Development and Evaluation of a TeamSTEPPS® Program Among Cardiac Procedural Unit Staff in a Mid-Atlantic Community Hospital to Improve Teamwork and Patient Safety

by

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Signature Page

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List of Abbreviations

AHRQ	Agency for Healthcare Research and Quality
ANOVA	Analysis of Variance
CCRC	Cardiac Catheterization and Rhythm Center
DNP	Doctor of Nursing Practice
EBP	Evidence-Based Practice
PICOT	Population, Intervention, Comparison, Outcome, and Time
RN	Registered Nurse
RT	Radiology Technologist
TeamSTEPPS®	Team Strategies and Tools to Enhance Performance and Patient Safety
T-TPQ	TeamSTEPPS® Teamwork Perceptions Questionnaire

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Abstract

BACKGROUND: Communication and teamwork between members of the non-provider patient care team in the cardiac procedural unit were observed to be unbalanced and at times ineffective. Team members additionally expressed concerns regarding efficiency and accuracy in patient handoff, specifically between units. The goal of this study was to improve teamwork and communication among the staff of the cardiac catheterization and electrophysiology lab. Participation in this initial, single-unit phase would include the non-physician staff of that unit. METHODS: Bandura's Social Cognitive Theory was the theoretical framework utilized for this project. Leadership assessment of service line communication noted deficits in teamwork and communication skills particularly with patient handoff most specifically between units. Leadership and departmental educational representatives conferred and based on experience recommended a trial of TeamSTEPPS® (Team Strategies and Tools to Enhance Performance and Patient Safety) program initiation. A literature review was performed to evaluate program applications and available assessment tools. INTERVENTION: Staff was surveyed via the TeamSTEPPS® Teamwork Perceptions Questionnaire (T-TPQ) immediately before and post three hours of TeamSTEPPS® education. They were additionally surveyed at four- and eight-weeks post education. Documentation of their teamwork perceptions was recorded, and their behavior observed over the eight-week project time frame. RESULTS: TeamSTEPPS® education resulted in statistically significant increases in teamwork perceptions from pre- to post-education and post-education to eight weeks assessments reflective of change and sustainability. CONCLUSIONS: TeamSTEPPS® education is effective in improving teamwork and communication perceptions immediately and at eight weeks in a dynamic cardiac procedural unit. *Keywords:* TeamSTEPPS, teamwork, communication, patient safety, T-TPQ, perceptions

Introduction

Problem Description

Lack of collaboration and effective communication among healthcare workers increases the potential for patient harm secondary to the incomplete transfer of information in retrospective and observational studies (Castner, 2012). Without a clear understanding of the known data regarding a patient and the roles and responsibilities of the team participants, there is an increased risk of patient injury. The World Health Organization estimated up to 16% of hospitalized patients may experience adverse events (World Health Organization, 2018). Communication failures have been identified as the leading cause of sentinel events by The Joint Commission (The Joint Commission, 2017). A review of nearly 940 sentinel event root cause analyses in 2015 revealed that communication difficulties were present in 79% of those events (The Joint Commission Center for Transforming Healthcare, 2015).

Poor teamwork and communication result in less than satisfactory patient outcomes leading to millions of dollars in penalties and litigation expenses (Sheppard, Williams, & Klein, 2013). Controlled Risk Insurance Company Strategies (CRICO) a risk management group associated with the Harvard Medical Institutions, reviewed 23,000 medical malpractice claims from 2009 to 2013 ("Cost," 2016). The report cited communication challenges as a significant contributing factor in 37% of those cases leading to nearly 1,700 deaths costing $1.7 billion over five years (TJC, 2017). Forty-eight percent of those communication failures were in an ambulatory setting, 44% in the inpatient setting, and 8% in the emergency department ("Cost," 2016). While 57% of these errors were between providers (27% surgical, 13% general medicine, 9% nursing, and 5% obstetrical), an alarming 55% occurred between providers and the patient,

implying 12% involved both inter-provider and provider to patient miscommunication ("Cost," 2016).

Through direct observation of members of the Cardiac Catheterization and Rhythm Center (CCRC), communication and teamwork were observed to be insufficient and at times ineffective. Team members additionally expressed concerns regarding efficiency and accuracy in provider interactions and with patient handoff specifically between units. Through interviews and interactions, a newly hired senior leader for the cardiovascular service line appreciated an opportunity for improvement (A. Cheek, personal communication, November 28, 2017). Her personal experience with Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS®) implementation in other facilities was influential for developing the initial plan for this project. Primary attention was focused on the hospital-employed staff of the unit; therefore, providers were not included in this initial venture.

Available Knowledge

Effective communication and teamwork proved to reduce clinical errors, improve patient safety, and advance procedural efficiency (Brasaite, Kaunonen, & Suominen, 2015). The World Health Organization additionally reported that only through collaborative practice teams utilizing effective communication would healthcare workers deliver the best quality of care (WHO, 2018). A lack of teamwork and effective communication has been linked to preventable medical errors (Ballangrud et al., 2017). Despite this knowledge, collaboration has not been integrated into the curricula of health professions (Keebler et al., 2014).

