey is sponsored through the Kaiser Permanente Southern California Regional Nursing Research Program.

Completing the online SWOT survey is voluntary. Your employment or performance evaluation at Kaiser Permanente or elsewhere is not affected whether you choose to complete the survey or not to complete it. You may skip questions or stop the survey at any time. Confidentiality is provided in that SWOT surveys are numbered by the web-based survey company and there is no link between numbered surveys and the names of participants. Although slight, there is the possible risk of loss of confidentiality; however, all measures will be taken to protect subject confidentiality. There is no compensation if you choose to complete the survey.

- Please access the online SWOT survey to evaluate the CCIRES program by clicking on this link: [\(hotlink to be embedded when created\)](#). Estimated time to complete the survey is 5 minutes.

Please contact Cecelia L. Crawford, who is the Primary Investigator, at [REDACTED] for any study questions. If you have any questions about rights as a program evaluation participant, please call Armida Ayala, PhD, Director, Human Research Subjects Protection Office, KPSC Institutional Review Board, at [REDACTED]

If you are interested in the survey results when the program evaluation is completed, please email [REDACTED].

Thank you for participating in this critical element of CCIRES program evaluation!

APPENDIX E

CCIRES ONLINE SWOT ANALYSIS SURVEY 2012

You now have the opportunity to participate in the evaluation of an academic-service partnership program known as CCIRES. Evaluation of the strengths, weakness, opportunities, and threats (SWOT) pertaining to this collaborative partnership is needed to better understand the CCIRES program. Through completing the online SWOT survey, the effectiveness of the CCIRES program will be evaluated and modified to better serve the programs end users of registered nurses and other health care professions.

Completing the online SWOT survey is voluntary. Your employment or performance evaluation at Kaiser Permanente or elsewhere is not affected whether you choose to complete the survey or not to complete it. The SWOT survey is divided into four components. Please enter your responses in the text box below each question. There is no time limit to complete this online survey. Your responses may be a short or as long as you wish; there is no limit to the amount of text you enter. You may skip questions or stop the survey at any time. Confidentiality is provided in that SWOT surveys are numbered by the web-based survey company and there is no link between numbered surveys and the names of participants. Although slight, there is the possible risk of loss of confidentiality; however, all measures will be taken to protect subject confidentiality. There is no compensation if you choose to complete the survey.

- **In your own words, what are the strengths of the CCIRES program?**
- **In your own words, what are the weaknesses of the CCIRES program?**
- **In your own words, what are the opportunities of the CCIRES program?**
- **In your own words, what are the threats of the CCIRES program?**

Thank you for participating in this critical element of CCIRES program evaluation!

APPENDIX F

2012 LOGIC MODEL COVER LETTER

To Members of the Collaborative Center for Integrative Reviews and Evidence Summaries (CCIRES):

You now have the opportunity to participate in the evaluation of an academic-service partnership program known as CCIRES. Evaluation of the CCIRES will be conducted to in order to (a) determine effectiveness implementation, and (b) improve the structures and processes of the CCIRES program. This evaluation will take place at the next monthly WebEx meeting of CCIRES and will use online group consensus building process to build the 2011 logic model. A consensus building agenda will structure the activities of this meeting. Analysis of the baseline 2010 logic model and design of the 2011 logic model will determine the effectiveness of the CCIRES program (See embedded documents). Logic model results will allow modification of CCIRES in order to better serve the programs end users of registered nurses and other health care professions.

- 2010 Logic Model
- 2011 Logic Model Template
- Consensus Building Agenda

The survey is sponsored through the Kaiser Permanente Southern California Regional Nursing Research Program. Participating in the WebEx group consensus building meeting is voluntary. Your employment or performance evaluation at Kaiser Permanente or elsewhere is not affected whether you choose to participate during the meeting or do not participate during the meeting. You may decline to participate in the web meeting or leave the web meeting at any time. Confidentiality is provided in that there is no link between logic model and the names of participants. Although slight, there is the possible risk of loss of confidentiality; however, all measures will be taken to protect subject confidentiality. There is no compensation if you choose to participate in the WebEx group consensus building meeting. Logic model results will be sent to all CCIRES members at the conclusion of the web meeting regardless of their participation.

Please contact Cecelia L. Crawford, who is the Primary Investigator, at [REDACTED] for any study questions. If you have any questions about rights as a program evaluation participant, please call Armida Ayala, PhD, Director, Human Research Subjects Protection [REDACTED]

Thank you for participating in this critical element of CCIRES program evaluation!

APPENDIX G

NURSING WEBSITE EVALUATION QUESTIONNAIRE (NWEQ) COVER LETTER

To Active Practicing Registered Nurses:

You now have the opportunity to participate in an academic-service partnership program evaluation of the design and usability of a nursing-focused website. The title of the program is the:

Collaborative Center for Integrative Reviews and Evidence Summaries: CCIRES

A key component of this collaborative program is the construction of a website repository containing CCIRES-designed tools and resources. Through completing the survey, the usability of the CCIRES website will be evaluated and modified to better serve the website's end users of registered nurses and other health care professions. The survey is sponsored through the Kaiser Permanente Southern California Regional Nursing Research Program.

[\(flyer to be embedded here\)](#)

Completing the survey is voluntary. Your employment or performance evaluation at Kaiser Permanente or elsewhere is not affected whether you choose to complete the survey or not to complete it. You may skip questions or stop the survey at any time. Confidentiality is provided in that surveys are numbered by the web-based survey company and there is no link between numbered surveys and the names of participants. Although slight, there is the possible risk of loss of confidentiality; however, all measures will be taken to protect subject confidentiality. There is no compensation if you choose to complete the survey.

- Prior to completing the survey, please access and explore the CCIRES website by clicking on this link: [\(hotlink to be embedded when created\)](#). Estimated time to evaluate the CCIRES website is between 10 to 20 minutes.
- Once you have access and explored the CCIRES website, please access the online survey to evaluate the CCIRES website by clicking on this link: [\(hotlink to be embedded when created\)](#). Estimated time to complete the survey is 5 minutes.

