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Quality Improvement Programs' Contribution to Successful Clinical Practice Changes

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QUALITY IMPROVEMENT PROGRAMS' CONTRIBUTION TO SUCCESSFUL CLINICAL PRACTICE CHANGES

by

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ERIKA OLIVARRI BOWEN

QUALITY IMPROVEMENT PROGRAMS' CONTRIBUTION TO SUCCESSFUL CLINICAL PRACTICE CHANGES

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There is a great deal of healthcare literature on the importance of QI programs and the significant contributions they make toward patient safety and patient satisfaction; however, documentation of outcome measures and predictors of success remains challenging. This study examined the experiences of physician participants who attended a state supported South Texas medical school's CSE course to gain an understanding of QI education, demonstrate the need for formal QI education, and determine if a change in clinical practice occurred as a result of attending a structured QI course.

Kirkpatrick's (1967) four-level evaluation model was used as a framework to guide the study in two key areas. The model was used to examine the experiences of the CSE physician participants to gain a better understanding of quality improvement, and it was used as a self-assessment instrument to determine baseline data of the physicians' knowledge to help identify if a change in clinical practice occurred after graduating from the CSE course.

Thirteen one-on-one interviews were conducted through self-evaluation questions. Participants shared their experiences and perceived outcomes about their own understanding of the quality principles learned in the CSE course and the framework in which they continued the CSE project's implementation for their department or division. An adopted framework from Labov's (1972) structural analysis and Kirkpatrick's four-level evaluation model (1967) was

used to help determine the effectiveness of the program and ways in which improvements could be made within the CSE physician graduates' clinical practice.

Through their shared experiences, the participants demonstrated the need for QI education and its ability to change clinical practice behavior. Results also revealed positive physician learner experiences. These positive experiences helped change how the physicians practiced within a clinical scope, helped shape the culture for the organization, and helped produce a progressive culture of self-development. Some of the physician learners expressed concerns in time management, funding, and support of leadership.

In this study, the participants' experiences were important to the success of QI initiatives within a healthcare system. If the system wants to practice effective QI efforts that provide a deep impact on clinical practice changes, the clinic leaders and administrators within the institution need to remain a fundamental component of the equation and most importantly of the education. The participants expressed a need to feel supported by their respective institution both monetarily and with designated protected time for QI initiatives. The participants often shared dual responsibilities as both administrators and clinicians, allowing them to provide a meaningful frontline perspective, which was instrumental in the change in clinician behavior. In addition, providing a QI course to all faculty, staff, and administrators established the tone and culture for the institution's current and future goals.

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Context of the Study

Quality improvement (QI) initiatives, a common healthcare topic that became salient in the United States in the 1970s, has continued its tradition of providing a powerful impact toward healthcare organizations that lead to measurable improvement (Health Resources & Services Administration, n.d.). During the past two decades, QI efforts have resurfaced in the public eye and have continued to build its controversial momentum with the recent implementation of the Patient Protection and Affordable Care Act (Affordable Care Act, n.d.).

In 1999, the Institute of Medicine published a report, *To Err is Human: Building a Safer Health System*, that focused its attention on improving hospital care (Kohn, Corrigan, & Donaldson, 2000). This report galvanized a dramatically expanded level of conversation and concern about quality and process improvement efforts nationally (Kohn et al., 2000). Many of these efforts focused on implementation of pathways, protocols, and checklists to ensure that providers followed processes consistently (Gawande, 2009). Despite some improvement errors, little progress in improving quality and safety has been made (The Leap Frog Group, n.d.), and adverse events within the healthcare system remain frequent.

According to Kocher, Emanuel, and DeParle (2010), "while the United States continues to garner some of the world's best physicians and health facilities, U.S. medicine fails to deliver reliable high-quality care" (p. 536). With these failed deliveries, the quality of care being given continues to be a national concern (Kocher et al., 2010). Longenecker and Longenecker (2014) explained that the driving force to lead medical changes in the healthcare system have traditionally included topics such as medicine, technology, reimbursement rates, delivering

quality care, and “insufficient access to primary care and allied health providers” (Kocher et al., 2010, p. 536).

To address those concerns, Congress fully implemented the Affordable Care Act in January 1, 2014 (Health Resources & Services Administration, n.d.). When fully employed, it became the basic legal protection to guarantee affordable health insurance coverage to all Americans and lawful immigrants from birth through retirement. Rosenbaum (2011) described some of the act’s major aims as the following: “(1) achieve near-universal coverage through shared responsibility among government, individuals, and employers; (2) improve the quality and affordability of insurance coverage; (3) improve health-care value, quality, and efficiency by reducing wasteful spending and making the healthcare system more accountable; and (4) make strategic investments in the public’s health, through both an expansion of clinical preventive care and community investments” (p. 130). Essentially, the act responded to the calls to reframe the financial relationship between Americans and the healthcare system.

Because the Affordable Care Act requires all U.S. citizens to purchase health insurance, physicians will need to prepare themselves for the influx of new patients. According to a U.S. Department of Health and Human Services, open enrollment for 2015 marketplace coverage, a forum that allows families and small businesses to obtain information about their healthcare options, secured almost 11.7 million new Americans with healthcare coverage. Sommers, Buchmueller, Decker, Carey, and Kronick (2013) further argued that “when fully employed, the Affordable Healthcare Act is expected to surge to an incredible thirty-million additional covered patients” (p. 165). Although this flood of patients translates into an unbalanced patient to provider ratio, physicians are reminded that the removal of the financial barriers decreases medication adherence, which should lead to better health (Kocher et al., 2010) in the future.

According to Bleich (2014), “as the Affordable Care Act drives change, the concept of systems interdependence is being realized—national policy now impacts care and how the individual providers deliver services” (p. 246). Providers will be expected to provide the same level of quality of care with very diverse economic disparities (Ezziane et al., 2012). As physicians begin the arduous task of employing new practice models to improve patient outcomes and keep patients healthy and out of the hospital, the value of medical services and patient experiences will continue to thrive and remain a fundamental component of our improved healthcare system. One way to achieve this is to apply QI techniques through collective learning (Bunniss, Gray, & Kelly, 2012).

Research suggests that to be more effective, learning should be experience-based, which examines the needs of learners, targets content appropriately, and illustrates how the content applies to the participants’ work environment (Tingle, 2012). Commonly disseminated programs include formal QI programs and continuous QI efforts (Mohammadi, Mohammadi, Hedges, Zohrabi, & Ameli, 2007). Learning mechanisms that provides a structured approach to process improvement will support the need for lifelong physician learning (Jacobson et al., 2014.)

The need to improve care, along with the requirement for a more structured approach to improvement, has slowly been recognized by the medical community through such organizations as the Accreditation Council for Graduate Medical Education (Jacobson et al., 2014). This organization is the accrediting body that ensures residents are properly trained to become practicing physicians within the United States. It added an additional competency in July 2002 in which it included practice-based learning and improvement. According to Jenson et al. (2009), practice-based learning and improvement is conceptually linked to QI, which is defined as the methods of improving processes of clinical care.

Today, all residents entering and exiting medical school will be thoroughly evaluated and analyzed on their ability to apply and implement QI techniques while in their medical residency training programs (J. Toohey, personal communication, August 18, 2015). Additional evaluation mechanisms include requiring residents to reflect on the outcomes of clinical practice and to understand the principles of improving the processes of care (Patow et al., 2009). This additional competency not only supports the need for QI training, but it also validates the need to train physicians to be committed to a lifelong process of assessing and improving the quality of care they provide (Becher & Chassin, 2001).

As the act continues to change the landscape of how care is delivered, other healthcare initiatives are being developed to support QI efforts, such as the Bundled Payment for Care Improvement, which is an initiative created by the Center for Medicine and Medicaid Innovation in Baltimore, Maryland. Traditionally, Medicare would make separate payments to physicians for each of the individual services treated. This approach can be cumbersome both financially and during the delivery of care. With the Bundled Payment for Care Improvement, a payment rewards system was put into place to ensure “financial and performance accountability” (Centers for Medicare & Medicaid Services [CMS], 2014). The CMS further explained that this new model will now allow physicians and hospitals to be financially compensated for the quality of care furnished rather than the quantity of services offered. A model such as this is proven to lead to higher quality of care at a lower cost to services such as Medicare (CMS, 2014).

With the acceptance of QI programs becoming a fundamental component of the healthcare system in the United States, the importance of adopting a formal QI program that allows providers to continuously transform physician behavior for the betterment of patient safety becomes significant. According to Varkey, Reller, and Resar (2007), healthcare has

historically focused on quality assurance and quality control only. These methods used alone are not adequate to enhance outcomes; thus, a call for regular QI training is needed. Through the development and implementation of formal QI training and educational programs, physicians can now fill those educational gaps by identifying "areas where improvement opportunities existed, share results with their practices, implement changes, and rapidly improve their performance," and "sustain (the changes) over long periods of time" (Jacobson et al., 2014, p. 203.) Furthermore, "front line health care professionals will be more effective in optimally improving quality and performance in their environment if they first appreciate the characteristics and tools available" (Varkey et al., 2007, pp. 738–739).

Statement of the Problem

As organizations continue to struggle to develop coherent programs for improving safety (Frankel, Gandhi, & Bates, 2003), the call for enhancement of better quality and safety of care in academic medical teaching hospitals becomes necessary (Weiss, Wagner, & Nasca, 2012). Physicians must become masters of acquiring necessary information in a timely fashion to make correct clinical decisions (Becher & Chassin, 2001) with the Affordable Care Act garnering 11 million more new American patients in the healthcare system (Health Resources & Services Administration, n.d.). According to Varkey et al. (2007), improvement often requires deliberate redesign of processes based on knowledge and improvement like tools and programs.

The problem facing those trying to articulate reflective, meaningful, improvement programs includes the lack of research available that helps determine if these programs are effective and allow for life-changing events (Springfield, Gwozdek, & Smiler, 2015) to occur for the physicians. Other barriers healthcare institutions may encounter include the methods for measuring performance and determining if those new methods lead to significant performance

improvement (Hawkins, Roemheld-Hamm, Ciccone, Mee, & Tallia, 2009). Standard evaluation practices typically include surveying the participants about their program satisfaction, but the evaluation of their satisfaction does not reflect if the physician truly changed his or her clinical practice.

To demonstrate the need for QI education that changes clinic practice behavior, further research is needed in academic healthcare institutions to fill those gaps. The following qualitative study addressed those challenges by examining a state supported QI program that teaches physicians QI techniques. Through these educational initiatives, physicians were encouraged to apply these QI skills in their clinical practices.

Purpose Statement

The purpose of this qualitative study was to gain a better understanding of QI education programs by examining the experiences of the physician graduates who attended and completed the Clinical Safety and Effectiveness (CSE) course from 2008 to 2013 and identify if a change in clinical practice occurred after graduating from the course.

Research Question

The central research question for this study was the following: How did the CSE physician graduates change their clinical practice after completing the CSE course?

Theoretical Framework

Tingle (2012) explained that “training health professionals in quality improvement has the potential to impact positively on attitudes, knowledge and behaviors” (p. 990) and produce better patient outcomes. Quality education training programs should become a basic tenant in every healthcare academic institution in the United States. In the current climate of heightened accountability, physicians and academic institutions are strongly encouraged to continuously

validate their QI efforts. Ovretveit and Gustafsonto (2002) argued that in order to motivate and sustain implementation and to create conditions likely to produce results, relevant training that personnel can use immediately is necessary. To justify the investment of time and resources, academic healthcare institutions are encouraged to continuously demonstrate that professional development activities and research (Allison et al., 2000) result in positive changes in clinical practice and improved patient outcomes.

Kirkpatrick's model suggests that evaluation of training should assess change in four areas: learners' reactions, learning or acquisition of knowledge and skills, behavior in practice settings, and results or intended outcomes (Kirkpatrick, 1967). This model helped conceptualize potential QI training outcomes, select appropriate outcomes for assessment within an academic healthcare setting, select appropriate assessment methods and tools, given the organizational context of a particular training effort (Decker, Jameson, & Naugle, 2011), and identify whether behavior in practice improved. Through this model, improvement professionals and QI program evaluators assisted in the identification for targeting training-specific evaluation efforts (Watkins, Leigh, Foshay, & Kaufman, 1998), such as healthcare QI programs at academic medical centers.

Kirkpatrick's (1967) four-level evaluation model was used as a framework to guide the study in two key areas. The model was used to examine the experiences of the CSE physician participants to gain a better understanding of quality improvement. And, it was used as a self-assessment instrument to determine baseline data of the physicians' knowledge to help identify if a change in clinical practice occurred after graduating from the CSE course.

Definition of Terms

To further clarify the research, the following terms and definitions were used throughout

the research process to provide a common understanding of the context and problem.

Academic healthcare institution or academic medical center: An academic health center refers to one or more health profession schools (the medical school plus one other and a hospital). An academic medical center is a medical school and a university-based hospital, and academic medicine includes both these types plus community hospitals that are part of the Association of American Medical Colleges.

Quality improvement (QI): According to the Health Resources & Services Administration (n.d.), QI consists of systematic and continuous actions that lead to measurable improvement in healthcare services and the health status of targeted patient groups.