Leadership has been found to be a trainable skill that impacts patient outcomes through the creation of a safety culture (Agency for Healthcare Research and Quality [AHRQ], 2015); therefore, teamwork training is essential to achieve desired patient outcomes (Husebo &

Akerjordet, 2016). Safety culture is “the learned, shared, enduring values, and behaviors of organization members regarding the organization’s willingness to detect and learn from errors” (Jones, Skinner, High, & Reiter-Palmon, 2013, p. 394). Jones et al. (2013) proved in a longitudinal study of 24 hospitals who underwent teamwork training that in creating a supportive work environment, inclusive of middle and upper management, the learning led to positive behavior change. Utilization of formal and informal leaders within groups facilitates a process of training, resulting in more efficient, effective, and safe interactions among the team, and is perceived as improved care coordination by patients (Bunnell et al., 2013).

A comprehensive search, employing electronic databases, reviewed the literature on the TeamSTEPPS® experience. Key terms isolated from the population, intervention, comparison, outcome, and time (PICOT) question were utilized for that search: TeamSTEPPS® and communication, teamwork, attitude, perception, multi-professional education, interprofessional education, patient safety, and staff retention. Databases used included the Cumulative Index to Nursing and Allied Health Literature Plus with full text, Medical Literature Analysis, and Retrieval System Online, PubMed, PsycINFO, Google Scholar, Academic Research Primer, and the Cochrane Database of Systematic Reviews. Search limiting phrases included articles written in the English language, published in peer-reviewed journals, and with a date range of January 2013, to March 2018, for publication. Additionally, references for accepted articles were reviewed for additional resources, and to maximize the utilization of primary sources. All accepted literature was evaluated utilizing the Strength of Recommendation Taxonomy framework (Ebell et al., 2004).

In November 1999, Kohn, Corrigan, and Donaldson (2000) wrote a report entitled *To Err is Human*, on behalf of the United States Institute of Medicine, that brought attention to the

almost 98,000 preventable deaths every year in the United States secondary to medical errors; over 70% were from communication mistakes. The Institute of Medicine predicted the overall cost of those errors to our society at more than $29 billion (Pettit & Duffy, 2015). Since then, there has been substantial interest in patient safety and a significant mobilization of healthcare organizations and providers to make changes accordingly. In 2013, new figures placed deaths related to preventable medical errors at over 400,000 annually (James, 2013). Most recently in 2016, researchers published a study citing healthcare itself as the third leading cause of mortality in America after heart disease and cancer (Makary & Daniel, 2016). Effective communication and teamwork have been demonstrated to reduce clinical errors, advance patient safety, and develop procedural efficiency (Lee et al., 2017). In the current evolution of accountable care and patient experience driven reimbursement, TeamSTEPPS® is a validated interventional multilevel teamwork approach that incorporates patients as a member of that healthcare team (Gittell, Beswick, Goldman, & Wallack, 2015).

In 2006, the AHRQ, in conjunction with the Department of Defense's Patient Safety Program, released TeamSTEPPS®. Developed by decades of military and aviation industry research, this evidence-based program sought to improve communication and teamwork skills and was made available to civilian health care providers on the AHRQ website (AHRQ, 2015). The curriculum is comprehensive in its planning, training, principles, and actionable tools and its goals regarding communication, leadership, team structure, situation assessment, and patient safety (see Figure 1) (Ward, Zhu, & Lampman, 2015). Emphasis is noted on shared mental modeling, mutual trust, information sharing, and closed-loop communication (Lee et al., 2017). These processes have been honed to encourage the flattening of the traditional hierarchy of

healthcare workers to support all team members in advocating for safety by speaking freely (Bunnell et al., 2013).

Figure 1. TeamSTEPPS® Model representing skills measured by the T-TPQ. From the Agency for Healthcare Research and Quality [AHRQ], About TeamSTEPPS. Copyright 2015.

Without a clear understanding of known data regarding a patient, and the roles and responsibilities of the team participants, there is an increased risk of patient harm (Lisbon et al., 2016). Additionally, a link exists between improved work relationships, enhanced patient outcomes, and decreases in staff attrition. The TeamSTEPPS® curriculum encompasses the need for assessment, training, implementation, and finally sustainment of the new processes. The skill of communication is supported using four tools: situation, background, assessment, and recommendation; check-back; call out; and handover (AHRQ, 2015). Applying structured teamwork, clear communication, and tool usage leads toward the improvement of team behavior, communication, and the enhancement of patient safety (Gaston & Short, 2016). Utilizing a mixed methods approach, Gaston and Short (2016) customized the three-hour TeamSTEPPS®

Essentials course with interprofessional groups from three acute care oncology teams. Administration of the TeamSTEPPS® Teamwork Perceptions Questionnaire (T-TPQ) revealed a statistically significant positive impact on staff perceptions of communication and team structure one month after training completion ($p<0.05$) (Gaston & Short, 2016). Likewise, the perception of open communication and teamwork revealed statistically significant results with increases of 21% and 17% respectively one month after training ($p<0.00$) (Gaston & Short, 2016).