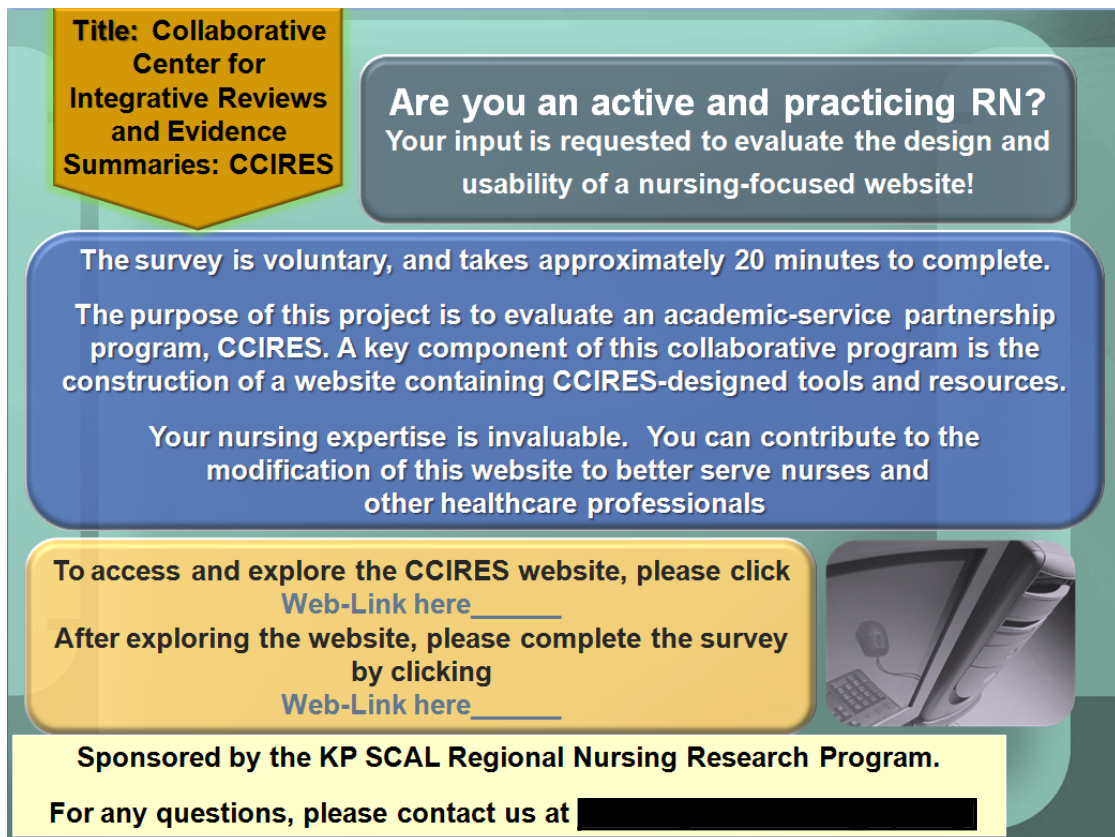
Please contact Cecelia L. Crawford, who is the Primary Investigator, at

██████████ for any study questions. If you have any questions about rights as a program evaluation participant, please call Armida Ayala, PhD, Director, Human Research Subjects Protection Office, KPSC Institutional Review Board, at ██████████. If you are interested in the survey results when the program evaluation is completed, please email ██████████.

Thank you for participating in this critical element of CCIRES program evaluation!

APPENDIX H

NURSING WEBSITE EVALUATION QUESTIONNAIRE FLYER



The flyer is a vertical rectangular graphic with a light green background and rounded corners. It contains several colored boxes with text and a small image of a computer monitor.

Title: Collaborative Center for Integrative Reviews and Evidence Summaries: CCIRES

Are you an active and practicing RN?
Your input is requested to evaluate the design and usability of a nursing-focused website!

The survey is voluntary, and takes approximately 20 minutes to complete.

The purpose of this project is to evaluate an academic-service partnership program, CCIRES. A key component of this collaborative program is the construction of a website containing CCIRES-designed tools and resources.


Your nursing expertise is invaluable. You can contribute to the modification of this website to better serve nurses and other healthcare professionals

To access and explore the CCIRES website, please click [Web-Link here](#)

After exploring the website, please complete the survey by clicking [Web-Link here](#)

Sponsored by the KP SCAL Regional Nursing Research Program.

For any questions, please contact us at [REDACTED]



APPENDIX I

NURSING WEBSITE EVALUATION QUESTIONNAIRE METHODOLOGY

The investigator proposed to conduct a summative evaluation using the Nursing Website Evaluation Questionnaire (NWEQ) (See Table C, Table 2 and Table 3) as an outcome measure to test the usability of the CCIRES website. Summative evaluation was to entail an outcome analyses to assess a program's predetermined goals, objectives, and effectiveness in order to determine whether the program is to be continued or terminated (Patton, 2008; Polit & Beck, 2008). Narrative description was the proposed method to outline the extent to which goals and other positive outcomes were to be obtained (Polit & Beck, 2008). The investigator and web master designed the CCIRES website during November/December of 2011, with final website construction completed first week of January 2012. As of April 2012, the CCIRES website had not completed the internal review process by the KP SCAL Regional Information Technology (IT) Department. Therefore, the next section of this chapter will purpose a methodology that the investigator would have used for the CCIRES website evaluation. Pending KP IT review, the investigator will conduct this website evaluation separate from this dissertation project.

Representative population. Potential users of CCIRES were to include the diverse population of interested health care, business, and technology professionals. However, for the purposes of this summative evaluation, the main end users of the CCIRES website eligible to participate in the NWEQ online survey were to be limited to

registered nurses who had a current registered nurse license and were actively practicing nursing in any clinical or nonclinical setting. The investigator anticipated that this representative population of active and practicing registered nurses would result in a convenience, nonrandomized sample for data analysis. Recruitment was to include an invitation for participants to recruit additional participants, which may have resulted in the snowball effect (Polit & Beck, 2008). Recruitment of additional participants was to take place via e-mail invitation (See Appendix G) and recruitment flyer (See Appendix H). The representative population would have included the following:

- Southern California KP professional registered nurses
- Community professional registered nurses
- Academic-service registered nurse partners

Setting. The virtual infrastructure of a large integrated health care system was the setting in which the CCIRES website repository was designed and housed, within the programmatic structure of a SCAL regional nursing research program. The SCAL region of the integrated health care system consisted of 13 medical centers, 405 medical office buildings, and 5 home health/hospice settings. For the NWEQ, the setting was focused on a digital environment that could be accessed from any home or workplace computer.