QI programs: Health Resources & Services Administration (n.d.) a QI program involves systematic activities that are organized and implemented by an organization to monitor, assess, and improve its quality of healthcare. The activities are cyclical so that an organization continues to seek higher levels of performance to optimize its care for the patients it serves while striving for continuous improvement.

Kirkpatrick's evaluation model: Kirkpatrick's model suggests that evaluation of training should assess change in four areas: learners' reactions, learning or acquisition of knowledge and skills, behavior in practice settings, and results or intended outcomes (Kirkpatrick, 1967).

Background of the Researcher

I have over 10 years of combined professional experience in academia and QI initiatives. My experience in quality includes facilitating QI projects at an academic medical institution, participating in patient-centered government clinical research projects, and serving as a team member of multiple QI research projects.

Through my research practicum, I realized that there was a need for real change in our healthcare system. It further confirmed the need to further explore the concept of physician education and analyze the way in which our healthcare physicians adopt new practice models to improve patient outcomes. My hope is that this study, by demonstrating a program that displays a real change in physician clinical behavior, will encourage other academic healthcare institutions to replicate QI programs or model programs similar to this one in order to improve patient safety, patient care, and how clinical physicians practice.

Significance of the Study

The healthcare literature has largely considered the importance of QI programs and the significant contribution it makes toward patient safety; however, being able to properly document outcome measures has traditionally had various challenges surrounding it (Chassin, Loeb, Schmaltz, & Wachter, 2010). This study has contributed to the literature by examining the experiences of the CSE physician participants to gain a better understanding of QI education and to determine if a change in clinical practice can occur through a structured QI program.

The contributions of this study are of interest to scholars in the healthcare system and practitioners that develop QI programs. Studies that examine the importance of structured QI programs for physicians, through the assessment of experience, often apply that learned information to improve the development of QI (Chassin et al., 2010). These methodologies are the core tenants of the development of QI initiatives, to which this study would be significant. In addition, implementing structured QI programs improves patient care and ultimately increases revenue streams for the academic medical hospitals. According to Hendricks and Singhal (1997), key elements to reduce costs are effective process improvement programs that essentially reduce defects and rework and eliminate waste.

This study has also contributed to research as to how we measure performance. This study provided knowledge into best research practices for measuring the impact QI training has on a healthcare institution and for improving the prevelance rate in QI initiatives that ultimately provides safer and quality care to patients.

Chapter Summary

Since the release of the Institute of Medicine's report in 1999, *To Err is Human: Building a Safer Health System*, healthcare appeared to be far behind other high-risk industries in ensuring basic safety (Stelfox, Palmisani, Scurlock, Orav, & Bates, 2006). Today, the implementation of the Affordable Care Act has reignited the discussion of affordable quality care for all American citizens in the United States, as it represents the most significant transformation of the American healthcare system. According to Manchikanti, Caraway, Parr, Fellows, and Hirsch (2011), it is argued that it will fundamentally change nearly every aspect of healthcare, from insurance to the final delivery of care.

As the Affordable Care Act guarantees access to healthcare for all Americans, it creates new incentives to change clinical practice to foster better coordination and quality (Kocher et al., 2010). However, its immediate implementation remains debatable. Physicians will need to deliver affordable quality care to all of its new and established patients.

Since the act's implementation, much of the research has focused on the importance of QI initiatives to maintain quality of care for patients. Few researchers have captured the importance that actual educational training may have on a physician's clinical practice.

This study examined the experiences of the graduates of a state supported academic medical school's CSE course by gathering their stories and perceptions of the course.

Kirkpatrick's four-level evaluation model was used as a guide to assist in the exploration and documentation of the graduates' perceived outcomes as a result of attending the course.

The results of the study contributed to the body of knowledge in QI initiatives and QI curriculums. The knowledge gained from the study helped close the knowledge gap for institutions that may have QI courses that have not shown real improvement in physician behavior or have not been able to properly identify if physician behavior has changed. In addition, this study provided tangible knowledge about QI programs and the important contribution they make within an academic healthcare institution.

Chapter 2: Literature Review

The purpose of this literature review is to present the current research in quality improvement (QI) education, identify gaps in the current knowledge of QI education, and provide an overview of Kirkpatrick's framework with relevance to QI development programs. The overall purpose of the review is to explore background information illustrating the rationale for QI education and to identify the range of QI programs available to physicians.

When the Affordable Care Act changed the landscape of how the United States delivers care, the way in which physicians were trained also changed. The most prevalent model for educating medical students assumes that faculty identifies a finite body of knowledge that all students must master to become physicians. After learning the basic sciences, students begin apprenticeships that continue during their residency training programs (Becher & Chassin, 2001). Teaching rounds are organized with faculty instructing teams of trainees and students. Becher and Chassin (2001) further explained that this approach to educating and training physicians has far outlived its utility. Physicians are trained to become masters of memorization rather than making accurate and safe clinical decisions.

As we transition into a new era with a new patient population, academic medical schools will need to continue their efforts with adopting new ways to improve patient safety and shed the archaic traditional ways of teaching their physicians. According to Hughes (2008), the majority of QI hospital programs focus on issues identified by regulatory or accreditation organizations, such as checking documentation, reviewing the work of oversight committees, and studying credentialing processes. More attention is paid toward accurate reporting, and little attention is focused on the quality of educational training provided to the physicians. These QI educational programs provide the fundamentals of QI, which offer a starting point for improvement projects,

and stimulate further inquiry into QI methodologies currently being used in today's healthcare system (Bunniss et al., 2012).

Since the 1950s, the medical community has studied the importance of QI programs. Researchers have challenged the impact QI programs have made within a healthcare system because it is often difficult to measure the results of the initiatives. Although change is producing improvement, we need accurate and powerful measurements of what is happening (Batalden & Davidoff, 2007) and whether the change is sustainable. In the past two decades, the emerging theory of continuous QI has grown and gained credibility, and this literature review provides insight into the phenomenon identified by scholars.

In this chapter, the significance QI education has on a physician's clinical practice is discussed in three sections. The first section includes a historical reference of the emerging field of QI. The second section describes multiple variations of QI education. And the third section synthesizes the review by using Kirkpatrick's evaluation model to quantify the importance of QI education in a physician's clinical practice.

The Evolution of Quality Improvement

To understand the origin of QI, it is only fair to begin with its founding fathers: Walter A. Shewhart and Dr. W. Edwards Deming. In the 1920s, according to Tague (2005), Shewhart, a Bell Laboratory statistician, developed control charts and principles of modern statistical process controls. These principles were later applied in the American industry but became dormant due to the booming American economy after World War II. Deming learned about Shewhart's statistical reporting process and reintroduced the process to engineers and statisticians in the early 1940s. During the 1950s, Deming was invited to Japan to talk about his 14-point management model. Within his model, Deming's philosophy also highlighted that "management

was 94% responsible for the problems that exist within an organization" (Salazar, 2006, p. 54). Salazar (2006) further explained that Deming's work focused on the importance of management in establishing and controlling the system and safety: "Management controls the training resources, establishes and implements work methods, develops policies and procedures, determines expenditures for equipment and modifications, and even selects and assigns personnel" (p. 54).

Although Deming always emphasized the leadership's role in quality efforts, he also acknowledged the system's responsibility in the matter:

> By investigating the complete system in the evaluation of errors, further active failures can often be prevented and the impact and occurrence of human errors can be minimized if latent conditions in the system are identified. Latent conditions are characteristics of the organization or design of a system where individuals work in. These latent conditions are often the result of the policy of the organization, and include problems for example in staff mix, understaffing, work pressure, multiple software systems, unworkable procedures, or unreliable checklists, backups, and alarm systems. (De Jonge, Nicolaas, Van Leerdam, & Kuipers, 2011, pp. 339–340)

The system's responsibility in quality implies that "care consists of connected processes that influence each other, and the ultimate patient outcome" is what is referred to as total quality management (De Jonge et al., 2011, pp. 339–340). Total quality management includes the system's responsibility as well as the safety of the patient. Japan's auto industry was championed for its acknowledgement of a systems approach and soon thereafter the success of the Japanese auto industry started to slowly spread to America.

In the 1970s and 1980s, Americans started to take note. They incorporated Deming's concepts and the system concepts by utilizing Deming's 14 points. The importance of Deming's quality concepts (Tague, 2005) were soon adopted by other companies outside of the auto industry.

During the mid-1980s and 1990s, a cross-disciplinary learning between industry and healthcare was triggered, and this began an evolutionary process where notable quality experts—Paul Batalden of Hospital Corporation of America, Donald Berwick of Harvard Community Health Center and Institute of Health Improvement, and Brent James of Intermountain Health Care—applied total quality management principles in U.S. hospitals (Sollecito & Johnson, 2011). Since the application of quality management principles by Batalden, James, and Berwick, a number of quality tools and methodologies have been adopted within the healthcare industry, such as *lean*, Six Sigma, and the Plan-Do-Study-Act cycle. Graban (2012) defined lean as the following: "Lean is a set of concepts, principles and tools used to create and deliver the most value while consuming the fewest resources and fully utilizing the knowledge and skills of the people performing the work" (p. x). Six Sigma is based on a simple problem-solving approach that includes five core tenants: define, measure, analyze, improve, and control. Six Sigma focuses on reducing the variation in the production process to the point where it will be able to meet the specification tools and techniques that will meet or exceed customers' satisfaction (Bandyopadhyay & Lichtman, 2007). Finally, the Plan-Do-Study-Act cycle is a powerful tool for accelerating improvement, according to the Institute for Healthcare Improvement (n.d.). This model is not meant to replace or change preexisting models that organizations may already be using but rather to accelerate improvement (Institute for Healthcare Improvement, n.d.).

All the tools provide variations to the outcomes desired by the organization and quality needs. But, the underlining purpose for any quality tool is to be a useful resource for any QI variation.

Quality Improvement Today

Porter and Teisber (2006) pointed out that many in healthcare are unhappy with the current healthcare system.

> The combination of high costs, unsatisfactory quality, and limited access to healthcare has created anxiety and frustration for all participants. No one is happy with the current system—not patients, who worry about the cost of insurance and the quality of care; not employers, who face escalating premiums and unhappy employees; not physicians and other providers, whose incomes have been squeezed, professional judgments override, and workdays overwhelmed with bureaucracy and paperwork; not health plans, which are routinely vilified; not suppliers of drugs and medical devices, which have been introduced many life-saving or life-enhancing therapies but get blamed for driving up costs; and not governments, whose budgets are spinning out of control. (p. 1)

The medical world is challenged daily with its ability to achieve its stated purpose, which is "to ensure the highest quality of care for each patient, without losing societal aspects such as cost control, and accessibility of care" (De Jonge, et al., 2011, p. 358). The Institute of Medicine (2001) further emphasized that Americans should be able to count on receiving care that meets their needs and is based on the best scientific knowledge. Therefore, it is evident that quality is deeply rooted in the healthcare system.

Between the roots of healthcare and the branches of quality, sits the overarching purpose, safety. Safety is the seed that has planted this quality movement. And, it is because of the safety of our patients that quality continues to remain an important staple in our healthcare system.

In 1999, when the report *To Err is Human: Building a Safer Health System* was first released from the Institute of Medicine, it sparked a national movement about the validity of our healthcare system. The report revealed that as many as 98,000 Americans die in hospitals each year due to "medical errors" that could have been prevented (Kohn et al., 2000, p. 26). Since the report's release date, hospitals—along with the U.S. government—have implemented programs that prioritize patient safety as a top priority. Those proactive measurements include the

implementation of such programs as the National Patient Safety Goals, Core Measures, and the Patient Safety Quality Improvement Act.

Today, QI can be defined in a number of ways. According to the Health Resources & Services Administration (n.d.), QI consists of systematic and continuous actions that lead to measurable improvement in healthcare services and the health status of targeted patient groups. The Hasting Center described QI as the following:

> systematic, data-guided activities designed to bring about immediate improvements in health care delivery . . . Quality improvement uses an array of methods and can look like practical problem solving, an evidence-based management style, or an application of a theory-driven science of system change. (Lynn et al., 2007, p. 666)

A more modern definition includes a collaborative-centered approach. Batalden and Davidoff (2007) argued that QI is defined as the "combined and unceasing efforts of everyone—healthcare professionals, patients and their families, researchers, payers, planners and educators—to make the changes that will lead to better patient outcomes (health), better system performance (care) and better professional development" (p. 2).

Although quality tools are more commonly disseminated through academic healthcare institutions in a myriad of formats, measuring the results of those initiatives are often difficult to quantify. One of those variables includes value versus cost. According to Graban (2012), subpar quality and high cost often translates into poor value in our healthcare system. This practice is what has been delivered to our patients across healthcare institutions and continues to remain an industry challenge.

Another significant outcome that is difficult to quantify is the influence QI education has on changing physician behavior. Although change is producing improvement, we need accurate and powerful measurements of what is happening (Batalden & Davidoff, 2007) and whether the change is sustained.

Variations of Quality Improvement Education

According to Wong, Etchells, Kuper, Levinson, and Shojania (2010), the Association of American Medical Colleges now endorses the introduction of formal QI education across the medical education continuum to encompass undergraduate, postgraduate, and continuing medical education levels. These developments coincide with the recognition that engagement in QI represents an emerging career path for clinicians.

Through the sanctions from major community medical organizations and the U.S. government, physicians now have the support to exercise their experience, along with insight from others, to identify promising improvements, implement changes on a small scale, monitor and interpret effects, and make decisions about additional changes and wider implementation (The Hasting Center, n.d.) through continuous QI education.