Studies evaluating the effectiveness of TeamSTEPPS® training on the attitude and perceptions of healthcare clinicians toward teamwork and communication skills have succeeded. Vertino (2014) reported in a study at a large Veterans Administration Hospital that 82% of participants in TeamSTEPPS® training perceived an improvement in teamwork. Also, without the influence of occupational groups or years of experience, the training produced a statistically significant increase ($p\leq0.001$) in leadership, situation monitoring, mutual support, communication, and overall performance (Vertino, 2014). Lisbon et al. (2016) studied TeamSTEPPS® training at three academic medical centers reporting the results from a 21-question survey. The findings revealed post-education knowledge and perception improvement were increasingly statistically significant at 45-days and was at least sustained at 90 days (Lisbon et al., 2016). Similarly, TeamSTEPPS® Essentials training for emergency department nurses and emergency medicine residents at a large urban academic hospital revealed statistical significance in four of the above constructs, with the fifth, communication, being near significant at 2.6% ($p=0.107$) (Wong, Gang, Szyld, & Mahoney, 2016). Additional analysis of three specific patient safety areas related to teamwork and communication reflected between 20.5% and 23.9% improvements ($p=0.024$-0.035) (Wong et al., 2016).

An understanding of the identified role of each team member facilitated interdisciplinary team function (Glymph et al., 2015). The surgical service line in one of the United States' largest military hospitals focused on two components of TeamSTEPPS® training: briefs and huddles, and reported a statistically significant improvement in team member communication perception through tool utilization (Tibbs & Moss, 2014). Tibbs and Moss (2014) found increased team member communication resulted in decreased procedural turnover times and surgeon complaints. Capella et al. (2010) utilized an observational tool to evaluate the effect of TeamSTEPPS® training within a radiology imaging service. The researchers reported significant improvement in all five areas: leadership, situational monitoring, mutual support, communication, and overall performance (p <0.001-0.009) (Capella et al., 2010). Additionally, both the time into the computed tomography scanner and the subsequent transit time to the operating room was significantly decreased (Capella et al., 2010). Study analysis by Weld et al. (2015) of operating room data on urology and orthopedic services after TeamSTEPPS® training revealed 21% and 12% improvement in OR case start time and a subsequent 12.7-minute and 19-minute decrease in average case length (Weld et al., 2015). This team efficiency was also seen outside of the operating room. In the hectic environment of a large, high-volume level I trauma center in the southeastern United States, TeamSTEPPS® training accomplished a reduction of 4.3 minutes in transport to a computed tomography scanner, over 35-minute decrease in time to the operating room but also a 5.5-minute improvement in the time to establish an endotracheal airway (Peters et al., 2018). Peters et al. (2018), using an observational tool, were additionally able to demonstrate improvement in all five-core measurable, and those findings were sustained when reevaluated at one year.

While significant adverse events are reported and handled administratively, TeamSTEPPS® tools allow frontline staff to examine near misses or more minor unintended outcomes. Use of the TeamSTEPPS® tools allows staff to address safety issues more comprehensively, as they previously may have gone unreported (Riverra-Chiauzzi, Lee, & Goffman, 2016). Gupta, Sexton, and Frush (2015) reported within an interventional ultrasound practice that participants in TeamSTEPPS® training conveyed improved coordination between physicians and sonographers, primarily focusing on feedback and patient concerns. Weld et al. (2015) found patient safety issues in the operating room settings were 10% improved six months post-TeamSTEPPS® training and that decrease was sustained at one year ($p<0.001$).

Gittell et al. (2015) identified validated measurements and interventions related to teamwork and subsequently combined these findings to optimize their success within organizations. Their assessment of the four core skills of TeamSTEPPS®: leadership, situation monitoring, mutual support, and communication was that the skills are trainable and directly affect goal outcomes of attitude, knowledge, and performance (Gittell et al., 2015). They found that organizations who empowered teamwork encouraged employees to recognize their interdependence with others and consequently acquire new skills to enhance those relationships (Gittell et al., 2015). The process of active communication as it relates to coordination of efforts must be “frequent, timely, accurate, and problem-solving” while encompassing “shared goals, shared knowledge, and mutual respect” (Gittell et al., 2015, p. 118). In a dual-designed quasi-experimental study, 37 critical access hospitals (24 intervention and 13 control) in the mid-western United States instituted TeamSTEPPS® training to evaluate the effect on teamwork and patient safety (Jones et al., 2013). Seventy-five percent of the eligible population, almost 3,500 respondents, were assessed for more than one year with statistically significant increases in

continued patient safety improvement (5%), intradepartmental- (2%) and interdepartmental-teamwork (5%) (Jones et al., 2013). Jones et al. (2013) found that facilities that most rapidly embraced training with the greatest leadership support reported the most significant effect.