Sample size. The representative population of the aforementioned groups were eligible to participate in the summative evaluation of the CCIRES website, via the NWEQ online survey. In July 2011 the represented groups totaled approximately 2000 individuals and included the (a) Nurse Educator International Listserv (n = 1600), (b) Nurse Educator Research Listserv (n = 30), (c) KP SCAL Regional Nursing Research Committee (n = 50), and (d) Western University of Health Sciences, College of Graduate

Nursing (n = 350). The unit of analysis for summative evaluation was the individual participant. With a margin of error of 10%, a confidence interval of 95%, and a response distribution of 50% (assuming normal distribution), the calculated sample size was 92 participants to propose any inferred generalizability (Raosoft, 2004). Therefore, the investigator targeted a minimum of 92 participants for the sample. If the described sample was not obtained by the end of the designated data collection period, analysis would continue with a stated limitation that the results reflected only the sample collected.

Inclusion criteria. Any registered nurse who had a current registered nurse license and was actively practicing nursing in any clinical or nonclinical setting would have been deemed eligible to participate in the NWEQ online survey. Criteria screening questions would have asked if the person taking the NWEQ was a registered nurse, had a current registered nurse license, and if the person was actively practicing as a registered nurse in a clinical or nonclinical setting; the respondent had to answer “yes” to all three questions to meet inclusion criteria.

Exclusion criteria. Any registered nurse who did not have a current registered nurse license and/or was not actively practicing nursing in any clinical or nonclinical setting would have been deemed ineligible to participate in the NWEQ online survey. Criteria screening questions asked if the person taking the NWEQ was a registered nurse, had a current registered nurse license, and if the person was actively practicing as a registered nurse in a clinical or nonclinical setting. If the respondent answered “no” to any question, she/he would have been excluded from participating in the NWEQ online survey. Licensed vocational nurses were not eligible to participate, as

they have a limited scope of practice and have not been academically prepared for nursing research.

Human subjects protection. The primary investigator did obtain approval from the Institutional Review Board of Western University of Health Sciences and the large integrated health care organization prior to the proposed participant recruitment. Consent would have been implied when the participant completed the NWEQ online survey. NWEQ respondents were to have answered questions related to the usability of the CCIRES website via six critical components of a nursing website: content validity, accessibility and convenience, speed and connection, overall impression, website function, and compatibility with various browsers. The investigator would have obtained the aggregate, de-identified summary responses in a Microsoft® Excel document for statistical analysis from the online survey service. The Excel document was to be password protected, with the password used only by the investigator and the statistician. The statistician and investigator would have ensured the data for the survey was limited to one portable encrypted data device to allow for statistical analysis. The investigator would have maintained possession of final data results of the NWEQ survey on a password protected laptop computer. Note: the investigator for this program evaluation was not a direct manager of any registered nurses. Following Institutional Review Board approval, the investigator would have placed the NWEQ survey link on an organizationally sponsored website for any active and practicing registered nurse to access.

Sample recruitment. Potential participants would have been invited by an e-mail cover letter description of the CCIRES program evaluation and survey purpose (See

Appendix G). Potential participants included the following groups: members of the KP SCAL Regional Nursing Research Committee, Nurse Educator International Listserv, Nurse Research Education Listserv, and Western University of Health Sciences, College of Graduate Nursing. The primary investigator was to send an email invitation to all potential participants at the beginning of month four on the timeline (See Table 4, page 110). The e-mail invitation would have contained two hotlinks provided in the body of the e-mail; one link to allow the participant to access the CCIRES website, while the second link would have accessed the online survey. The e-mail would have embedded the NWEQ survey flyer document (See Appendix H) in the body of the electronic invitation. Three weeks after the first e-mail, the aforementioned groups would have received a second duplicate e-mail as a reminder. Distribution groups would have received this duplicate e-mail only once. If requested by any registered nurse group, wording from the web-based cover letter would have been presented verbally by the investigator at local SCAL KP or non-nursing research committee meetings to expose registered nurses to the opportunity of participation.

Data collection protocol. For summative evaluation, all data were to be collected via an electronic survey utilizing the NWEQ, a valid and reliable web-based measurement instrument for website usability (Ebenezer, 2003; Polit & Beck, 2008; Zhang & Adipat, 2005). Online surveys such as NWEQ have been used to generate automatic databases and eliminate the time, cost, and potential errors associated with transferring paper-based data to electronic databases (Funk, Rose, & Fennie, 2010). The investigator does not anticipate that seasonal influences, holidays, historical events, and/or celebratory events would influence the evaluation process or CCIRES outcomes.

Data collection instrument. Nursing websites differ from other types of health-based websites and require different criteria for evaluation and outcome measurement (Cader et al., 2009; Tsai & Chai, 2005). As the only questionnaire to date evaluating nursing websites, the NWEQ has proven valuable in the website summative evaluative process (Tsai & Chai, 2005). The NWEQ would have measured the six criteria for nursing website evaluation; these criteria were (a) webpage content validity, (b) accessibility and convenience, (c) speed and connection, (d) overall impression, (e) website functionality, and (f) compatibility with various browsers (Tsai & Chai, 2005).

The NWEQ consisted of the aforementioned six criteria categories, for a total of 32 questions divided into two parts. Part I used a 5 point Likert-type scale for 17 questions related to the first four categories (See Appendix C, Table 2), while Part II used yes/no questions for the remaining 15 questions related to categories five and six (See Appendix C, Table 3). Previous factor analysis of NWEQ revealed a 66.6% cumulative variance explained by four identified factors, thus demonstrating construct validity. Tsai and Chai (2005) measured a Cronbach alpha value for Part I of NWEQ at 0.93 and the KR-20 (Kuder Richardson) for Part II at 0.85, which demonstrated adequate internal consistency (Tsai & Chai, 2005). Tsai and Chai (2005) stated this questionnaire measured six of the eight criteria proposed by Health on the Net Foundation for evaluating nursing websites: (1) authority, (2) complementarity, (3) confidentiality, (4) attribution, (5) justifiability, and (6) transparency of authorship.