The growing concern with quality in higher education has led institutions to look for ways to manage quality processes (Inglis, 2005). In some institutions, such as the University of Texas System, a curriculum-based training model that concentrates on QI and patient safety has been adopted. The course was originally modeled after Dr. Brent's Advanced Training Program at Intermountain Health Care in Utah. The course is 8 days, 8 hours per day over 6 months. The curriculum emphasizes quality concepts and evidence-based medicine, including patient safety, quality improvement, quality tools, teamwork, disclosure and crafting apologies, and return on investment. It is project-based and demonstrates use of quality concepts and tools. Projects align with the institution's strategic goals and include "increasing active-learning strategies" and expanding programs to educate a diverse group of future healthcare academicians (UT Health San Antonio, n.d.).

As most physicians recognize, a physician's commitment to continuous learning leads to the development of new understanding, skills, and capabilities (Moore, Greene, & Gallis, 2009), which ultimately improves patient outcomes. Leykum, et al (2011) expanded on this by noting that the ability to learn can help people deal with an uncertain and changing environment more effectively. These QI programs create the forum for continuous learning and the ability to demonstrate the importance of QI education among clinic members, which may lead to improved care of patients (Leykum, Palmer, Lanham, Jordan, McDaniel, Noel & Parchman, 2011).

Applying Kirkpatrick's Framework to QI Education Within a Clinical Scope

Kirkpatrick's (1967) four-level evaluation model has traditionally been applied to evaluate the effects of training programs in business but also within the field of education to evaluate professional development programs. As outlined by Kirkpatrick (n.d.), getting people to apply what they learn to on-the-job behavior is sometimes difficult to do. To help close the gap, Kirkpatrick proposed the following levels of evaluation outlined by Kirkpatrick (n.d.). They are (1) reactions, (2) learning, (3) transfer, and (4) results. These four levels of evaluation were used as the framework for the physician participants' self-assessment. Each level is intended to provide a comprehensive evaluation of the training's effectiveness that extends beyond measuring participant responses but directly connects the outcomes to the outputs of the clinical behavior and its implication to the practice.

The central research question was, How did the CSE physician graduates change their clinical practice after completing the CSE course? The physician learners answered the question by way of reflective learning. Reflective learning provides the physician learners the opportunity to discuss, explain, and defend their ideas thereby assisting them to reflect and to improve on their own understanding (Sim & Radloff, 2008).

Level 1 examined how the CSE graduates felt about the training program and directly addressed their reaction to the course. The graduates self-reflected during this level to demonstrate the Level 1 reaction. Level 1 asked two questions: (1) What did you like about the course? and (2) What did you find beneficial about the course? Through their continued self-reflection, the physician learners shared their own personal experiences of the course. Level 1 provided step-by-step accounts to help set the stage for Level 2.

Level 2 discussed the learning. It assessed the extent to which the training program caused the learners to (a) acquire knowledge, (b) learn new skills and/or increase their present skill level, or (c) change their attitudes (Kirkpatrick, n.d.). Level 2 asked the following questions: What new tools did you learn from the course? Do you have a speaker that made a significant impact on you? If so, why?

Level 3 assessed the transfer of learning. It discussed if the physician learners were able to transfer the applied knowledge from the CSE course to real application. Level 3 was examined through a continued self-reflection, self-assessment, and one-on-one discussion with the CSE graduates. Level 3 asked the following three questions: (1) How has the CSE changed or impacted your clinical practice?, (2) How has the CSE course changed or impacted your professional development?, and (3) What (behavior) changes, if any, have you personally made in your clinical practice after attending the CSE course?

Level 4 examined the results. Did physicians use their CSE experience to change their clinical practice? Level 4 explored the change in the physician's clinical practice through a self-reflection and by way of the aim statement written at the start of the CSE course. Participants read their aim statements to discuss the project status as well as help demonstrate if their clinical work had changed in their clinical practice as a result of attending the CSE course. In addition,

this level also examined if their improvement project spread to other areas of the institution by asking, Has your project spread to other departments or divisions that you might be aware of?

Chapter 3: Methodology

The purpose of this study was to gain a better understanding of quality improvement (QI) education problems by examining the experiences of the physician graduates who attended and completed the Clinical Safety and Effectiveness (ESC) course from 2008 to 2013 and identify if a change in clinical practice occurred after graduating from the course. Through Kirkpatrick's four-level evaluation model, which comprises reactions, learning, transfer, and results, an exploration and documentation of the perceived outcomes of the physician graduates were gathered. In this chapter, several topics are presented. First, the selected research approach and design proposed for the study are discussed. Next, the data collection procedure, the selection of participants, and the setting are described. Then, the efforts used to ensure trustworthiness and credibility in this study, the protection of human subjects, the role of the researcher, and the analysis of data are explained.

Research Approach and Rationale

This study utilized a qualitative approach to answer the research question related to examining the experiences of the physician graduates after attending the CSE course to better understand QI education and help identify whether a change in clinical practice occurred as a result of attending the CSE course. Kirkpatrick's evaluation model was chosen as the framework to guide this study in order to support the efforts of the medical education community in adopting a more evidence-based approach that thoroughly evaluates medical education (Yardley & Dornan, 2012).

According to Creswell (2013), qualitative research is based on a constructivist prospective that makes knowledge claims that an individual's interactions and engagement with the people and the world may be socially constructed through experimental strategy of inquiry

and pre- and posttest measures of attitudes. Creswell further elaborated that by using a narrative approach a researcher may establish a phenomenon from the views of the participants and the researcher through collective stories of individuals.

According to Clandinin and Connelly (2000), a narrative approach involves a way of understanding experience. It aims at understanding and making meaning of experience through conversations, dialogue, and participation in the ongoing lives of research participants. Hinyard and Kreuter (2007) further explained that narrative approaches are emerging as a promising set of tools for motivating and supporting health behavior change. They are also engaging in and of themselves, which makes the health information they contain not only less objectionable but also more contextual and meaningful.

The qualitative narrative research approach was appropriate for this study because it is increasingly used in studies of educational practice and experience (Moen, 2006). This study was conducted in a natural setting where participants' meanings were used, and the research question was answered (Creswell, 2013).

Research Design

The study was conducted using a narrative research analysis. This design was selected because it was identified as the best option to learn about the physicians who graduated from the CSE course. The physicians were given the opportunity to share their individual experiences, to describe what those experiences meant to them, and to evaluate if their clinical practice changed after having those experiences.

Narrative research is described as the study of stories that helps understand individual and social change (Andrews, Squire, & Tamboukou, 2013) and the experiences and outcomes as perceived by the participants (Creswell, 2013). Traditionally, a narrative approach involves

participants being interviewed about their personal experiences in the field, creating field texts, and writing both interim and final research texts (Clandinin & Connelly, 2000).

In this study, field texts were composed from conversations, interviews, and participant observations. According to Clandinin and Connelly (2000), field texts are compositions, reflective of researchers and participants that help in telling and showing those aspects of experience that the relationship allows. Through these instruments, How did the CSE physician graduates change their clinical practice after completing the CSE course?

Research Instrument

In qualitative narrative studies, the researcher plays an instrumental role in conducting the interviews, observing the participants, and collecting and reviewing the data (Creswell, 2013). Clandinin and Connelly (2000) expanded on the importance of studying narrative experiences, and they further explained that researchers recognize the centrality of relationships, the relationships among participants and researchers, and the relationships of experiences studied through and over time. Between these relationships, participants relate and live through stories that speak of and to their experiences of living. The process of narrative inquiry consists of engaging with participants in the field, creating field texts, and writing both interim and final research text.

Since the researcher and the participants are considered primary instruments of the study, special consideration of the participant questions should be thoroughly examined prior to the interviews. In this study, a panel of qualitative experts reviewed the interview questions and checked for validity before the interviews were conducted. The interview questions utilized Kirkpatrick's evaluation model, which includes four topics: reactions, learning, transfer, and results. These levels of evaluation were used as the framework to (a) examine the experiences of

the CSE physician participants to gain a better understanding of quality improvement and (b) use as a self-assessment instrument to determine baseline data of the physicians' knowledge to help identify if a change in clinical practice occurred after graduating from the CSE course.

The Kirkpatrick model was used to correlate the appropriate self-assessment questions to the participants. Level questions included the following:

1. Reaction: What were your initial reactions to the CSE course?
2. Learning: What new knowledge, if any, did you gain as a result of attending the CSE course?
3. Transfer: What (behavior) changes, if any, have you personally made in your clinical practice as a result of attending the CSE course?
4. Results: Level 4 was examined by reviewing the CSE aim statements presented at the end of the course, during graduation.

According to the Institute for Healthcare Improvement (n.d.b), aim statements give organizations clear and firm intentions. The Institute further explained that aims should be time-specific and measurable; they should also define the specific population of patients that will be affected. Agreeing on the aim is crucial and the right people and the necessary resources to accomplish the aim should be thoroughly discussed in advance (Institute for Health Improvement, n.d.b). All participants used the aim statement to help examine Level 4 results. Each of the participants discussed the aim status and whether changes in their clinical practice had been made as a result of attending the CSE course.

Participants were interviewed in a one-on-one setting at length to determine how they personally experienced the QI program and if the course influenced their clinical practice in any way (Creswell, 2013).

Before each interview, the participant was asked grand tour questions to help generate small talk and build trust. During the interview, it was important to take copious field notes by using audio recordings along with keeping a personal journal entry of each of the interviewees (Creswell, 2013).

Finally, throughout the entire research and interview process, ethical considerations required that as a researcher, I remain attentive to ethical tensions, obligations, and responsibilities in the relationships with participants (Clandinin & Connelly, 2000).

Inclusion Criteria

For the purpose of this study, participants were selected using the inclusion criteria until saturation of data was reached. Participants met the following selection criteria:

1. Did she/he attend the CSE course in San Antonio from 2008 to 2013?
2. Is she/he a clinical physician (i.e., an MD or DO)?
3. Did she/he graduate from the CSE course?

The primary search for potential participants was conducted through the Office of Quality and Lifelong Learning. A list of graduates from the years 2008 to 2013 was requested. Years were selected based on the participant's graduation location and project size. The associate dean from the Office of Quality and Lifelong Learning also made recommendations on graduation years based on data availability and graduation projects. In addition, all participants who graduated on or after 2008 graduated from the San Antonio site only. Graduates before 2008 attended various institutional campuses, which made the data collection and project availability difficult to track and manage appropriately. Participation for this study was voluntary. Participants received a letter of solicitation by e-mail. The letter included the purpose of the study, the participant requirements, the approximate length of the interview, and my contact

information. Participants indicated their interest via in-person or e-mail. Interviews were scheduled, identified, and conducted by me.

Selection of Participants

The participant data were selected by the associate dean from the Office of Quality and Lifelong Learning (see Table 1). Upon the dean's approval for the final participants, the dean, the program manager, and I worked together to identify how the data would be extracted from the office's database along with the corresponding aim statements of each of the qualifying participant graduates. All participants that met the inclusion criteria received a letter of solicitation by e-mail. The letter included the purpose of the study, the participant requirements, the approximate length of the interview, and my contact information.

Each of the 13 participants responded to the invitation by phone or e-mail to make interview arrangements. In the initial e-mail, program participants were given a list of times and dates to choose from. Following the selection of availability, the participants received a meeting invitation with a final date and time for the interviews. Of the 13, 11 had in-person interviews. The 11 in-person participants chose the place in which they felt comfortable meeting. Those meeting places

included their home, their office, or a mutually agreed upon public space. All the places in which the meetings took place were quiet and allowed for limited interruptions. Two of the 13 participants were interviewed by phone for scheduling accommodations. One of the participants no longer resided in the local area, and the second participant had clinical responsibilities in the evening that made it difficult to schedule an in-person interview during the day. All the

interviews were recorded on a digital recorder and then transcribed with the participants' permission.

In agreeing to participate in the study, each physician participant was assured anonymity. They were provided pseudo names. Of the 13 physicians that participated in the study, 10 were identified as key participants.

Table 1

Description of Key Participants

Key Participants	Gender	Position
CHRIS	Male	Retired Administrator/Current Physician
EDDIE	Male	Faculty/Clinician
YOLANDA	Female	Faculty/Clinician
KATHERINE	Female	Administrator/Faculty/Clinician
EDISON	Male	Administrator/Faculty/Clinician
JO-ANNE	Female	Faculty/Clinician/Researcher
NOAH	Male	Administrator/Faculty/Clinician
MARY	Female	Administrator/Faculty/Clinician
SARA	Female	Faculty/Clinician
COLT	Male	Faculty/Clinician

The following chapter outlines and presents the key physician learners' stories in their own words. In general, the participants welcomed the research process, even though it may have infringed on their personal time. The majority of participants were appreciative that a researcher had taken interest in the course and of the information they obtained and completed as a result of attending the course.

Overview of the Setting

At each of the interview introductions, the goals of the research project were explained, and the participants were reminded that the meeting was being recorded. Verbal consent was given at the start of each of the interviews and the interviews proceeded. Each participant was provided a list of prewritten open-ended questions, which allowed for the participants to feel engaged, to feel as they had the opportunity to tell their story and experiences, and to provide a self-assessment of information learned as best as they recalled. Before the conclusion of each of the interviews, the aim statement in which they wrote at the time they were present in the course was also recited to them. Reading the aim statements to the participants allowed them to reflect on the actual project description and provide tangible feedback of the project status.