The utilization of multiple theoretical frameworks in many settings has increased the breadth of knowledge regarding implementing TeamSTEPPS® training and its effectiveness. Experience has documented the importance of need assessment and acquiring support for the program before initiation. Study findings revealed a benefit in tailoring TeamSTEPPS® to the program site and emphasize the need to plan for training sustainment, and ongoing evaluation of the learned skills (Paul et al., 2017). The attitude and perception questionnaires developed by the program reveal not only behavioral change but also improved staff satisfaction and increased staff input, both of which will enhance training implementation as well as sustainment efforts (Gaston & Short, 2016).

Rationale

The TeamSTEPPS® program was developed as a health care curriculum from military and aviation industry programs when critical team functionality similarities were recognized. The overall process encompasses three main steps: need assessment, training and implementation, and finally sustainment of the new methods. Applying a structured teamwork and communication intervention leads to the improvement of team behavior, communication, attitudes, perceptions, and enhancement of patient safety.

Social Cognitive Theory is Albert Bandura's change theory comprised of behavioral and cognitive aspects of human learning (Bandura, 2000). Bandura (2000) postulated attention, retention, and subsequent reproduction is channeled through the activities of observation followed by imitation and then developing into modeling behaviors. Views are not only of a

specific occurrence but also the sequelae of that incident. Humans learn via give-and and-take exchanges with their environment, as it is perceived cognitively and behaviorally.

Bandura, a psychologist, placed the concept of self-efficacy at the center of his theory (Bandura, 2000), as represented in the researcher-created diagram in Figure 2. Self-efficacy is the confidence one has in oneself to succeed in situations through mastery of practice, social encouragement, and indirect experience (Consiglio, Borgogni, DiTecco, & Schaufeli, 2016). Self-efficacy is a trait developed over time through experiences and observations that plays a direct role in how an individual performs (Singleton, 2017). Self-efficacy is an optimistic theory in concept. Individuals who believe they will succeed at a task often do, and those with doubts, often fail (Bandura, 2000). Bandura (2000) expounds on the concept of team efficacy proposing a team's success is reflective of the self-efficacy of its members. Therefore professional efficacy "refers to a general evaluation of the effectiveness and accomplishment derived from the performance itself" (Consiglio, Borgogni, Alessandri, & Schaufeli, 2013, p. 23). Not only does the individual member's confidence affect the success of the team, but the individual's perception of the team's efficacy also plays a role in their success or failure.

TeamSTEPPS® is an evidence-based practice (EBP) system focused on optimizing patient outcomes by improving teamwork and communication (AHRQ, 2015). Team competencies taught are communication, leadership, situation monitoring, and mutual support (AHRQ, 2015). The structure considers barriers, strategies, and subsequent outcomes. Bandura recognized that humans are, in part, shaped by their experiences and environment and therefore have certain expectations for their future. In some scenarios, these may constitute barriers. However, by utilizing strategies to alter their circumstances, such as TeamSTEPPS®, the future events can change. Perceived self-efficacy reflects what an individual believes, and therefore

shapes not only their behavior, but also plans, goals, and dreams (Bandura, 2000). Bandura (2000) also discussed the concept of collective efficacy that is the individual members of the group projecting their beliefs onto the perceived abilities of the team.