Data collection procedure. The NWEQ online survey was to be electronically accessed through a web-based survey provider company. Participants would have received an e-mail description of the CCIREs program evaluation and survey

purpose. The e-mail invitation would have contained two hotlinks provided in the body of the e-mail; one link to allow the participant to access the CCIRES website, while the second link would have accessed the online survey. The e-mail invitation would have embedded the NWEQ survey flyer document in the body of the electronic document. The participant would have accessed the CCIRES website and the NWEQ online survey via the hotlinks embedded in the body of the email or via an email address used on recruitment flyers. The participant would be invited to visit the website, then access the online survey. Once the participant had reached the web-based questionnaire, a cover letter explaining the study would precede the web-based questionnaire. The time to explore and evaluate the CCIRES website was deemed variable and dependent on the individual respondent. Estimated time for CCIRES website evaluation was determined to be between 10 to 20 minutes. Estimated time to complete the NWEQ was calculated to be 5 minutes. Access to the website was to remain open for four weeks. Three weeks after the first e-mail, the aforementioned groups would have received a second duplicate e-mail invitation as a reminder. Distribution groups would have received this duplicate e-mail invitation only once.

Data analysis: Summative evaluation of the CCIRES website. The ultimate assessment of the value of CCIRES is based on whether it helps the populations it intended to help (IOM, 2001). Summative evaluation analysis would have focused on the usability of the CCIRES website as evaluated by active and practicing registered nurses.

Data analysis plan. Data would have been analyzed using SPSS (version 17.0). Descriptive statistics would have described the nurse perceptions of the CCIRES website, as measured by the validated NWEQ online survey. The statistics were to

include means, medians, and modes; frequencies and percentages; and appropriate variance statistics such as standard deviation. The instrument for this sample was to be evaluated using Cronbach's alpha and KR-20.

Survey Response Burden

The NWEQ could be subject to response burden. Although the NWEQ was a 32-item SAQ that was estimated to take approximately five minutes to complete, the potential participant could perceive the number of survey items as burdensome and decline to respond to the survey. Additionally, the NWEQ requires that the potential participant connect to and explore the CCIREs website prior to the completion of the online survey. The potential participant may perceive the effort involved in the examination of the CCIREs website as burdensome and decline to complete the NWEQ.

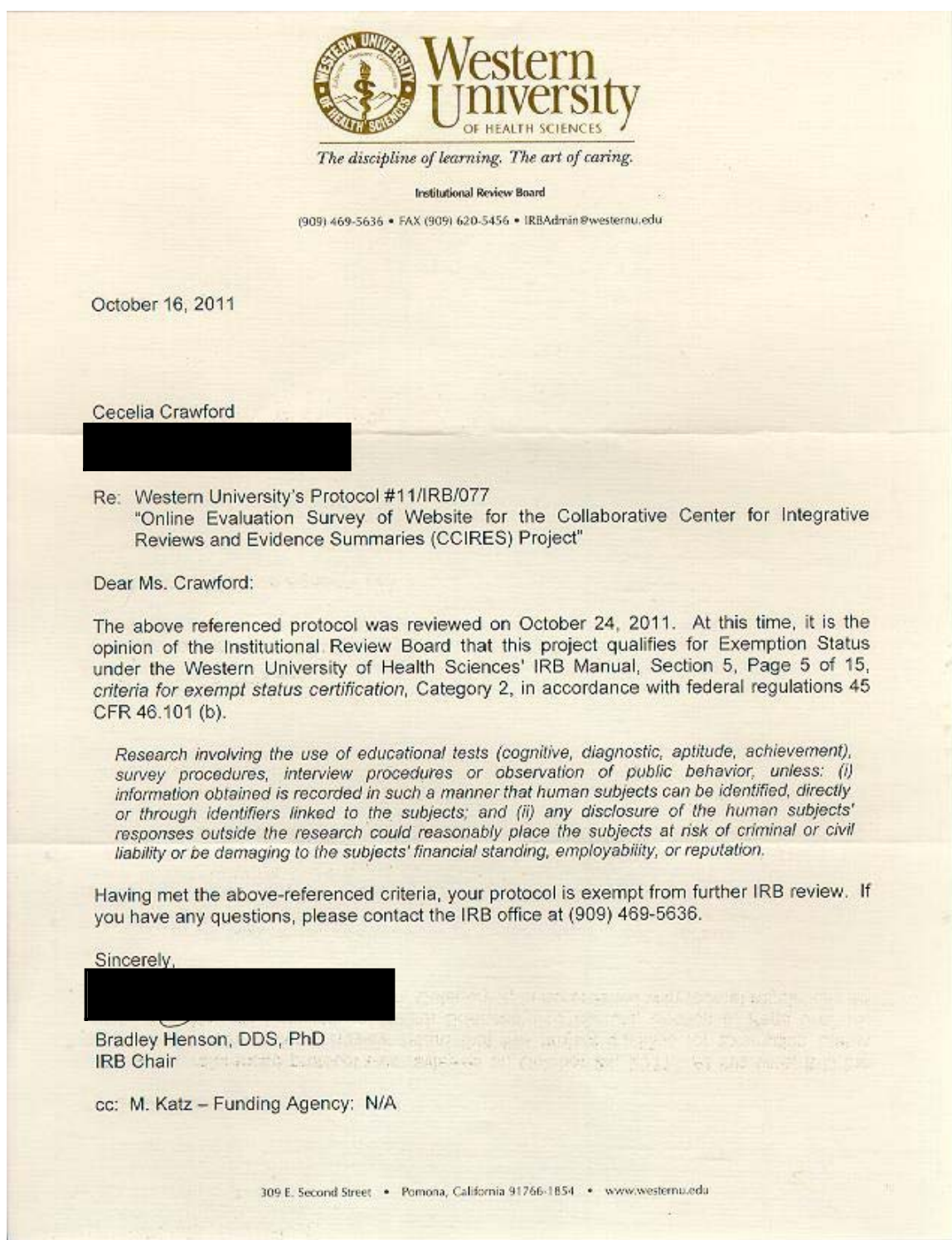
Tactics used to counteract the effects of response burden for the hypothetical use of the NWEQ included (a) an easy-to navigate online environment, (b) responses that were of equal effort, (c) simple survey wording, (d) clear survey instructions, and (e) ensuring respondent anonymity (Jones et al., 2007; Polit & Beck, 2008). However, the NWEQ could not be administered to CCIREs participants as part of this program evaluation and dissertation project.