Trustworthiness

According to Merriam (1995), "qualitative research assumes that reality is constructed, multidimensional and ever-changing" (p. 54). The following steps, as described by Merriam (1995), were taken to strengthen the validity and trustworthiness of this qualitative study."

1. Triangulation—the use of multiple investigators, multiple sources of data, or multiple methods to confirm the emerging findings.
2. Member checks—taking the data collected from the study participants and the tentative interpretations of these data, back to the people from whom they were derived and asking if the interpretations are plausible.
3. Peer/colleague examination—asking peers or colleagues to examine the data and to comment on the plausibility of the emerging findings.

4. Statement of the researcher's experiences, assumptions, biases—presenting the orientation, biases, and so on, of the researchers at the outset of the study. This enables the readers to better understand how the data might have been interpreted in the manner in which they were.
5. Submersion/engagement in the research situation—collecting data over a long enough period of time to ensure an in-depth understanding of the phenomenon. (p. 54)

Protection of Human Subjects

In preparation for the study, committee members were consulted to ensure the research was conducted in an appropriate manner and that the process of evaluation and assessment was ethical and accurate. In addition, the Collaborative Institutional Training Initiative certification was completed, and approval was obtained from both the University of the Incarnate Word's Institutional Review Board (see Appendix A) and the S. Texas medical school. Permission was also provided from Kirkpatrick Partners (see Appendix B) to use the Kirkpatrick framework for the study.

All participants received and signed a consent form. The consent form explained that all information was to be held in strict confidence and that there were no physical risks to those who participated in the study. The consent form also stated that participation was voluntary and that the participants had the choice to withdraw from the study at any time without harm or penalty.

Before the research analysis began, the participants read the consent form and had all their questions answered before approval of the form was granted. A high degree of confidentiality and privacy of participants in the study was honored and pseudonyms were assigned to ensure participants' identities remained anonymous.

An outside professional transcription company was hired to transcribe the digitally recorded interviews. The hired transcriber received and signed a waiver that agreed to keep all files confidential and dispose of them at the end of the project. Records of all documents including the digitally recorded interviews, the transcripts, and consent forms remained in a locked, password protected file until the conclusion of the study.

Role of the Qualitative Researcher

As a qualitative researcher, I was the primary instrument used to collect and analyze data. As a former public relations director, and with over 10 years of experience working in academia and QI initiatives, I was comfortable in the preparation of the study. I have facilitated QI projects at a state academic medical institution, have been involved in patient-centered government clinical research projects, and have served as a team member of multiple QI research projects. In addition, I have published numerous QI abstracts, patient-centered abstracts, at national and regional conferences. I studied how to conduct interviews by becoming familiar with the literature and through my professional experience in academia and healthcare.

The limitation of being the primary instrument includes many biases that may have influenced the study's findings, such as working with some of the participants in a professional setting. In addition, some of the participants may have provided limited information in fear of workforce discrimination. To minimize those biases, I remained open and up front about my expectations and assured participants that their experiences would be unidentifiable since pseudonyms were assigned and used only for the purposes of this study.

Data Analysis

In narrative methodology, various approaches are available to collect and analyze data to help detect the main narrative themes within the accounts people give about their lives in order to

make sense of those experiences (Thorne, 2000). Narrative analysis can be approached in a myriad of ways. Wiles, Rosenberg, and Kearns (2005) described narratives as a means of connecting the way people learn about, explain, and organize their experiences. And, examining what individuals say about their personal experiences provides insights into social processes and events (Wiles, Rosenberg, & Kearns, 2005). Some early narrative approaches include Labov's structural analysis of a narrative. Labov believed that narratives have, as described by Smith (2000), an abstract (summary), orientation (person, place, time situation), complication (series of events terminated by a result), evaluation (point of significance of events, attitude of the narrator), resolution (outcome), and coda (returns perspective to the present). Franzosi (1998) described Greimas' approach, which classifies narrative characters according to what they do (hence the name *actants*). According to Greimas, six basic actants can be found in all narratives, working in sets of three interrelated pairs: sender/receiver, helper/opponent, and subject/object.

Labov's unique structural analysis focuses on how a story is told through a multilayer approach between the speaker and the researcher (see Appendix C). This approach guided the narrative analysis for this study. Wellman (1997) described characteristics of structural analysis, such as the patterned relationship among multiple alters, jointly affecting behaviors as well as patterned relations or unit analysis. Both characteristics were essential in understanding the experiences of the CSE graduates. Furthermore, using Labov's structural approach allowed the story to be told as it was meant to be interpreted by the speaker and to understand the factors that motivated the speaker. It also allowed me to use my professional expertise to interpret the story (Wiles et al., 2005).

Chapter 4: Presentation and Findings

The purpose of this qualitative narrative study was to gain a better understanding of quality improvement (QI) education programs by examining the experiences of the physician graduates who attended and completed the Clinical Safety and Effectiveness (CSE) course from 2008 to 2013 and identify if a change in clinical practice occurred after graduating from the course. The study focused on exploring how physician learners translated quality principles to their clinical practice as well as how they translated what occurred in the CSE course to their institutional QI framework. Participants were asked questions intended to gather data about their own understanding of the quality principles learned in the CSE course and the framework in which they continued the CSE project's implementation for their department or division. Specifically, the study sought to answer the following research question: How did the CSE physician graduates change their clinical practice after completing the CSE course? Kirkpatrick's (1967) four-level evaluation model was used to evaluate the CSE course by examining the experiences of the CSE physician participants to gain a better understanding of quality improvement and by using it as a self-assessment instrument to determine baseline data of the physicians' knowledge to help identify if a change in clinical practice occurred after graduating from the CSE course.

According to Sims and Radloff (2008), Kirkpatrick's model focuses on the quality, efficiency, and effectiveness of educational programs. Sim and Radloff (2008) further explained that the model's simplicity and practicality also serves as a useful evaluation model for the evaluation of participants' reaction to a program. The model allowed for the participants' reaction to the CSE course (Level 1), the participants' learning within the course (Level 2), the

clinical behavioral change as a result of attending the course (Level 3), and the results or the framework in which they continued to implement the CSE project (Level 4).

Background Information about the CSE Course

The participants attended the CSE course at a state supported academic medical school from 2008 to 2013. The CSE course is a curriculum-based training model that focuses on quality and safety concepts, such as evidence-based medicine, understanding variation, QI theory and tools, quality metrics, data management, teamwork, human factors engineering, and statistical process control. The Plan-Do-Study-Act is the emphasized QI methodology. It is project-based and must demonstrate the use of QI concepts and tools.

The CSE course is 6 months long, and students attend 8 hours a day for 1 to 2 days a month. During each of the 8-hour days, students are exposed to a robust group of nationally known QI leaders, such as Brent James, James Reinertsen, and Mark Graban, as well as local faculty trained in QI. All classes are held at the university campus. Cohorts range in class size but hold a maximum of 40 students per cohort. Two cohorts are scheduled throughout the fiscal year. The first cohort starts in January and ends in June. The second cohort begins in August or September and ends in January of the following year.

CSE students are preselected to attend the course. The clinical leadership of the respective health system first nominates the student to attend the course. Then, the department chair, division chief, or supervisor approves the nomination. Along with the nomination, clinical leadership identifies high priority projects that will improve an aspect of healthcare. Typically, three to five students are selected to take the course for each project; the team that works on the project includes team members not enrolled in the course as well. Teams consist of faculty and staff members, such as physicians, healthcare administrators, nurses, pharmacists, social

workers, techs, and so forth. Due to the limitations of space and personnel, there is a limited number of students in each cohort. If a student is not selected for the upcoming cohort class due to space limitations, that nominee is placed on a waiting list for the next available cohort class (J. Patterson, personal communication, August 18, 2016).

Prior to the first day of class, students are pregrouped according to project interest or team size. Teams are also assigned a team number and are appointed a team facilitator. Team facilitators have QI experience, are graduates of the CSE course, and are supported financially by the academic medical school's Dean's Office, the academic medical school's Center for Patient Safety, and the affiliated academic medical school's hospital (L. Bresnahan, personal communication, August 18, 2016).

After an introduction to QI methodology and tools, students choose their project team and finalize an aim statement. Quality improvement tools are used and baseline data are collected to analyze the problem and decide on an intervention. The intervention is made and follow-up data are collected for analysis using statistical process control.

All classes end with a commencement ceremony that allows students to showcase their project findings as well as demonstrate the QI tools learned as a result of attending the course. Supervisors, department chairs, and clinical leaders attend the course commencement in recognition of the students' and teams' accomplishments. All projects displayed at commencement meet the course requirements, which include the following: (a) a final aim statement, (b) a process flow diagram, (c) a cause and effect diagram or fishbone diagram, (d) statistical process control (upper and control limit) charts that include pre- and post-intervention data results, and (e) return on investment findings.

Demographic Overview and Summary of Key Physician Learners

For this study, a total of 13 physicians participated, encompassing 15% of the CSE graduates that qualified within the inclusion criteria. Of the 13 participants, the majority had multiple leadership appointments outside of their daily clinical responsibilities, such as faculty, department, or division chair appointments. Specialties amongst each of the physician participants varied across discipline. Participant specialties included hospitalists, general medicine, internal medicine, anesthesiology, orthopedics, emergency medicine, and ophthalmology.

Although all the participants attended the same CSE course, not all of them remained within the hospital system following the course. Of the 13 interviewed, one retired, one moved on to a different hospital system, and one was with a hospital affiliate. The 10 other physician participants were still within the hospital system.

Theoretical Framework and Design

The study's theoretical framework was adapted from Kirkpatrick's model. In this model, Kirkpatrick (1976) suggested that evaluation of training should assess change in four areas: learners' reactions, learning or acquisition of knowledge and skills, behavior in practice settings, and results or intended outcomes. This model was used to explore if the physician learners were able to translate quality principles to their clinical practice and to identify whether behavior in their clinical practice had improved within their institutional QI framework.

A narrative design was used to understand the experiences and perceptions of the graduates to gain a better understanding of QI education. In the process of listening to the participants' stories, various themes were identified. The methods used to obtain the data were semi structured interviews that allowed for open-ended questions for the participants and a field

journal to record each one-on-one interview. The use of the interview questions aided the structure of this study and was a great source to facilitate the gathering, organizing, recording, and analysis of information.

Interview Analysis

The interview questions sought to explore the participants' understanding of quality principles learned from the CSE course, whether new knowledge was gained as a result of attending the CSE course, and the influence the CSE course may have had on their clinical practice and institutional quality framework. In every interview, the purpose of the study was mentioned. Open communication and dialogue were encouraged in one-on-one in-depth interviews that are often "widely used by healthcare researchers to co-create meaning with interviewees by reconstructing perceptions of events and experiences related to health and health care delivery" and "delve deeply into social and personal matters" (DiCicco-Bloom & Crabtree, 2006, pp. 315–316) as they related to the course. Copious field notes were kept, which at one time was the predominant data collection strategy that was known to also help doctors organize and manage patient encounters (DiCicco-Bloom & Crabtree, 2006). After verbal and/or written consent was given, the interviews began.

Once the transcriptions of each of the interviews were complete, the transcripts were sent to the participants along with a written consent form. This allowed the participants to review their transcripts and provide any final feedback before the coding process began.

Themes

When the 13 participant interviews were analyzed, the data collected were organized using Labov's structural analysis. This structural analysis focuses on the underlying events of a story as the speaker experienced them (Labov, 2003), which can be useful when analyzing

several narrative accounts (Riessman, 2005). This provided a pattern of meaning that the participants recounted, which led to the discovery of various themes from the data.

Notes taken from the field journal were noted if the participants used metaphors and phrases of meaning to answer the research questions. Through this process of analysis, common words and phrases that were representative of the participant's understanding of QI education were discovered. Each of those was then coded within their respective categories adapted by Kirkpatrick (1967) and Labov (1972).

Codes were assigned using a thematic analysis. Thematic analysis is described by Fereday and Muir-Cochrane (2006) as a form of pattern recognition within the data, where emerging themes become the categories for analysis. Vitale (2012) explained that the arduous process involves identifying the themes through "careful reading and re-reading of the data" (Rice & Ezzy, 1999, p. 258). The emerging categories identified were the following: (a) abstract (learners' reactions), (b) orientation (learners' reactions and details), (c) complicating action (learners' acquisition of knowledge and skills), (d) resolution (behavior in a practice setting or improvements), (e) evaluation (results or intended professional outcome), and (f) coda (results or intended professional and personal outcomes). Table 2 provides a description of each of the narrative categories used, along with a definition of the codes, and a quote that further defines the code.

Abstract. The abstract provided the initial framework of the story. It introduced the story by providing the learners' reactions and initial impressions about the CSE course. Yolanda, one of the CSE course participants, described her initial reactions to the course as someone who "enjoyed working on an actual project in order to learn the techniques." Jo-Anne, a female physician, described her impressions of the course as the following:

> [having] fun memories of it [CSE Course] because it was really the first time to have a structured course on quality and how you go about measuring quality or improving quality. It was the first time I was able to hear about the fishbone model and things like variability and how important it is to get rid of variability. Just the terminology and then to start thinking in that way, changes the way you think. So, for me it was the first time to really have a structured course in that.