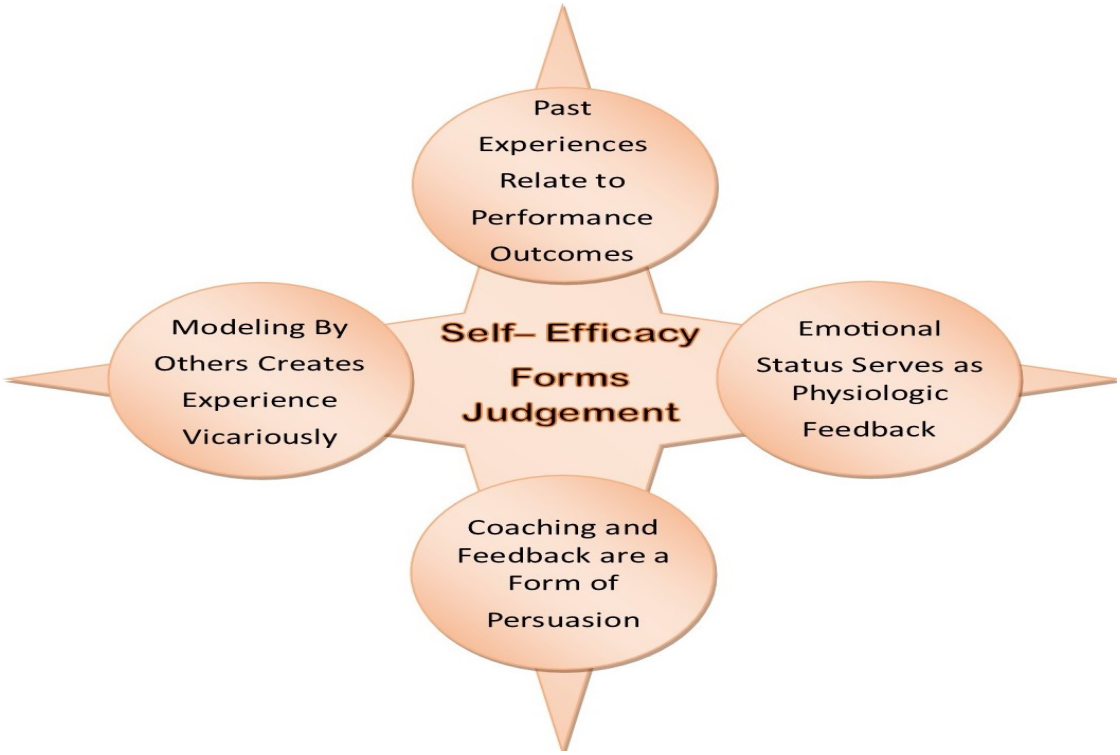

Figure 2. Self-Efficacy within Bandura's Social Cognitive Theory.

In the case of this procedural unit population, specific repetitive experiences have created self- and collective-efficacies that are not in the best interests of productivity, perceptions, and outcomes. TeamSTEPPS® education also encompasses conflict management tools to support staff when accepted communication techniques fail (Bunnell, 2013). While many contributing factors are outside the non-physician staff of the cardiac interventional procedural unit, demonstration of staff member improvement before engaging providers and other groups will be beneficial. Individual departments within hospitals function as microsystems that possess significant opportunities to improve work methods within their immediate environment (Ballangrud et al., 2017). Working with individuals has not produced the overall effect desired

without the group progressing together. The self-efficacy of the individual does not translate to group improvement. Research demonstrating collective investment in efficacy increases motivation and energy toward future trials that lead to more significant and maintained accomplishments over time (Salanova, Rodriguez-Sanchez, Schaufeli, & Cifre, 2014).

Specific Aims

The purpose of this quantitative and correlational EBP project is to improve teamwork and communication among hospital employed staff in the cardiac catheterization and electrophysiology laboratory. The literature has revealed multiple research articles reviewing the utilization of the TeamSTEPPS® program. The areas represented are emergency departments, intensive care units, operating rooms, and labor suites. Each area is a high intensity, potentially high-stress environment where rapid decision-making takes place. Patients are more likely to vary in acuity, stability, or require resuscitation; therefore, the clinicians are multi-tasking, and effective communication is key (Plonien & Williams, 2015). No studies focusing on a dynamic procedural unit, such as a cardiac catheterization and electrophysiology lab are noted. Some similarities exist between these settings, but the dissimilarities are significant. Such a clinical unit cares for a diverse ambulatory, inpatient, emergent, and critical care population.

The importance of teamwork and communication are essential to the unit and to the patient who experiences not only procedural unit care but also transfers into and out of that area. Units transferring to or receiving patients from the CCRC are emergency departments, critical care units, or even ORs, with their own documented challenges, as mentioned in the literature. Therefore, effective teamwork is essential not only within the procedural area but also between departments. The selection of a single central unit in a service line to train initially would allow for multiunit broadcast in the future. Staff engagement in this process will be encouraged by

promoting the team members' self-interests toward improving their work experience by streamlining processes, defining expectations, and enforcing accountability.

The PICOT question posed was: In (P) non-physician, cardiac catheterization and electrophysiology laboratory staff (I) does implementation of education regarding communication and teamwork skills (C) versus compared to no prior formal training (O) improve learner/participant perceptions and knowledge regarding communication and teamwork (T) immediately, and at one and two months after the intervention? Information in this paper describes a scholarly project designed to further investigate the effect of TeamSTEPPS® training on the perceptions and knowledge of communication and teamwork in a cardiac procedural unit. The resultant paper represents the culminating assignment in partial fulfillment of the requirements for the Doctor in Nursing Practice (DNP) program at Wilmington University, in New Castle, Delaware.

Methods

Context

The design of this EBP project was quantitative, correlational, and specifically predictive, and details the effect of one variable on another. The consent form and demographic information collection tool were Institutional Review Board approved (see Appendix L and Appendix M). The goal of this project was to perform an education intervention regarding communication and teamwork skills, utilizing the TeamSTEPPS® process and tools. Utilizing validated Likert-type scale tools, the learner participants' knowledge before the intervention and at three intervals post-intervention, assessed sustained learning and change.

Setting

The Heart Institute at AtlantiCare Regional Medical Center is a full-service medical, diagnostic, interventional, electrophysiological, structural heart, and cardiac surgery capable program. At the core of the Heart Institute is the CCRC, which is a five laboratory, 15 holding bay procedural unit, with access to a hybrid OR. The CCRC is the busiest ST-elevated myocardial infarction lab in New Jersey, the busiest percutaneous coronary intervention site in southern New Jersey with a higher than average percutaneous coronary intervention versus cardiac surgery patient mix than the rest of the state (State of New Jersey Department of Health, 2018).