Social Desirability

NWEQ respondents may answer survey items in order to present themselves in a socially desirable and favorable light, rather than based on the survey's actual content (Waltz et al., 2005). Respondents could also misrepresent themselves and gave answers based on perceived expectations and prevailing social norms for the CCIREs program (Polit & Beck, 2008).

APPENDIX J

CCIRES PART I: WESTERN UNIVERSITY IRB APPROVAL LETTER



APPENDIX K

KAISER PERMANENTE IRB DETERMINATION MEMO



Institutional Review Board
Kaiser Permanente Southern California

November 7, 2011

Cecelia L. Crawford, RN, MSN
Southern California Patient Care Services
Kaiser Permanente



Re: Using a Collaboration Center for Integrative Reviews and Evidence Summaries to Narrow the Research-Education-Practice Gap

A designated reviewer on the Kaiser Permanente Southern California (KPSC) Institutional Review Board (IRB) reviewed your submission and determined that this is not human subjects research as defined by 45 CFR 46.102 (d) and (f). Therefore, Institutional Review Board review of this project is not necessary.

Sincerely,



Annika Ayala, MHA, PhD
Director
Human Research Subjects Protection Office
Institutional Review Board

APPENDIX L

CCIRES PART II: WESTERN UNIVERSITY IRB APPROVAL LETTER



Institutional Review Board

(509) 469-5636 • FAX (509) 620-5456 • IRBAdmin@westernu.edu

January 4, 2012

Cecelia Crawford

Re: Western University's Protocol #11/IRB/083
"Expert Evaluation of the Collaborative Center for Integrative Reviews and Evidence
Summaries (CCIRES) Project"

Dear Ms. Crawford:

The above referenced protocol was reviewed on January 3, 2012. At this time, it is the opinion of the Institutional Review Board that this project qualifies for Exemption Status under the Western University of Health Sciences' IRB Manual, Section 5, Page 5 of 15, *criteria for exempt status certification*, Category 2, in accordance with federal regulations 45 CFR 46.101 (b).

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Having met the above-referenced criteria, your protocol is exempt from further IRB review. If you have any questions, please contact the IRB office at (909) 469-5636.

Sincerely,

Bradley Henson, DDS, PhD
IRB Chair

cc: M. Katz – Funding Agency: N/A

APPENDIX M

EXEMPLARS FOR “STRENGTHS” THEMES

Table 7

Strengths
<p>Virtual & Physical Infrastructure: 4 of 5 respondents (Major Theme)</p> <p><i>*Definition – Permanent foundation or essential elements of a structure, system, or plan of operations</i></p> <ul style="list-style-type: none"> • Kaiser System advances evidence-based practice • KP + community • Kaiser's research website • Potential to close the gap between research and practice by embedding a collaborative academic/service partnership infrastructure into the Kaiser system • Collaborative program – service and academia • Academic service infrastructure • Existing physical & virtual Infrastructure (webinars/live meetings; KP + Academic internet & computers, online electronic databases) • Webinar as a forum to meet, makes collaboration practical and feasible • Existing infrastructure of KP SCAL NRP Tools and training • Integrative review materials and tools • Evidence review tools and training materials available to the community at large • Evidence leveling system tool • Charter to guide • Charter with clear objectives • Website repository designed
<p>Human Capital: 5 of 5 respondents (Major Theme)</p> <p><i>*Definition – Any human resource or circumstance that can be utilized for an ambitious objective</i></p> <ul style="list-style-type: none"> • Powerful collaborative of key stakeholders • Committed core CCIRES group • Core group still exists • Composition of the group is diverse with different fields of expertise • Partnership between clinical and academia is one of the strengths of this program • Collaborative academic-service partnership committed to high quality and evidence-based patient care • It's a collaborative program - service and academia • Current members who have been active these past two years are highly collaborative • Academic/service partnership • Benefit of academic/service mutual exchange

-
- Engaging experts, including staff nurses, advanced practice nurses, nurse leaders, nurse researchers, and nurse educators in translating research to practice and answering key practice questions
 - Diverse perspectives of various nurses, such as nurse leaders, nurse researchers, nurse educators, APNs, and academic scholars
 - Academic scholars
 - Clinical educators
 - CCIRES leader is skilled facilitator
 - One member experienced in conducting & teaching integrative reviews
 - Team leader and her mentor, who are experts in integrative reviews and translational research
-

Translational Research Activities: 5 of 5 respondents (Major Theme)

Definition – Activities pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008).

- Partnership with clinical and academia
 - Past two years are highly collaborative
 - Brings together people from...service and academia
 - Brings expertise and maintains focus and momentum on our work
 - Engaging experts, including staff nurses, advanced practice nurses, nurse leaders, nurse researchers, and nurse educators in translating research to practice and answering key practice questions
 - Engage in generative dialogue to bring diverse perspectives: advanced practice nurse, nurse leader, academic scholar, researcher
 - Continued development of core CCIRES group
 - Link clinical questions (inquiry) and answers more closely together for staff nurses, advanced practice nurses, clinical educators, and nurse leaders in their daily practices
 - Evidence Leveling System designed & tested
 - Table of Evidence modified with rules for article review
 - Instrument Development during 2011
 - Integrative analysis of the best evidence
 - integrative reviews
 - Review articles
 - Rules for article review
 - Aspiration Integrative Review article accepted for future publication by Nursing2011
 - The opportunity to learn new skills
 - The opportunity to participate in research activities in a very specific way
 - Leverage optimal care processes and patient outcomes
-

Organizational Sponsorship: 2 of 5 respondents

**Definition – An organization acting as a sponsor; to vouch for or be responsible for a person, entity, or group*

- Sponsorship by Executive Organizational leaders (KP + Community)
- Kaiser System advances evidence-based practice and has a well established research department to support this process
- Service partnership infrastructure into the Kaiser system

* Funk & Wagnalls (1966). *Standard Dictionary of the English language*. (International ed.) Chicago: J.G. Ferguson.