In the category of abstract, the reoccurring themes that the participants identified included learning from others and the significance of the resources provided within the class, particularly the project and the speakers. It was observed that in every interview of the key participants, the participants shared their stories by recalling personal accounts of the actual course.

The participants noted that the course offered the opportunity to learn from one another's work, which in turn helped enhance their learning by way of application. Jo-Anne's initial reaction to the course was that it was a great opportunity to learn from her colleagues:

> It was really great for me to be on one of the first teams with, like, people with different disciplines and then bring that together and using the principles from the course to actually make a project. So I think if we hadn't had that applied knowledge, it would be hard to remember all of the lectures but then using that to get like a goal done, was really good.

Learning from others' work and the rich connections made in a cohort setting was also identified as a strength. These relationships, it was noted, helped foster growth and made the experience more meaningful. Katherine, a female administrator who worked with multiple levels of leadership and different disciplines on a daily basis, expanded on the relationships she developed and helped foster as a result of attending the course:

> Honestly, it was probably more the connections. So, there's always even the critical massive folks from San Antonio who were doing the course and particularly because it was offsite, and people drove together or traveled together and ended up having dinner together. So, I felt like you've got to know the other people taking the course too, so it wasn't just the content or the project, but it was the relationship building aspect.

Table 2

Description of Narrative Codes and Quotes

Narrative categories and definitions	Participants' quotes that define the categories
Abstract (Learners' reactions): Provided the initial framework of the story. It introduced the story by providing the learners' reactions and initial impressions about the CSE course.	"I enjoyed working on an actual project in order to learn the techniques." "It was excellent from top to bottom . . . it was extremely useful because it gave me some easy lessons, easy insights, easy tools to improve some of the efficiencies [of the outcome]." "Dr. P [program dean] lines up a very talented group of lectures who not only are effective speakers but are engaged and focused speakers."
Orientation (Learners' reactions and details): Provided details about the story. It set the stage and explained the learners' experiences from the CSE course. It helped answered the questions, What did you learn in the course? And, how did you learn about the course?	"we are able to work in the history of lean and lean techniques and going all the way back to Toyota Model and bringing it up into current day." "time and opportunity do the teaching with some exercise, some hands on adult learning theory" "Probably the best thing that's done for me personally. [The training] has made me become a leader in this . . . I got to see it, do it, and then teach it, and then read about it."
Complicating action (Learners' acquisition of knowledge and skills): The turning point or series of experiences the learners may have had within the CSE course. It captured the learners' acquisition of knowledge and skills.	"Because it was a different type of data presentation than I was used to using and seeing, so it definitely made an impact." "when people display control charts and things like that, I understand how they were derived and what the results mean."

Resolution (Behavior in a practice setting or improvements): The result or outcome of the CSE course. It helped identify if changes in behavior in a practice setting or any improvements were made as a result of attending the CSE course.	"in our clinics . . . we are constantly looking at the flow, patient flow now . . . The nurses have an incentive program to utilize the lean process to get patients out and so our residence looked at that and that's a big deal now on orthopedic surgery that we use is getting people out of the hospital early and get them . . . home. "it gave me a more complete foundation, a platform, a more widely educated platform to be able to further mentor my interns and residents from, and I'm very active in doing that."
Evaluation (Results or intended professional outcome): Final results of the course by way of the learners' experiences with the course and/or team project. Did the learners feel that as a result of attending the course there was a significant amount of changes/results/professional outcomes that were meaningful as it relates to how they practice?	*Question: Has the CSE course change or impacted your clinical practice?* *Clinician:* Of course. Really, I'm a leader in quality improvement now and a huge advocate of it, a speaker for it, and I think I have changed the, or at least helped change the culture in my division, and we are slowly making that change and the culture over at the other hospital that I am also affiliated with.
Coda (Results or intended professional and personal outcomes): Final results of the course by way of the physician learners' experiences with the CSE course and/or team project. As a result of attending the course, the physician learners identified a significant amount of change in results and in professional and personal outcomes that were also meaningful. This may signify a combination of change in professional and personal development.	It has changed the way I think on everything, for example Christmas. I used to hate putting Christmas lights up, or I used to because you get dizzy going around and moving the ladder around. So, now what I do is I string them all together. And, instead of going all the way around I now only go from side to side in the front of the tree.

Chris, a male clinician who continued to practice within the system and was a retired chair, emphasized the importance of the resources. He said he was so impressed with the resources provided in the course. Chris explained that they were not only available to him while taking the course, but the resources were also available after the course concluded: “They gave everyone all those books, that was really nice . . . you know, you may not remember a concept well, but you could look things up and use them as a resource.” Edison, a resident educator within the field of quality, emphasized the importance of another resource that was beneficial to the course, which were the speakers. He explained: “Dr. P [program dean] lines up a very talented group of lectures who not only are effective speakers but are engaged and focused speakers” Yolanda elaborated on the final resource that the physician learners expressed enthusiasm about, which included the identification of a QI project within their institution. She said, “I thought it was a great introduction to it [quality], and I think that because they made it relevant to each person because each person got to pick their project, I thought that was just invaluable.”

Although the abstract category outlined the importance of shared learning and the strengths of the resources provided within the course, participants also discussed the challenge of balancing their clinical responsibilities and reserving time for two 8-hour in-class days for each of the 6 months. Eddie, for example, was asked, Was there anything that you found least beneficial about the course? He replied, “Yeah, I think the classroom sessions varied . . . Just the time that you have to spend many hours in a classroom setting, like all day”

Orientation. Orientation provided details about the story. It set the stage and explained the participants’ experiences from the CSE course. This category also helped answer the questions, What did you learn in the course? And, how did you learn about the course? Noah

said, “Probably the best thing that’s done for me personally. [The training] has made me become a leader in this . . . I got to see it, do it, and then teach it, and then read about it.”

The category of orientation was comparable to the abstract category in many ways; however, it delved deeper into how and why the course benefitted the participants in a practical setting. Through this category, the reoccurring themes that the physician participants identified with included the in-depth learning about the course and the significance of the resources provided. And, how those resources continued to help them professionally and provide them with a new shared language. Chris described this shared language in the interview:

> It was really interesting to be able to see some statistical scientific principles applied to the healthcare process to measure outcomes, which is something that I really haven’t been able to do in the past.
>
> Now we can do this with double-minded randomized control trials, but when you are really looking at a complex process like delivering healthcare, there are so many variables in there that you can always debate how you are going to measure the outcome and having these process control charges, incredible.
>
> Then of course the human element, how you get the human to buy into the program to the culture was critical, and there was one of the things that we learned in the program . . . I became so interested and liked it so much that I had every physician in my division take the course. You have to have a critical mass I think to change the culture.

The in-depth learning described by the physician learners helped breakdown the quality concepts in a manner that was easily understood. Those quality concepts they often described included fishbone diagrams, variability, how to create aim statements, and learning to think with a quality mindset. In this section, the participants were able to connect what they learned to how they learned. Mary, a faculty member at the institution, chair of her department, and a clinician, recalled those step-by-step accounts vividly:

> I just remember the importance of the breakdown of the process and remembering the process and then your aim statements, and I use this to today. That aim statement needs to be very specific and very short . . . because I notice when people start getting into quality process improving, and they get way too big, and then they don’t get anything done.
>
> So, I was just helping actually one of my vice chairs, he is doing a quality process improvement. He brought his aim statement, which was kind of three pages long. I was

> like, What do we really need? Let's prioritize here, and let's focus on one. I don't know if I would have known to do that without the course.
>
> I've been able to send a lot of colleagues to it [the course].

Eddie, a faculty clinician who also taught resident learners, elaborated on his experience with his first exposure to the fishbone diagram. The fishbone diagram is frequently taught at the macro level to help identify the root cause analysis of a problem. Eddie said, "It was the first time I really did the fishbone . . . I think I've been involved in projects, but not doing it, like the head person, the lead person."

The shared language was also identified as a common theme amongst the physician learners. Being able to adequately translate the information learned in the course within the scope of the QI language was often described as beneficial and helpful when returning to their clinics. Mary spoke to this point in her interview: "We have a shared language when we talk. Because some people don't even know the language." Jo-Anne also elaborated about the importance of having this shared language:

> I definitely think it gave me the tools to think about clinical problems that may have a QI intervention and potentially work on ways to improve patients care with good tools. . . . this gave me a vocabulary and basic knowledge to like kind of reserve my way into a career that has these components, which I think is really important.

Complicating action. Complicating action was the turning point or series of experiences the learners may have had within the CSE course. It captured the learners' acquisition of knowledge and skills. Sara stated, "When people display control charts and things like that, I understand how they were derived and what the results mean."

This category captured the learners starting to create meaning and make sense of the QI tools they learned in the course. They started to connect the tools with tangible experiences within their workspace. Throughout this category, the reoccurring themes included having

exposure to the QI tools and principals in a real-life setting, allowing themselves to remain vulnerable, and understanding the significance of the QI language.

Jo-Anne argued that the project assignment helped her connect the physical evidence with the long-term impacts of an administrative component that she had never considered before as a clinician:

> I remember one of the slides I had to make for our [project] was return on investment. And, learning how to calculate. That is something that I have kept with me because I know the term now. I know how they are maybe calculated and why it's important and why that matters to administration. So, I think that again, putting that presentation together and that one concept stays with me.

Many of the learners described this exposure as a sense of vulnerability. In other words, they had to learn to allow the weakness of their current work to be exposed in order for the problem to be fixed. Edison described these vulnerabilities as an opportunity to fix the weaknesses within a clinical space:

> you are exposed to all these tools, and you are exposed to seeing things, how things work and how they work efficiently and how they don't work efficiently. There is [*sic*] weaknesses, and there are vulnerabilities. And, how you can insert yourself in and fix and prevent those things. Pretty soon, especially when you are teaching this month-by-month, by-month . . . you see everything around you. You see the vulnerabilities and the errors.

The learners also recognized that some of the tools learned within the CSE course may not completely fit in their setting, but it provided them with a basic framework that would help in the real applications of QI tools. Edison debated about the concept of waste. He determined that he immediately knew that this concept would not work in his hospital system; however, he was able to see value in some component of the model.

> So, whether you 100% agree with all of it or not, it was fascinating and was useful and you not necessarily supposed to cherry-pick that but you know, you tend to cherry-pick and decide that I'm going to use these elements in the future because they are quick, they are efficient, they are easy, and I agree with them.

> . . . you see what you want to see, and you hear what you want to hear. So, those things that I agreed with clearly I was going to incorporate. There was one glaring thing that I, in that part that I didn't agree with or I agreed with asteriskly. . . .
>
> So, literally while I'm listening to that in the CSE course and I'm thinking, I like everything else about this model, except for that particular thing.

The ability for the physician learner to dichotomize one of the quality concepts learned, helped capture the learner's acquisition of knowledge and skills as a result of attending the CSE course.

Resolution. Resolution was the result or the outcome of the CSE course. It helped identify if changes in behavior in a practice setting or any improvements were self-identified from the participants as a result of attending the CSE course.

> The main impact that we made on that [project] is . . . when there was no patient in the waiting room and open beds in the back. If a patient arrived they didn't go through that long triage process.
>
> They would be placed directly on a bed and that's still goes on to the same day . . . provided the space is open. Now, since the time of this project we've moved in to a new facility for the . . . department. We've doubled the number of beds and take a run from what 60,000 square feet to almost a million square feet.
>
> We have two CAT scanners, three x-ray suite[s], and a full stocked lab. The trauma service has its own unknown footprint in the area. (Colt)

The category of resolution captured the physician learners applying the meaning of the QI tools they had learned from CSE course by way of their project. The learners moved beyond the scope of the connectivity phase and toward the actual application of the tools within their physical clinical workspace, further articulating if results in their practice had occurred. Furthermore, the physician learners started to connect the tools with tangible experiences within their workspace.

Throughout this category, the reoccurring theme included the actual application of the QI tools and principals within a clinical setting that many times spilled over to administrative appointments too. Mary said that because of the course, she learned that as an administrator she

had to rely on other people to help fulfill the mission of the division; however, sometimes staff may regress or not have the knowledge base to complete the tasks so being able to differentiate between these was an important skill set learned. She described her experience in the following story:

> Alright, I was at the . . . Clinic and my no-show rate went up to like 70%. I'm like, What is going on? I call my schedules, I'm like, What is going on? Do we have such a backlog that patients are going someplace else? No, no, no. I'm like going nuts, right?
>
> So, I just go watch the schedules. Do you know what they were doing? They were typing a name into the slot and never contacting the patient. I said, "That's not scheduling, that's typing a name into the slot."
>
> They go, "No, we scheduled see, we took this name, and we scheduled it right there." I'm like, "No, the definition of scheduling is not that you type it into a slot." Had I not gone and watched, how would I have ever known? I was getting complaints about people not getting scheduled and that they had to send two and three and four faxes to get them.
>
> So, I go down and I'm like, "Guys, you're supposed to schedule and fax things too." They're like, "Well you know our legal matters." So, I asked, "Where are your fax sheets?"
>
> Do you know they have like a box and all of them were just dumped in there, not in an alphabetical order, they didn't know they had duplicates, triplicated, or whatever and I was like, How can you keep track of this?
>
> So, it was an easy fix, right? I got one of those alphabetize files and put it all in order, got rid of all dupes and said, "Now this is how we do it." But who would know? Unless I observed . . . looked at the data, made no assumptions. Just look at the data and take a step back.