Patient mix is elective, urgent, and emergent adult procedures. Patients are sourced from outpatients, inpatients, and emergencies from four hospitals; five emergency departments; and field activations for over two southern New Jersey counties. Non-physician staff, including the clinical manager and nurse manager, consists of 21 registered nurses (RN), eight radiology technologists (RT), three patient care associates, and three office staff members.

Population

Inclusion criteria were non-provider full-time and part-time CCRC staff where English was their primary language. Excluded from this project population were providers (physicians and nurse practitioners), non-employees of the CCRC, and any pool or float staff. Providers were excluded at the request of administration for this project.

Selection for the project population was voluntary. One month before the planned education, an electronic mail was sent to all non-provider staff within the CCRC introducing the project. The letter was additionally printed and posted in employee lounge areas to facilitate awareness. This summary emphasized the voluntary nature of participation, the time

commitment for education, and subsequent data collection, and allowed participants to opt out at any point in the process (see Appendix K). After that, a brief introduction was shared in a staff meeting. Two weeks before education initiation, three meeting invitations were sent electronically to all qualifying staff members representing the three separate classroom sessions. Each individual electing to participate was requested to select and accept one meeting for scheduling purposes.

The three sessions were planned on weeknight evenings over a two-week period by reviewing the staff schedule for days worked, thereby allowing each potential team member at least one course to attend on a day they were scheduled. Participation was not financially compensated. However, licensed staff was offered continuing education credits. Refreshments were provided during each of the educational sessions.

Intervention

Preparation

The researcher completed the online TeamSTEPPS® trainer modules before project initiation (see Appendix H). After curriculum completion, trainers have access to utilize standardized teaching materials available electronically. The documents are available for printing and duplication to augment the successful implementation of this EBP program at participating institutions. Trainers are encouraged to personalize those tools to teach leadership skills, mutual performance, adaptability, shared mental models, mutual trust, and explain how to use closed-loop communication. The training sessions were consistent with the TeamSTEPPS® Essentials Course and utilized the audiovisual and didactic information scripted by the course designers.

Data Collection

The three-hour educational sessions took place in hospital meeting rooms on three separate evenings. After written consent, the demographic data were collected for each participant, followed by completing the T-TPQ immediately before and after their three hours of education (see Appendix J). The T-TPQ is a 35-question Likert-type scale validated tool for measuring individual perceptions of teamwork. The team was observed and supported during the following eight weeks, and they repeated the same questionnaire at four weeks and eight weeks post education. The results of each survey were recorded in a data collection tool for subsequent analysis.

Study of the Interventions

The data collected from the four survey sessions were compared by the mean scores of individuals over time and by matched pairings based on collected demographics. The planned *t*-test analysis was adjusted to an analysis of variance (ANOVA) to allow comparative results across three or more groupings for statistical significance. The ANOVA analyzes the variance within and between the sample population groups over the project course while additionally considering the influence of demographic identifiers in the learning patterns within the group. Demographic identifiers for paired comparison included the highest level of education attained, and factors that have a role in learning capabilities, such as style, and opportunities for the participants. The planned demographics included prior formal teamwork training gender, age, race, primary language, licensure, years in their current occupation, and years in their current position (see Appendix M).

Measures

Via survey, staff perceptions of teamwork and communication pre-and post-education were collected to evaluate for baseline responses, training related change, and subsequent maintenance. Additionally, measured data included staff attendance at the three-hour training sessions, staff knowledge of TeamSTEPPS® tools, and observational utilization of those tools. TeamSTEPPS® has several validated tools from which to select. The two most frequently used are the TeamSTEPPS® Teamwork Attitudes Questionnaire and T-TPQ ("T-TAQ," 2014) ("T-TPQ," 2014). After careful review, the T-TPQ was selected, as it best reflected the goals of the project and gap identified among the target population.

The T-TPQ has undergone significant field testing. After utilization of classical statistical method analysis, the original survey was reduced by 16 questions to the current 35-question format ("T-TPQ," 2014). The resulting convergent validity by correlation coefficient was 0.81 with reliability coefficients ranging from 0.88 to 0.95 ("T-TPQ," 2014).

Staff observation was an ongoing component of data collection. Observational notes over unusual or unanticipated experiences of various participants specifically on data collection weeks were made. These relevant individual experiences were potential influencing factors toward data reporting.

Budget

The modular education for TeamSTEPPS® is available to the public free of charge on the AHRQ website. While all components have been made available electronically with permission to utilize as designed, AHRQ supplied both a poster, a compact disc of the PowerPoint lectures, and video vignettes free of charge (see Appendix I). Expenses related to the project were the cost of applying for educational credits from the American Society of Radiology Technologists at a

reduced rate ($60) and the cost of food and beverages for the educational sessions ($150). The contact hours for nursing staff, paper and copying supplies, and the instructional rooms were supplied by AtlantiCare Regional Medical Center (see Appendix N). While no budget was submitted, the cardiovascular service line at AtlantiCare reimbursed the researcher the overhead costs.