APPENDIX N

EXEMPLARS FOR “WEAKNESSES” THEMES

Table 9

Weaknesses
<p>Virtual & Physical Infrastructure: 3 of 4 respondents (Major Theme)</p> <p><i>*Definition – Permanent foundation or essential elements of a structure, system, or plan of operations</i></p> <ul style="list-style-type: none"> • “Never been done before” • “Vaporware” website awaiting "go live" • No central resource repository until website is a reality • Few tested tools & resources for searching, gathering, & appraising evidence • Non-institutionalized program • Not yet full integration into the Kaiser infrastructure • Inability to share to the outside world the summary and recommendations
<p>Human Capital: 3 of 4 respondents (Major Theme)</p> <p><i>*Definition – Any human resource or circumstance that can be utilized for an ambitious objective</i></p> <ul style="list-style-type: none"> • Not enough representation especially from the nurse at the bedside • Volunteer membership • 4 of 5 members naïve to integrative review process • Only 1 remaining member has experience in conducting a full integrative review • Limited core group membership • One staff nurse who resigned in December 2011 • Not found a way to overcome certain logistical considerations to bring staff nurses into the collaborative process due to scheduling conflicts and issues • One academic member • Hard time recruiting qualified academic scholars due to their work commitments
<p>Translational Research Activities: 3 of 4 respondents (Major Theme)</p> <p><i>Definition – Activities pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008).</i></p> <ul style="list-style-type: none"> • Integrative review process seen as mysterious and intimidating • Only one review conducted by the CCIRES group • We are still in our early stage and need more experience to refine our skills and process

-
- Inability to continuously do an integrative review on a topic unless requested, thus the skills are not fully enhanced
 - Inability to share to the outside world the summary and recommendations

Narrowing Gaps (Academic-Service Gap; Research-Practice Gap): 1 of 4 respondents

**Definition – A breach or chasm; a break in continuity; a range of phenomena about which nothing is known*

- Existing academic-to-service gap
- Existing research-to-practice gap

* Funk & Wagnalls (1966). *Standard Dictionary of the English language*. (International ed.) Chicago: J.G. Ferguson.

APPENDIX O

EXEMPLARS FOR “OPPORTUNITIES” THEMES

Table 11

Opportunities
<p>Virtual & Physical Infrastructure: 1 of 4 respondents</p> <p><i>*Definition – Permanent foundation or essential elements of a structure, system, or plan of operations</i></p> <ul style="list-style-type: none"> • Create a 24/7 open access virtual website repository for reviews, tested tools, & resources • Secure grant funds to become a self-sustaining & institutionalized KP entity • Marketing strategies of the CCIRES program
<p>Human Capital: 3 of 4 respondents (Major Theme)</p> <p><i>*Definition – Any human resource or circumstance that can be utilized for an ambitious objective</i></p> <ul style="list-style-type: none"> • A community of like-interested people • Expansion of CCIRES membership with increased academic and staff nurse participation • Invitation to a staff nurse who is in masteral or doctoral level to be a member of the CCIRES program • Membership to include a medical life science librarian • Currently the role of the academic scholar is clearly delineated • As more DNP scholars come into the workforce, there will be more opportunities for collaboration between DNP/PhD scholars. This should also provide a greater pool of academic members
<p>Translational Research Activities: 4 of 4 respondents (Major Theme)</p> <p><i>Definition – Activities pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008)</i></p> <ul style="list-style-type: none"> • Sharing information with others • Opportunity to participate in integrative reviews • Opportunity to work on and answer clinical questions that will positively impact patient outcomes • “Learn by Doing” • Demystify review process for all professional nurses • Develop and test more integrative review related instruments and tools • Instrument Testing during 2012 for: • Table of Evidence • SORT Grading Tool

-
- Partner with National KP PCS and assist in design and development of National KP NRP
 - Available tutorials to conduct an integrative review, summarize the findings and make recommendations
-

Gaps (Academic-Service Gap; Research-Practice Gap): 1 of 4 respondents

**Definition – A breach or chasm; a break in continuity; a range of phenomena about which nothing is known*

- Develop strategies to narrow the academic-service gap & research-practice gap
-

Competencies: Knowledge, Attitudes, & Skill Sets: 2 of 4 respondents

**Definition – Qualified persons exercising judgment based upon experience and practical ability*

- Learning new skills
- Develop structures & processes for the dissemination of nursing knowledge
- Continued development of nurses' integrative review skills and competencies
- Develop new skills & competencies for core CCIRES group
- CCIRES is establishing a process that works to include the multiples sources of knowledge about nursing practice

Diffusion of Innovations: 3 of 4 respondents (Major Theme)

Definition – A theoretical framework illustrating the spread of knowledge and innovations involving the four main elements of the diffusion process, by which (a) a particular innovation is (b) communicated through various channels (c) over a time period (d) via members of a specific social system (Greenhalgh et al., 2004; Rogers, 2003)

- Demystify review process for all professional nurses
 - Sharing information with others
 - Develop a innovative nursing collaborative & model
 - Develop structures & processes for the dissemination of nursing knowledge
 - How could this collaborative model evolve and expand with other academic scholars?
 - This is taking place at the "cutting edge" of the Future of Nursing Initiative and supports many of the recommendations
 - Opportunities for collaboration beyond nursing
 - Presentations and publications from this project will have an impact not only on Kaiser and the communities served by Kaiser, but beyond
 - Once the website is available, this model has the opportunity to "go global" with collaboration on research translation around the world
 - Marketing strategies of the CCIRES program
 - Communicate to different groups the existence of the CCIRES program, its goals and objectives; and process of requesting for an integrated review on a clinical topic
-

Collaboration: 2 of 4 respondents

*Definition – To labor or cooperate with another, especially in literary or scientific pursuits
(Dougherty & Larson, 2010)*

- Collaboration
- The collaboration between academia and service needs further development
- Boundaries and parameters, opportunities for two-way collaboration to be explored
- How could this collaborative model evolve and expand with other academic scholars? A community-based collaborative?
- Contribute to the collective practice wisdom through collaboration with the research conducted by other professions and health systems research
- "Go global" with collaboration on research translation around the world
- As more DNP scholars come into the workforce, there will be more opportunities for collaboration between DNP/PhD scholars.

* Funk & Wagnalls (1966). *Standard Dictionary of the English language*. (International ed.) Chicago: J.G. Ferguson.