Evaluation. Evaluation referred to the final results of the course by way of the learners' experiences with the course and/or team project. Did the learners feel that as a result of attending the course there was a significant amount of changes, results, and professional outcomes that were meaningful as it relates to how they practice? Edison answered, "it gave me a more complete foundation, a platform, a more widely educated platform to be able to further mentor my interns and residents from, and I'm very active in doing that.

This category helped answer the central research question: How did the CSE physician graduates change their clinical practice after completing the CSE course? Many of the physician

learners felt that the course did change how they practiced; however, some noted that the change was an indirect change. The indirect change may have included how they approached a clinical method and sometimes an administrative method. This category also identified the learners who were unable to continue the implementation due to barriers within the system.

Mary said her experience in the course empowered her to ask questions more freely, and it provided her the tools needed to make meaning of data. For her, the data concepts have been pivotal in driving change in her department along with understanding the importance of a team approach.

> *Question: So, how has the CSE course changed or impacted you in your clinical practice, if it did?*
> *Mary:* I look at the data. Before I make changes and I do my gemba walks and really make sure that what I'm hearing is what's occurring. I do a lot more of breakdown of processes than I did before. I try to figure things out and then learn and . . . the importance of understanding team and getting buy-in.

Many of the physician learners have also noted that the movement of quality has made some important strides within itself, particularly from the patient side. When Mary discussed her project, she mentioned that she was part of the first cohort for CSE. And, because she was one of the newer cohorts, system practices were different during this time. Patients were more willing to accept longer wait times, so the need for her project may have been of higher priority 10 years ago. She said this was not acceptable today.

> Patients no longer will tolerate that [long wait times]. So, they're much more vocal on it. So, not only because things change in the way we treat patients but also because our patient population no longer says, 'That's okay, a doctor's time is more valuable than mine.' They don't say that. So, they are very vocal and so happy they have found their voice, and, but I don't see people waiting for hours or some days too over there.

Because healthcare systems continuously change, the inability to continue the CSE project was many times voiced as a barrier. Those organizational barriers varied, some included resistance to change, change in leadership, change in funding resources or change in system

processes. Mary explained that through her administrative role, she has encouraged her faculty to attend the course. And, those faculty members have reiterated the importance of having buy-in from all levels of leadership. She explained:

> Nothing's going to work if you don't get buy-in. The rapid cycle tests you know; you can get people to try something for a week. . . . For one week, they'll put up with you and if it's better then they're like great, but it didn't work. Good idea, but it didn't work.

Coda. Coda referred to the final results of the course by way of the physician learners' experiences with the CSE course and/or team project. As a result of attending the course, the physician learners identified a significant amount of change in results and in professional and personal outcomes that were also meaningful. This may signify a combination of change in professional and personal development. Edison stated, "If you ask the question, How is it changing, the way I am conducting my life and my work? It has changed that dramatically."

Through this code, an emerging theme was how the physician learners made practical changes in their personal life. Although not all the learners identified with this category, the learners that did made rich connections and improvements within their personal life and professional life, including Mary. Mary shared in her interview that the course changed her perspective professionally and personally. She described the change in her personal life through her experience with putting up the Christmas tree at home. She explained:

> It has changed the way I think on everything, for example Christmas. I used to hate putting Christmas lights up, or I used to because you get dizzy going around and moving the ladder around. So, now what I do is I string them all together. And, instead of going all the way around I now only go from side to side in the front of the tree.
>
> So, I mean just everything I do, I am always trying to be efficient.

Another one of the physician learners connected to the course so intimately that he described the class as a way in which it helped him think about daily life activities in a more

meaningful and more organized fashion. Edison, shared his personal revelations during a recent travel trip to Houston with his son.

> I was at a tennis tournament with my son in Houston about 3 years ago, gosh, it's been about 3 years ago, and I was at a hotel, and I told my wife I'm taking a shower. I go into the shower and everything about [how] the bath was set-up was designed to injure somebody.
>
> It would be, I got into the bath tap, I took a shower, I got on bath tap, the bottom of the bath tap was just quick as hell. I've always wondered in a bath tap, why in 2016 with all the emphasis on safety and the legal world that we have, litigious world that we have. The floor of every bathtub is just sandpaper gripped.
>
> So, you don't slip, but this was as slick as it could be, it's like they put mucous down on it, it was that slick. So, Number 1. Number 2, the back of a bathtub was a very shallow, whatever the bathtub that kind of went up like that, it was one of those ones where they want you to be comfortable lying back down in, right?
>
> But there was a hook, the only hook where you put your towel was up on the wall on the other side of that thing and you couldn't really step over it because it's too far away. So, you really had to lean over and then the hook was a, let me tell you what I did with this, this is how you interpret this things.
>
> The hook because it was out of a hotel that was a cattle exchange type hotel and they were big on motifs of cattle all over the hotel. So, the hook was a long horn like this, so it had a long thing coming out. So, you put your towel over that, so, if you are standing inside the bathtub and you are really leaning over, you just kind of want to pull it, it can come over that way.
>
> The hooks are so sharp you had to really flick it over it to be able to get it, and I thought this is tailor made for somebody to trip and fall outside. So, I took pictures of the whole thing, and sequentially I took pictures of the bathtub, of the slick floor, of those slant thing, of the thing of the hook and I use it actually as a sequence of things.
>
> When you see the world through error glasses, you look at something like this and say, there is multiple ways you can fix this such that you reduce the risk of slipping and falling. This is the arrow through the cheese and . . . it just changes the way you look at the world.

Summary of Themes

In this chapter, 10 key participants represented the voices of the CSE course. The physician participants of this study had the freedom to express themselves and their perceptions in their own words and voices as accurately as possible. The themes of the study represent the viewpoints of the physician learners involved in the CSE course at the research institution from 2008 to 2013 (see Table 3).

Abstract. In the category of abstract, the reoccurring themes that the physician learners identified included learning from others, the significance of the resources provided during the class, such as the speakers and books, and the opportunity to identify a project. In this category, it was noted that through their stories, the course offered the participants the opportunity to learn from their colleagues. This, they believed, was due to the educational format, which helped build lasting relationships within the system. Other notable tools included the speakers. The speakers were identified as well-versed QI experts that helped carry them through the implementation of their project. Although the abstract category outlined the importance of shared learning and the strengths of the resources provided within the course, participants also discussed the challenge of finding time for the course. Balancing their clinical responsibilities and reserving time for two 8-hour in-class days for 6 months was often difficult and was in some ways a deterrence from participating.

Orientation. The category of orientation was comparable to the abstract category in many ways, such as the participants' initial reaction to the course. However, it delved deeper into how and why the course benefitted them in a practical setting. The reoccurring themes that the physician participants identified included the in-depth learning about the course and the significance of the resources. The participants further elaborated on how those resources continued to help them professionally and provided them with a shared language.

The participants described the in-depth learning and breakdown of the quality tools, such as the fishbone diagrams, variability, creating aim statements, and learning the importance of approaching clinical applications with a quality mindset. In this section, the learner participants connected what they learned to how they learned.

Table 3

Summary of Themes

Category	Themes
Abstract	• Learning from others • Understanding the significance of resources (e.g., books, speakers, and the project) • Experiencing shared learning • Difficulty balancing clinical responsibilities and class time
Orientation	• Understanding how and why the course helped • Experiencing in-depth learning and breakdown of QI • Experiencing a shared language
Complicating action	• Creating meaning and making sense of the QI tools learned • Connecting the tools learned with the tangible experiences within the workspace • Having a safe place to feel vulnerable, which led to next steps in "fixing" their problems
Resolution	• Applying the meaning of the QI tools learned from the CSE course by way of their project • Moving beyond the scope of connectivity and toward application • Encouraging others to attend the CSE course
Evaluation	• Experiencing change or an indirect change in their practice, including the participants' approach to clinical and/or administrative responsibilities • Identifying if the participant was unable to continue the project due to institutional, healthcare, or funding barriers
Coda	• Experiencing change in their personal and professional life

The shared language was also identified as a strength of the educational learning. Being able to communicate what they learned and how they learned it within the scope of the QI language was often described as beneficial and helpful when returning to the clinics.

Complicating action. This category captured the learners' acquisition of knowledge and skills. The learners created meaning and made sense of the QI tools they learned within the course. They began connecting the tools learned with tangible experiences within their respective workspace. Throughout this category, the reoccurring themes included having exposure to the QI tools and principals in a real-life setting, having a safe space to feel vulnerable, and understanding the significance of the QI language.

A unique finding within this theme was the individual personal connection. When the learners allowed themselves to feel vulnerable about their workspace, they were able to explore their personal clinical strengths and weaknesses on a more personal level. When the physician learners accepted this vulnerability, it created the first steps in "fixing" their problems.

The learners also recognized that some of the tools learned within the CSE course may not completely be applicable within their setting, but the basic framework or concepts was noted as very helpful.

Resolution. The category of resolution captured the physician learners applying the meaning of the QI tools learned from CSE course by way of their project. The learners moved beyond the scope of connectivity and toward the application of the tools within their physical clinical workspace, further articulating if changes in their practice had occurred within their project.

Throughout this category, the reoccurring theme was the application of the QI tools and principals within the physician learners' clinical setting. Because many participants also served in an administrative capacity, their perspective and changes in their clinical practice often impacted their administrative decisions in a positive way. Some of the notable changes made administratively included encouraging other faculty and staff within their department to attend

the course, requiring residents within their department to take the course, and in one division, designing a course modeled after the CSE course for residents and interns to take.

Evaluation. This category helped answer the research question: How did the CSE physician graduates change their clinical practice after completing the CSE course? Many of the physician learners felt that the course did change how they practiced; however, some noted that the change was an indirect change. The indirect change may have included how they approached a clinical method and sometimes an administrative method. This category also identified the learners who were unable to continue the implementation due to barriers within the system.

Some of the physicians described the inability to continue their project because of institutional barriers that proceeded them or because the healthcare system as a whole had changed. Those barriers varied from project to project; however, those barriers included resistance to change, change in leadership, change in funding resources, or change in system processes.

Coda. Through this code, an emerging theme was how the physician learners made changes in their personal and professional life as a result of attending the CSE course. Although not all the learners identified with this category, the learners that did make rich connections and improvements noted how it changed their overall perspective on how they approached personal daily tasks. Some of the physician learners connected to this course so intimately that they described the class as a way in which it helped them think about daily life activities in a more meaningful and more organized fashion.

All physician participants communicated a great sense of admiration for the CSE course. The physician learners described the experience as an opportunity to be a part of a course that

provided them the tools needed to continue their journey in QI and remain stewards of the healthcare system.

Chapter 5: Discussion, Implications, and Recommendations

Discussion

The purpose of this qualitative narrative study was to gain a better understanding of quality improvement (QI) education programs by examining the experiences of the physician graduates who attended and completed the Clinical Safety and Effectiveness (CSE) course from 2008 to 2013 and identify if a change in clinical practice occurred after graduating from the course. The study was carried out in San Antonio, Texas, at a state supported academic medical school. Specifically, the study sought to answer the following research question: How did the CSE physician graduates change their clinical practice after completing the CSE course? Kirkpatrick's (1967) four-level evaluation model was used to evaluate the CSE course by examining the experiences of the CSE physician participants to gain a better understanding of quality improvement and by using it as a self-assessment instrument to determine baseline data of the physicians' knowledge to help identify if a change in clinical practice occurred after graduating from the CSE course.

In this study, the participants were male and female physician graduates of the CSE course from 2008 to 2013. The course's main objective was to teach QI principles to physicians to help them develop QI principals that could be applied within their clinical scope of responsibility. Through one-on-one interviews, CSE graduates shared their experiences and perceived outcomes of their understanding of the quality principles learned through the course and the framework in which they continued the CSE project's implementation for their department or division. Through their shared experiences, the participants were able to demonstrate the need for QI education and its ability to change clinical practice behavior.

A narrative design was used to gain in-depth knowledge and understanding of the participants' QI education training from the CSE course. This chapter discusses the main findings represented in the six categories that emerged from the participant data, examines their implications to QI education, and suggests recommendations for future research. The six categories are as follows:

1. Abstract (learners' reactions)
2. Orientation (learners' reactions and details)
3. Complicating action (learners' acquisition of knowledge and skills)
4. Resolution (behavior in a practice setting or improvements)
5. Evaluation (results or intended professional outcome)
6. Coda (results or intended professional and personal outcomes)

This study was guided by the adopted theoretical framework from two models. The first was Kirkpatrick's model, which helped determine the effectiveness of the program and ways in which improvements could be made (Kirkpatrick, 1967) within the CSE physician graduates' clinical practice. The second model was Labov's narrative analysis, which offers an alternative method into an interpretation of meaning (Labov, 2003). From the physician learners in this study, it was clear that they were aware of their realities. And, as a result of being listened to and being allowed to be active participants in their personal improvement efforts, they were provided the opportunity to recount their own past events in their own words and transfer their experiences from one person to another through their own narratives of personal experiences (Labov & Waletzky, 2003).