Analysis

Data were analyzed comparatively over the four-week survey evaluation timeframe. Individuals received a confidential although not anonymous identifier for assessing changes and demographic data collection. The Statistical Package for the Social Sciences Windows Version 25.0 was utilized to compare pre- and post-educational perceptions, as measured by the T-TPQ as well as their maintenance over time.

Demographic variables, such as gender, are nominal variables, and therefore frequency distributions were utilized. Hours and years of participant experience as ratio variables were considered by averages as well as highest and lowest variables. The inferential analysis was a one-way ANOVA that examines between-group mean differences. Sphericity was not assumed because of the homogeneity of variance across equal sized comparison groupings. The Greenhouse-Geisser was utilized, as it increases the challenge for results to be considered significant, as it assesses change with three or more observations in a time continuum.

Ethical Considerations

Human subject training was completed before starting this project and included the National Institutes of Health web-based training course Protecting Human Research Participants and the Collaborative Institutional Training Initiative program (see Appendix A and Appendix B). After project design but before initiation, application for approval was obtained from the

Wilmington University Human Subject Review Committee, the AtlantiCare Nursing Research Council, and the Geisinger Institutional Review Board (see Appendixes C, D, E, and G). Additionally, Geisinger required a declaration of no conflict of interest questionnaire completed before approval to proceed (see Appendix F).

Any risk to the population was minimal, other than maintenance of privacy related to responses shared. Confidentiality of the study responses of the staff was strictly maintained to increase the integrity of the data collected as well as decrease the likelihood of individuals declining to participate or failing to complete the program. This information was contained within the consent and therefore shared with the staff before implementation of the program. Rights of the participants included that their participation would be free of coercion or duress. The presentation of the planned project in all formats, and the consent form, emphasized the voluntary nature of involvement as well as the right to withdrawal from the project before program completion without repercussions. While administrative support for the project was present, there was no encouragement to participate from managers or administration to maintain the integrity of the volunteer nature of participation. Any observational data were not specified in a way to identify the participant.

Results

Participants

The setting was the CCRC within the Heart Institute at AtlantiCare Regional Medical Center. The project population was non-physician staff with a potential for 35 contributors. Participation for the project population was voluntary, and 17 individuals agreed to participate. The average age of the participants was 49.70 (*SD* = 11.936) with a minimum age of 27.00 and a maximum age of 64.00 for an age range of 37.00 years (see Figure 3). As seen in Table 1, there

was one (5.9%) participant who identified as male and 16 (94.1%) participants who identified as female. Most participants identified as Caucasian (*n* = 14, 82.4%) followed by Asian (*n* = 2, 11.8%) and African American (*n* = 1, 5.9%). All participants (*n* = 17, 100.0%) reported that they were not Hispanic and spoke English. For level of education, many participants reported having a Bachelor's degree (*n* = 10, 58.8%) followed by a HS/GED (*n* = 4, 23.5%) and an Associate degree (*n* = 3, 17.6%). Nine (52.9%) participants reported having prior training, and seven (41.2%) reported being certified. For CCRC role, 11 participants (64.7%) reported being RNs, three (17.6%) reported being RTs, two (11.8%) reported being PCAs, and one (5.9%) reported being ancillary.