APPENDIX P

EXEMPLARS FOR “THREATS” THEMES

Table 13

Threats
<p>Virtual & Physical Infrastructure: 2 of 4 respondents</p> <p><i>*Definition – Permanent foundation or essential elements of a structure, system, or plan of operations</i></p> <ul style="list-style-type: none"> • New collaborative group with no guiding model • No technical expertise in web development & maintenance • CCIRES Program complexity • Organizational bureaucracy • Organizational agendas could overwhelm CCIRES agenda • Infrastructure support
<p>Human Capital: 2 of 4 respondents</p> <p><i>*Definition – Any human resource or circumstance that can be utilized for an ambitious objective</i></p> <ul style="list-style-type: none"> • Time availability for CCIRES members • Changing job roles for CCIRES members • Continuing challenges for engaging staff nurses and academic scholars • Staff nurse time schedules for meetings • Staff nurses underrepresented • Academic partners underrepresented
<p>Translational Research Activities: 3 of 4 respondents (Major Theme)</p> <p><i>Definition – Activities pertaining to “A systematic investigation that has as its purpose the development of generalizable knowledge that explains or improves clinical practice(s) sourced from evidence (including theory testing) or previous research” (KP SCAL Regional Nursing Research Program, 2008).</i></p> <ul style="list-style-type: none"> • Possibility of it appearing that we would expect everyone to sent their integrative review to us to "approve" or correct • Little knowledge in tool testing or tool development • CCIRES program may not be maximized to the fullest or may not be utilized by clinicians or academic practitioners if there is no demonstrated clinical or academic outcomes from accessing to its services

Organizational Sponsorship: 1 of 4 respondents

**Definition – An organization acting as a sponsor; to vouch for or be responsible for*

- Loss of organizational sponsorship

Competencies: Knowledge, Attitudes, & Skill Sets: 1 of 4 respondents

**Definition – Qualified persons exercising judgment based upon experience and practical ability*

- Rapid acquisition of new knowledge & skill sets

Diffusion of Innovations: 1 of 4 respondents

Definition – A theoretical framework illustrating the spread of knowledge and innovations involving the four main elements of the diffusion process, by which (a) a particular innovation is (b) communicated through various channels (c) over a time period (d) via members of a specific social system (Greenhalgh et al., 2004; Rogers, 2003)

- Untested structures & processes for information dissemination
- Disseminated information will not be valued or used

Budgetary Constraints: 2 of 2 respondents

**Definition – To confine or restrain fiscal expenditures; compel to inaction*

- Unfunded program
- Budget (sic) support
- Anything research-related has challenges in tight economies

** Funk & Wagnalls (1966). *Standard Dictionary of the English language*. (International ed.) Chicago: J.G. Ferguson.*

APPENDIX Q

vCCIRES DESIGN, IMPLEMENTATION, AND EVALUATION: TIMELINE, KEY MILESTONES, AND DELIVERABLES

Table 16

Phase	Time Period	Deliverables
Concept	1 month	<ul style="list-style-type: none"> • Conceptual Website Architecture • Zoomerang Survey Architecture • Survey Databases
Definition	1 month	<ul style="list-style-type: none"> • Website Screen Mockups and Workflows
Development	1 months (parallel with Definition)	<ul style="list-style-type: none"> • CCIRES Products • Website System Environments • Survey Database Construction • Zoomerang Survey Construction – NWEQ/SWOT
Testing	1 month	<ul style="list-style-type: none"> • Testing Plan • Testing Results • Logic Model Email Invitation to CCIRES members
Pilot	1 month	<ul style="list-style-type: none"> • Pilot Data Collection <ul style="list-style-type: none"> ○ NWEQ online survey Email invitation – Sample Population ○ SWOT Analysis online survey Email invitation – CCIRES members ○ Logic Model Group Consensus Meeting – CCIRES members
Analysis and Reporting	1 month	<ul style="list-style-type: none"> • Pilot Data Analytics • Summative Evaluation <ul style="list-style-type: none"> ○ NWEQ Usability Analysis • Formative Evaluation <ul style="list-style-type: none"> ○ SWOT Analysis ○ Logic Model Analysis • Project Evaluation Report • Lessons Learned Report • Sustainability Plan

Note. Detailed plan outlining the month-by-month phases and deliverable milestones for vCCIRES over the projected six-month timeframe.

APPENDIX R

PERMISSION TO USE PROCESS OF KNOWLEDGE DEVELOPMENT MODEL



Re: Process of Knowledge Development Model 
Anna K Omery to: Cecelia L Crawford
Cc: Anna.K.Omery

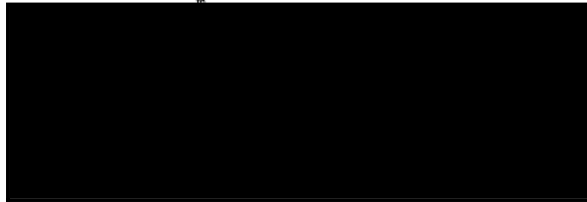
02/23/2011 10:12 AM

You have permission to use the Process of Knowledge Development Model in your dissertation with the condition that the Model be appropriately referenced to the Southern California Nursing Research Program.

Good luck on your dissertation.

Anna K. Omery, RN, DNSc, NEA-BC
Nurse Scientist & Director of Nursing Research/SCAL
[Nursing Pathways Web Site](#)

**Southern California Patient Care Services
Kaiser Permanente**



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Cecelia L Crawford

Dear Dr. Omery, I am a Doctor of Nursing Pract...

02/04/2011 11:33:08 AM



**Cecelia L
Crawford/CA/KAIPERM**
02/04/2011 11:33 AM

To: **Anna.K.Omery@kaiserpermanente.org**
cc

Subject: **Process of Knowledge Development Model**

Dear Dr. Omery,

I am a Doctor of Nursing Practice student at Western University of Health Sciences, College of Graduate Nursing, Pomona, California. I am beginning the practicum portion of my academic journey. My practice innovation is to establish a academic-service nursing partnership for the conduction of integrative reviews and evidence summaries. I would like to use your model for the process of knowledge development as part of this will be published at Western University and available on-line via CINAHL.

May I please have permission to use your model? I will identify the knowledge development model appropriately and reference you as it's creator.