Implications

For the physician learners, there was great admiration for the role they played in redefining their clinical approach methods as a result of attending the CSE course. Part of the redefining of their role started with the ability to help foster meaningful relationships with their institutional colleagues. Many of them acknowledged the rich experiences the course offered that extended beyond the scope of QI tools but also helped build a pathway for future QI endeavors.

This study highlighted the narrowing of the gap between internal stakeholders and the physician learners by addressing physician competence and performance (Hawkins et al., 2009). One participant stated, “it’s not the do, it’s the concept of it. So, now I know I could get people to do it.” Another participant elaborated on this viewpoint:

> [The course was] really the first time to have a structured course on quality and how you go about measuring quality or improving quality. It was the first time I was able to hear about the fishbone model and things like variability and how important it is to get rid of variability. Just the terminology and then to start thinking in that way, changes the way you think.

It was evident in the study that if the physician learners were at the helm of QI efforts for the system, real improvements for the entire organization could lead to sustainable improvement efforts for the organization and the physicians and produce a progressive culture of self-development. Many of the participants who served in a dual faculty capacity explained the importance of being able to share this knowledge with medical students, residents, and interns. Another participant described this process as being able to “change the culture in my division.”

The project was identified as one of the core competencies of the course, which helped build a sense of empowerment for the physician learners and provided a sense of accountability and ownership. Most of the participants in the study believed that being involved in the QI efforts of the system by way of project identification, allowed them to feel as if they were able to

contribute to the system-wide improvement efforts at a tangible and meaningful level. Although almost all the physician graduates understood the value of the project, the ones in a nonleadership role did not feel that they were given adequate protected time to work on all the project requirements. They attributed this barrier as a lack of buy-in from institutional leadership.

Barriers

Although the course participants were generally appreciative of the opportunity to attend the course, they did identify barriers that could help improve the course. The common barriers the physician learners identified were financial restrictions and not enough protected time to work on the project. In regards to lack of time dedicated for the course, many of the graduates discussed the difficulties in finding the time to attend the all-day classes. The combination of having clinical responsibilities, dedicating two 8-hour days for 6 months along with individual team meeting times, and developing a plan to research and implement the QI project was always a form of contention. One of the participants, Yolanda, who was supported by two institutions within the system as a clinician and administrator, reemphasized the time commitment for the project: “Again part of the problem we face as faculty, at least in my department, is that clinical duties are pretty much 100%. So, it doesn’t give us much time to work on projects.”

Due to time commitments, graduates of the course who held appointments as administrators found it difficult to recruit new faculty within their respective department or division to attend the CSE course because people were unwilling to make the extra commitment. A few administrators also identified the lack of compensation for the additional work as a barrier in recruiting new faculty to attend the course. One participant explained, “it wasn’t overwhelming. . . . but if you like 1 week in a room now that would be too much because first of all, you couldn’t do a project and secondly, Who can give up that kind of time? I told my guys

this year, ‘Listen, you can take 2 days there and once a month or twice a month there,’ when I was trying to get other people to go.”

Another common barrier found amongst the physician graduates included the financial barriers. The graduates often described the financial restrictions as being either the lack of funding to continue to move forward with the QI project initiative within the institution or the inability to sustain a project because of the time and resources needed for the project. One participant described his frustrations with justifying his staff’s time toward QI initiatives with leadership administrators:

> If you don’t encourage it, from my financial point of view, it is not going to happen. So, you can’t, you have to encourage these people, and most industries will reward financially, engineers or people on the assembly line that [are] figuring out ways to improve productivity or improve the equality. We don’t do that; we actually punish them for it financially. We say, “You’re not doing enough work; you are spending too much time with them on this project.”

Recommendations

The experiences of each of the CSE graduates are important to the success of QI initiatives within the system. If the system wants to practice effective QI efforts that provide a deep impact on clinical practice changes, the clinic leaders and administrators within the institution need to remain a fundamental component or “champion” (Kirchner et al., 2012) of the equation and of the education. The physicians need to feel supported by their respective institution both monetarily and with designated protected time for QI initiatives. The participants often shared dual responsibilities as both administrators and clinicians, allowing them to provide a meaningful frontline and administrative perspective, which was instrumental in the change in clinician behavior. During the self-reflecting interviews, each of the participants allowed themselves the opportunity to reflect on their own work. This, in turn, allowed them to explore the feeling of vulnerability. When the participants allowed for self-reflection, it allowed them to

internalize the processes and provide a more meaningful and thorough evaluation of what was going well and what could be improved upon (Mol, 2006). In addition, providing a QI course to all faculty, staff, and administrators established the tone and culture for the expectations of the institution. It supports the basic principal of QI, which maintains that continuous QI education should remain a basic staple in our ever-evolving healthcare system. See Figure 1 for a list of recommendations for future QI educational initiatives.

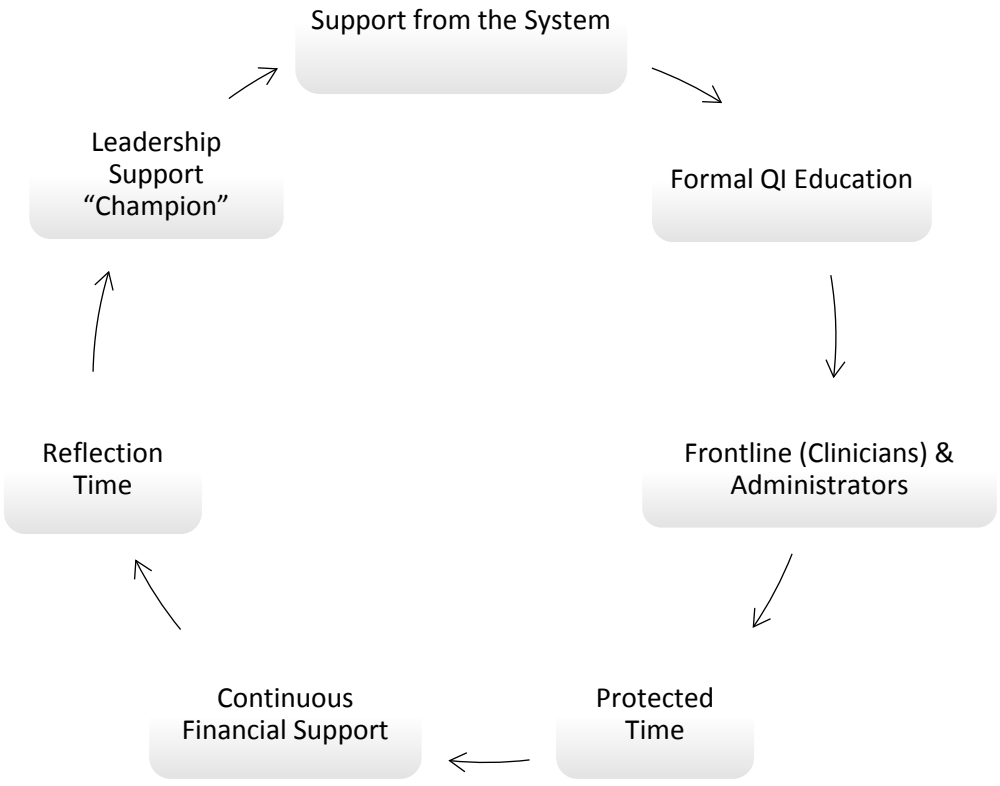

Figure 1. Bowen's model showing recommendations for future QI educational initiatives.

References

Affordable Care Act. (n.d.). In HealthCare.gov. Retrieved from https://www.healthcare.gov/glossary/obamacare/

Allison, J. J., Kiefe, C. I., Weissman, N. W., Person, S. D., Rousculp, M., Canto, J. G., . . . & Centor, R. M. (2000). Relationship of hospital teaching status with quality of care and mortality for Medicare patients with acute MI. *JAMA, 284*(10), 1256–1262.

Andrews, M., Squire, C., & Tamboukou, M. (Eds.). (2013). *Doing narrative research* (2nd ed.). Thousand Oaks, CA: Sage.

Bandyopadhyay, J. K., & Lichtman, R. (2007). Six Sigma approach to quality and productivity improvement in an institution for higher education in the United States. *International Journal of Management, 24*(4), 802–807, 824.

Batalden, P. B., & Davidoff, F. (2007). What is "quality improvement" and how can it transform healthcare? *Quality and Safety in Healthcare, 16*(1), 2–3.

Becher, E. C., & Chassin, M. R. (2001). Improving quality, minimizing error: Making it happen. *Health Affairs, 20*(3), 68–81.

Bleich, M. R. (2014). Developing leaders as systems thinkers—Part III. *The Journal of Continuing Education in Nursing, 45*(6), 246–248.

Bunniss, S., Gray, F., & Kelly, D. (2012). Collective learning, change and improvement in health care: Trialling a facilitated learning initiative with general practice teams. *Journal of Evaluation in Clinical Practice, 18*(3), 630–636. doi:10.1111/j.1365-2753.2011.01641.x

Centers for Medicare & Medicaid Services. (2014). *Bundled payments for care improvement initiative fact sheet* [Press release]. Retrieved from https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2014-Fact-sheets-items/2014-01-30-2.html

Chassin, M. R., Loeb, J. M., Schmaltz, S. P., & Wachter, R. M. (2010). Accountability measures—Using measurement to promote quality improvement. *New England Journal of Medicine, 363*(7), 683–688.

Clandinin, D. J., & Connelly, F. M. (2000). *Narrative inquiry: Experience and story in qualitative research.* San Francisco, CA: Jossey-Bass.

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Decker, S. E., Jameson, M. T., & Naugle, A. E. (2011). Therapist training in empirically supported treatments: A review of evaluation methods for short- and long-term outcomes.

Administration and Policy in Mental Health and Mental Health Services Research, *38*(4), 254–286. doi:10.1007/s10488-011-0360-1

De Jonge, V., Nicolaas, J. S., Van Leerdam, M. E., & Kuipers, E. J. (2011). Overview of the quality assurance movement in health care. *Best Practice & Research Clinical Gastroenterology*, *25*(3), 337–347. doi:10.1016/j.bpg.2011.05.001

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, *40*(4), 314–321.

Ezziane, Z., Maruthappu, M., Gawn, L., Thompson, E. A., Athanasiou, T., & Warren, O. J. (2012). Building effective clinical teams in healthcare. *Journal of Health Organization and Management*, *26*(4–5), 428–436.

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, *5*(1), 80–92.

Frankel, A., Gandhi, T. K., & Bates, D. W. (2003). Improving patient safety across a large integrated health care delivery system. *International Journal for Quality in Health Care*, *15*(Suppl. 1), i31–i40.

Franzosi, R. (1998). Narrative analysis—Or why (and how) sociologists should be interested in narrative. *Annual Review of Sociology, 24*, 517–554.

Gawande, A. (2009). *The checklist manifesto: How to get things right*. New York, NY: Metropolitan Books.

Graban, M. (2012). *Lean hospitals: Improving quality, patient safety, and employee engagement* (2nd ed.). Boca Raton, FL: CRC Press.

Hawkins, R., Roemheld-Hamm, B., Ciccone, A., Mee, J., & Tallia, A. (2009). A multimethod study of needs for physician assessment: Implications for education and regulation. *Journal of Continuing Education in the Health Professions, 29*(4), 220–234.

Health Resources & Services Administration. (2015). *HRSA announces $63 million in Affordable Care Act funding to expand quality improvement systems in health centers* [Press release]. Retrieved from http://www.hrsa.gov/about/news/pressreleases/150825qualityimprovement.html

Hendricks, K. B., & Singhal, V. R. (1997). Does implementing an effective TQM program actually improve operating performance? Empirical evidence from firms that have won quality awards. *Management Science, 43*(9), 1258–1274.

Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A Conceptual, theoretical, and empirical overview. *Health Education & Behavior, 34*(5), 777–792.

Hughes, R. G. (2008). Tools and strategies for quality improvement and patient safety. In. R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses.* Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK2682/?report=printable

Inglis, A. (2005). Quality improvement, quality assurance, and benchmarking: Comparing two frameworks for managing quality processes in open and distance learning. *International Review of Research in Open and Distance Learning, 6*(1). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/221/867

Institute for Healthcare Improvement. (n.d.). How to improve. Science of improvement: Setting aims. Retrieved from http://www.ihi.org/resources/pages/howtoimprove/scienceofimprovementsettingaims.aspx

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. Retrieved from https://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2001/Crossing-the-Quality-Chasm/Quality%20Chasm%202001%20%20report%20brief.pdf

Jacobson, J. O., Quinn, D., Gilligan, T., Davis, B. C., Dalby, C., Bretsch, J., & McNiff, K. (2014). The ASCO quality training program: Designing and implementing a medical specialty society-based quality improvement training program. *Journal of Oncology Practice*, *10*(3), 203–205. doi:10.1200/JOP.2014.001399

Jenson, H. B., Dorner, D., Hinchey, K., Ankel, F., Goldman, S., & Patow, C. (2009). Integrating quality improvement and residency education: Insights from the AIAMC National Initiative about the roles of the designated institutional official and program director. *Academic Medicine, 84*(12), 1749–1756. doi:10.1097/ACM.0b013e3181bf686f

Kirchner, J. E., Parker, L. E., Bonner, L. M., Fickel, J. J., Yano, E. M., & Ritchie, M. J. (2012). Roles of managers, frontline staff and local champions, in implementing quality improvement: Stakeholders' perspectives. *Journal of Evaluation in Clinical Practice*, *18*(1), 63–69. doi:10.1111/j.1365-2753.2010.01518.x

Kirkpatrick, D. L. (1967). Evaluation of training. In R. L. Craig & L. R. Bittel (Eds.), *Training and development handbook* (pp. 87–112). New York, NY: McGraw-Hill.

Kirkpatrick, D. L. (1994). Evaluation of training. In R. L. Craig & L. R. Bittel (Eds.), *The Four Levels* (pp. 19-67). San Francisco, CA: Berrett-Koehler Publishers, Inc.

Kirkpatrick Partners (n.d.). *Kirkpatrick Four Levels*. Retrieved from http://www.kirkpatrickpartners.com/Portals/0/Products/Kirkpatrick%20Four%20Levels%20-%20Audio%20Recordings%20Study%20Guide.pdf

Kocher, R., Emanuel, E. J., & DeParle, N.-A. M. (2010). The Affordable Care Act and the future of clinical medicine: The opportunities and challenges. *Annals of Internal Medicine, 153*(8), 536–539. doi:10.7326/0003-4819-153-8-201010190-00274

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (Eds.). (2000). *To err is human: Building a safer health system.* Washington, DC: National Academies Press.

Labov, W. (1972). *Language in the inner city: Studies in the Black English vernacular* (Vol. 3). Philadelphia, PA: University of Pennsylvania Press.

Labov, W. (2003). Uncovering the event structure of narrative. In D. Tannen & J. E. Alatis (Eds.), *Georgetown University round table on languages and linguistics 2001. Linguistics, language, and the real world: Discourse and beyond* (pp. 63–83). Washington, DC: Georgetown University Press.

Labov, W., & Waletzky, J. (2003). Narrative analysis: Oral versions of personal experience. *Sociolinguistics: The essential readings*, 74–104.

Leykum, L., Palmer, R., Lanham, H., Jordan, M., McDaniel, R., Noel, P. & Parchman, M. (2011). Reciprocal learning and chronic care model implementation in primary care: results from a new scale of learning in primary care. *BMC Health Serv Res.*, 11(44), 1–11.

Lynn, J., Baily, M. A., Bottrell, M., Jennings, B., Levine, R. J., Davidoff, F., . . . & James, B. (2007). The ethics of using quality improvement methods in health care. *Annals of Internal Medicine, 146*(9), 666–673.

Longenecker, P. D., & Longenecker, C. O. (2014). Why hospital improvement efforts fail: A view from the front line. *Journal of Healthcare Management, 59*(2), 147–157.

Manchikanti, L., Caraway, D., Parr, A. T., Fellows, B., & Hirsch, J. A. (2011). Patient protection and Affordable Care Act of 2010: Reforming the health care reform for the new decade. *Pain Physician, 14*(1), E35–E67.

Merriam, S. B. (1995). What can you tell from an N of l? Issues of validity and reliability in qualitative research. *PAACE Journal of Lifelong Learning, 4*, 51–60.

Moen, T. (2006). Reflections on the narrative research approach. *International Journal of Qualitative Methods, 5*(4), 56–69.

Mohammadi, S. M., Mohammadi, S. F., Hedges, J. R., Zohrabi, M., & Ameli, O. (2007). Introduction of a quality improvement program in a children's hospital in Tehran: Design, implementation, evaluation and lessons learned. *International Journal for Quality in Health Care, 19*(4), 237–243. doi:10.1093/intqhc/mzm021

Mol, A. (2006). Proving or improving: On health care research as a form of self-reflection. *Qualitative Health Research, 16*(3), 405–414.

Moore, D. E., Green, J. S., & Gallis, H. A. (2009). Achieving desired results and improved outcomes: Integrating planning and assessment throughout learning activities. *Journal of Continuing Education in the Health Professions*, *29*(1), 1–15. doi:10.1002/chp.20001

Øvretveit, J., & Gustafson, D. (2002). Evaluation of quality improvement programs. *Quality and safety in health care*, *11*(3), 270-275. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1743631/pdf/v011p00270.pdf

Patow, C. A., Karpovich, K., Riesenberg, L. A., Jaeger, J., Rosenfeld, J. C., Wittenbreer, M., & Padmore, J. S. (2009). Residents' engagement in quality improvement: A systematic review of the literature. *Academic Medicine*, *84*(12), 1757–1764.

Porter, M. & Teisberg, E. (2006). *Redefining health care: creating value-based competition on results (pp 1)*. Boston, MA; Harvard Business Press.

Rice, P. L., & Ezzy, D. (1999). *Qualitative research methods: A health focus* (1st ed.). Melbourne, Australia: Oxford University Press.

Riessman, C. K. (2005). Narrative analysis. In *Narrative, memory and everyday life* (pp. 1–7). University of Huddersfield. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.470.1392&rep=rep1&type=pdf

Rosenbaum, S. (2011). The patient protection and Affordable Care Act: Implications for public health policy and practice. *Public Health Reports*, *126*(1), 130–135.

Salazar, N. (2006). Applying the Deming philosophy to the safety system. *Professional Safety*, *51*(8), 52–57.

Sims, J., & Radloff, A. (2008). Enhancing reflective practice through online learning: Impact on clinical practice. *Biomedical Imaging and Intervention Journal, 4*(1), e8. doi:10.2349/biij.4.1.e8

Smith, C. P. (2000). Content analysis and narrative analysis. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 313–335). New York, NY: Cambridge University Press.

Sollecito, W. A., & Johnson, J. K. (2011). The global evolution of continuous quality improvement: From Japanese manufacturing to global health services. In W. A. Sollecito & J. K. Johnson (Eds.), *McLaughlin and Kaluzny's continuous quality improvement in health care* (4th ed., pp. 3–47). Retrieved from http://samples.jbpub.com/9780763781545/81545_CH01_FINAL.pdf

Sommers, B. D., Buchmueller, T., Decker, S. L., Carey, C., & Kronick, R. (2013). The Affordable Care Act has led to significant gains in health insurance and access to care for young adults. *Health Affairs, 32*(1), 165–74.

Springfield, E., Gwozdek, A., & Smiler, A. P. (2015). Transformation rubric for engaged learning: A tool and method for measuring life-changing experiences. *International Journal of ePortfolio*, *5*(1), 63–74.

Stelfox, H. T., Palmisani, S., Scurlock, C., Orav, E. J., & Bates, D. W. (2006). The "To err is human" report and the patient safety literature. *Quality and Safety in Health Care, 15*(3), 174–178.

Tague, N. (2005). *The Quality Toolbox* (2nd ed.). Milwaukee, WI: ASQ Quality Press.

The Hastings Center. (n.d.). Hastings Center Report. Retrieved from http://www.thehastingscenter.org/publications-resources/hastings-center-report/

The Leap Frog Group. (n.d.). Hospital Ratings and Reports. Retrieved from http://www.leapfroggroup.org/ratings-reports

Thorne, S. (2000). Data analysis in qualitative research. *Evidence-Based Nursing*, *3*(3), 68–70. doi:10.1136/ebn.3.3.68

Tingle, J. (2012). Perspectives on quality improvement training. *British Journal of Nursing, 21*(16), 990–991.

U.S. Department of Health and Human Services. Health Resources and Services Administration. (2011). *Quality improvement*. Retrieved from https://www.hrsa.gov/quality/toolbox/508pdfs/qualityimprovement.pdf

U.S. Department of Health and Human Services. (2015). *March effectuated enrollment consistent with department's 2015 goal* [Press release]. Retrieved from http://www.hhs.gov/news/press/2015pres/06/20150602a.html

UT Health San Antonio. (n.d.). CSE&E Clinical Safety and Effectiveness Course. Retrieved from http://uthscsa.edu/cpshp/CSE.asp

Varkey, P., Reller, M. K., & Resar, R. K. (2007). Basics of quality improvement in health care. *Mayo Clinic Proceedings*, *82*(6), 735–739.

Vitale, J. (2012). The perfect storm: Stress, anxiety, and burnout in the secondary school music classroom. *Brock Education, 22*(1), 56–72.

Watkins, R., Leigh, D., Foshay, R., & Kaufman, R. (1998). Kirkpatrick plus: Evaluation and continuous improvement with a community focus. *Educational Technology Research and Development, 46*(4), 90–96. doi:10.1007/BF02299676

Weiss, K. B., Wagner, R., & Nasca, T. J. (2012). Development, testing, and implementation of the ACGME Clinical Learning Environment Review (CLER) program. *Journal of Graduate Medical Education*, *4*(3), 396–398. doi:10.4300/JGME-04-03-31

Wellman, B. (1997). Structural analysis: From method and metaphor to theory and substance. In B. Wellman & S. D. Berkowitz (Eds.), *Social structures: A network approach. Contemporary studies in sociology* (Vol. 15, pp. 19–61). United Kingdom: Emerald Group.

Wiles, J. L., Rosenberg, M. W., & Kearns, R. A. (2005). Narrative analysis as a strategy for understanding interview talk in geographic research. *Area*, *37*(1), 89–99. doi:10.1111/j.1475-4762.2005.00608.x

Wong, B. M., Etchells, E. E., Kuper, A., Levinson, W., & Shojania, K. G. (2010). Teaching quality improvement and patient safety to trainees: A systematic review. *Academic Medicine*, *85*(9), 1425–1439. doi:10.1097/ACM.0b013e3181e2d0c6

Yardley, S., & Dornan, T. (2012). Kirkpatrick's levels and education 'evidence'. *Medical Education*, *46*(1), 97–106.

Appendices

Appendix A

IRB Approval

4/01/2016

Erika Bowen
[redacted]

Dear Erika:

Your request to conduct the study *QUALITY IMPROVEMENT PROGRAMS' CONTRIBUTION TO SUCCESSFUL CLINICAL PRACTICE CHANGES* was approved by expedited review on 4/01/2016. Your IRB approval number is 16-04-001. Any written communication with potential or current subjects must be approved and include the IRB approval number. Electronic surveys or electronic consent forms, or other material delivered electronically to subjects must have the IRB approval number inserted into the survey or documents before they are used.

Please keep in mind these additional IRB requirements:

- This approval is for one year from the date of the IRB approval.
- Request for continuing review must be completed for projects extending past one year. Use the **IRB Continuation/Completion form**.
- Changes in protocol procedures must be approved by the IRB prior to implementation except when necessary to eliminate apparent immediate hazards to the subjects. Use the **Protocol Revision and Amendment form**.
- Any unanticipated problems involving risks to subjects or others must be reported immediately.

Approved protocols are filed by their number. Please refer to this number when communicating about this protocol.

Approval may be suspended or terminated if there is evidence of a) noncompliance with federal regulations or university policy or b) any aberration from the current, approved protocol.

Congratulations and best wishes for successful completion of your research. If you need any assistance, please contact the UIW IRB representative for your college/school or the Office of Research Development.

Sincerely,

Ana Wandless-Hagendorf

Ana Wandless-Hagendorf, PhD, CPRA
Research Officer
University of the Incarnate Word IRB

Appendix B

Permission From Kirkpatrick Partners

Dear Erika,

Thank you for contacting us. To use the Kirkpatrick Model in the way you describe requires no special permission. You are free to cite the model and use it as the framework for your work. We do recommend that you mention Kirkpatrick Partners, and reference kirkpatrickpartners.com.

If your work is something you can share, we always enjoy seeing work that includes the model.

Best regards,

Wendy

On Thu, Sep 3, 2015 at 5:45 PM, Bowen, Erika O. < > wrote:

To whom it may concern,

My name is Erika Bowen and I am a PhD candidate at the University of the Incarnate Word. I am interested in using the Kirkpatrick model as a framework to help guide my study. My dissertation will focus on a quality improvement course at a state funded medical institution in Texas. The study will ultimately look to see if transformational learning has occurred in physicians. Essentially, I will use the model to study the physicians output following completion of the Quality improvement course. Please let me know if I need to sign a release form and/or if anything is needed to move forward with my study.

I look forward to hearing from you.

Respectfully,

Erika

Appendix C

Labov Categories

Narrative Category	Narrative Question	Narrative Function	Linguistic Form
Abstract	What was this about?	Signals that the story is about to begin and draws attention from the listener.	A short summarizing statement, provided before the narrative commences.
Orientation	Who or what are involved in the story, and when and where did the story take place?	Helps the listener to identify the time, place, person, activity and situation of the story.	Characterized by past continuous verbs; and adjuncts of time, manner and place
Complicating Action	Then what happened?	The core narrative category providing the "what happened" elements of the story.	Temporarily ordered narrative clauses with a verb in the simple past or present.
Resolution	What finally happened?	Recapitulates the final key event of the story.	Expressed as the last of the narrative clauses that began the complicating action.
Evaluation	So what?	Functions to make the point of the story clear.	Includes: intensifiers, modal verbs; negatives; repetition; evaluative commentary; embedded speech; comparisons with unrealized events.
Coda	How does it all end?	Signals that a story has ended and brings the listener back to the point at which s/he entered the narrative.	Often a generalized statement which is "timeliness" in feel.

Note. Adapted from "*A Digital humanities approach to the design of gesture-driven interactive narratives*," by Fox, H., Chow, K & Loyer, E., (2013). Adapted with permission.