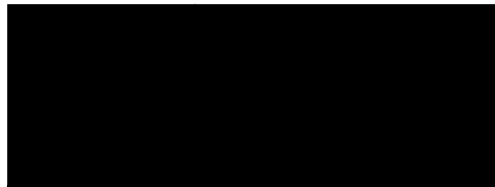
Looking forward to a positive response. Thank you for your time.

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Cecelia L. Crawford, RN, MSN | Project Manager III, Translational Research; Regional Nursing Research Program
[Nursing Pathways Web Site](#)

**Southern California Patient Care Services
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APPENDIX S

PERMISSION TO USE THE KP CRAWFORD MODEL



Re: The Crawford Model for Conducting Integrative Reviews 
Anna K Omery to: Cecelia L Crawford

02/23/2011 10:10 AM

You have permission to use the Crawford Model for Conducting Integrative Reviews in your dissertation and in all presentations related to your dissertation with the condition that the Southern California Nursing Research Program be appropriately referenced with each use.

Good luck on your dissertation!

Anna K. Omery, RN, DNSc, NEA-BC
Nurse Scientist & Director of Nursing Research/SCAL
[Nursing Pathways Web Site](#)

Southern California Patient Care Services
Kaiser Permanente
393 E Walnut St. 7th Floor
Pasadena, CA 91188



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Cecelia L Crawford

Dear Dr. Omery, I am a Doctor of Nursing Pract...

02/04/2011 11:36:55 AM



Cecelia L
Crawford/CA/KAIPERM
02/04/2011 11:36 AM

To 
cc

Subject The Crawford Model for Conducting Integrative Reviews

Dear Dr. Omery,

I am a Doctor of Nursing Practice student at Western University of Health Sciences, College of Graduate Nursing, Pomona, California. I am beginning the practicum portion of my academic journey. My practice innovation is to establish a academic-service nursing partnership for the conduction of integrative reviews and evidence summaries. I would like to use The Crawford Model for Conducting Integrative Reviews as part of this work. I am seeking permission to reference the model and reproduce it within the body of my clinical dissertation proposal. When I (hopefully) finish the project, the final paper

will be published at Western University and available on-line via CINAHL.

May I please have permission to use this model? I will identify The Crawford Model appropriately and reference it's creator, as well as the Kaiser Permanente organization, and regional nursing research department.

Looking forward to a positive response. Thank you for your time.

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APPENDIX T

PERMISSION TO USE THE COLORADO MODEL OF EBP

7 Re: New version of EBP model
Goode, Colleen
to:
Cecelia L Crawford
01/25/2011 04:47 PM
Show Details

Cecelia-- you have my permission to use the model. You must site the online version until it is published in the Worldviews journal. You can not publish the article in another journal until it is published in the Worldviews on Evidence-Based Practice journal. Best of luck to you. Dr. Goode

Sent from my iPhone

From: Cecelia.L.Crawford@kp.org [REDACTED]
Sent: Friday, January 14, 2011 12:18 PM
To: Goode, Colleen
Subject: New version of EBP model

Greetings from the KP SCAL Nursing Research Team. Anna Omery in particular sends her regards.

We corresponded last year when I asked permission to use your model in a couple of presentations and a school paper. I'm on the road towards completing my DNP and am entering the clinical practicum project portion of my scholarly journey. I would like to use your model as part of my practice dissertation and am 1) seeking permission to use your model and 2) wondering if you have completed revising the model, as you mentioned last year.

Looking forward to a positive response. Hope all is well. Happy New Year! Cecelia

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Cecelia L. Crawford, RN, MSN | Project Manager III, Translational Research; Regional Nursing Research Program
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APPENDIX U

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APPENDIX V

PERMISSION TO USE THE NWEQ

From: 蔡欣玲 [REDACTED]
Date: Sat, 29 Jan 2011 22:38:46 +0800
To: Cecelia Crawford<[REDACTED]>
Subject: Re: Request to use your questionnaire
Dear Cecelia:

Thank you for your interesting in my work. I am pleased to grant you permission to use "website evaluation questionnaire". The digital copy was attached. Good luck for your dissertation and proposal !

Sincerely

Sing-ling Tsai, R.N., Ph.D.
Professor
Department of Nursing
Fu Jen Catholic University

2011/1/28 Cecelia Crawford [REDACTED]
Dear Dr. Tsai,

I am a doctor in nursing practice student in Southern California. I recently read and incorporated information from your excellent 2005 article, "Developing and validating a nursing website evaluation questionnaire" for a grant proposal paper. However, I am interested in using your instrument in the real world for (a) dissertation work involving the creation and evaluation of a nursing website, and (b) a work-related project that involves the creation and evaluation of a nursing website. Would you kindly grant me permission to use your tool for these purposes? Do you have a digital copy of the questionnaire that I might use? Also, does this instrument have an official name?

I would, of course, cite you, your tool development partners, and your original article for all references relating to the tool, its design and testing, as well as any copyright statements for the tool itself.

Thank you in advance for your time and expertise. Looking forward to a positive response.

Happy New Year!

Respectfully,

Cecelia L. Crawford, RN, MSN | Project Manager III, Translational Research;
Regional Nursing Research Program

APPENDIX W

PERMISSION TO MODIFY THE NWEQ

From: 蔡欣玲 [REDACTED]
Sent: Sunday, October 16, 2011 10:20 PM
To: Cecelia Crawford
Subject: Re: Request to use your questionnaire

Dear Cecelia

I am glad to hear your progress in the Ph.D candidacy. Two modifications in the questionnaire will be fine as long as you have good rationale.

Bless you for the academic progress !

Sin-ling

Cecelia Crawford [REDACTED] 於 2011年10月14日上午1:22 寫道：

Dear Dr. Tsai,

Since we last corresponded, I have advanced to candidacy. I am getting ready to construct the website and format the survey for when the website construction is completed. I slightly modified the questionnaire, which is attached, to (1) reflect colloquial English and (2) update the questions concerning web browsers. Netscape no longer exists and many people use browsers other than Internet Explorer. In your opinion, will these modifications affect the internal validity and reliability of the questionnaire? Do I have your permission to modify this questionnaire (I would state that the questionnaire was modified from the original and what was changed). I will, of course, be running Cronbach's alpha to determine if this questionnaire is comparable to your results.

Thank you so much for your time and expertise.

Cecelia L. Crawford, RN, MSN, DNP(c)

Western University of Health Sciences, College of Graduate Nursing

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