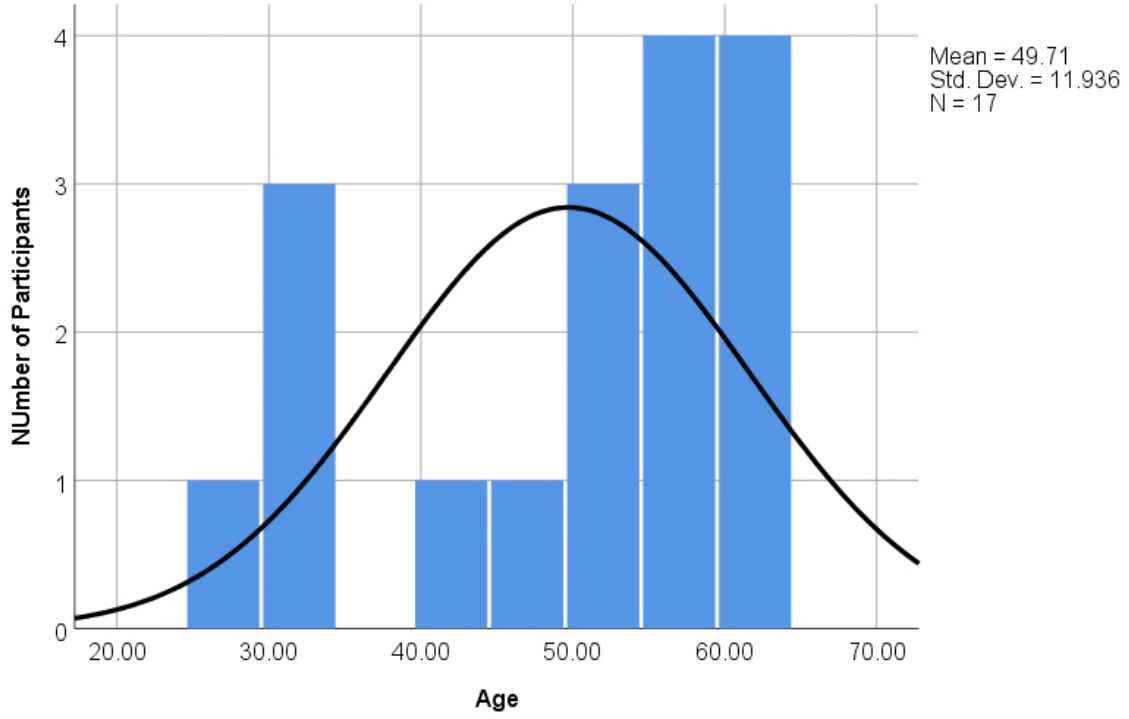

Figure 3. Histogram of participant ages in years.

Table 1

Participant Demographics

Characteristic		Frequency	Percent
Gender	Male	1	5.9
	Female	16	94.1
	Total	17	100.0
Race	African American	1	5.9
	Asian	2	11.8
	Caucasian	14	85.4
	Total	17	100.0
Ethnicity	Not Hispanic	17	100.0
Primary Language	English	17	100.0
Level of Education	HS/GED	4	23.5
	Associate Degree	3	17.6
	Bachelor's Degree	10	58.8
	Total	17	100.0
Prior Training	Yes	9	52.9
	No	8	47.1
	Total	17	100.0
Certified	Yes	7	41.2
	No	10	58.8
	Total	17	100.0
CCRC Role	Ancillary		
	Cardiac Cath & Rhythm	1	5.9
	Center	2	11.8
	RT	3	17.6
	RN	11	64.7
	Total	17	100.0

As seen in Table 2, the average hours spent at the CCRC a week was 43.05 (*SD* = 9.666) and the average years employed at the CCRC was 10.64 (*SD* = 5.634). The average years in career role was 25.11 (*SD* = 12.077).

Table 2

Participant Experience

	N	*Range*	*Minimum*	*Maximum*	*M*	*SD*
Hours at CCRC	17	30	30	60	43.05	9.666
Years at the CCRC	17	24	2	26	10.64	5.634
Years in Career Role	17	36	4	40	25.11	12.077

Data Analysis

T-TPQ assesses individual perceptions of teamwork with the higher score meaning a better perception of teamwork taking place. A T-TPQ was administered before the intervention, and again administered upon class completion to assess for immediate changes based on the education completed. The post-course survey was repeated at four- and eight-weeks after the education to evaluate the evolution of perceptions of teamwork as well as maintenance of post-education knowledge. The scores were summed for each of the four administrations and were considered interval. A repeated measures ANOVA was chosen to assess for any statistically significant differences among the four means (Sheskin, 2011). The results were significant at $F(2.747, 1439.167) = 20.406$, $p < 0.001$, using the Greenhouse-Geisser correction, because sphericity was not assumed (see Table 3). Using the post hoc Sidak comparisons, the pre-test ($M = 3.89$) was significantly lower than the post-test ($M = 4.04$), four weeks ($M = 4.10$), and eight weeks ($M = 4.13$), $p < 0.001$ (see Table 4 and Table 5). Further, the post-test ($M = 4.04$) was significantly lower than eight weeks ($p < 0.001$), but not different from four weeks; also, four weeks and eight weeks were not different from each other (see Table 4 and Table 5). This means that the intervention appeared to have a significant impact on raising teamwork perceptions from pre- to post-implementation and post-implementation to eight weeks (see Figure 4).

Table 3

Tests of Within Subjects Effects with Greenhouse-Geisser Correction

Source	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*p*
T-TPQ Greenhouse-Geisser	18.535	2.747	6.790	20.406	0.000
Error (factor1) Greenhouse-Geisser	475.965	1439.167	0.331		

Table 4

Descriptive Statistics for T-TPQ

	SD	*N*
Pre-Test	0.924	0.525
Post-Test	0.868	0.525
4 Weeks	0.870	0.525
8 Weeks	0.827	0.525

Table 5

Tests of Pairwise Comparisons using Sidak

					95% Confidence Interval for Difference[b]	
(I) T-TPQ	(J) T-TPQ	*Mean Difference* (I-J)	*Std. Error*	*p*[b]	Lower Bound	Upper Bound
1	2	-.149*	.031	.000	-.231	-.066
	3	-.213*	.038	.000	-.313	-.114
	4	-.244*	.037	.000	-.343	-.145
2	1	.149*	.031	.000	.066	.231
	3	-.065	.034	.288	-.154	.024
	4	-.095*	.033	.023	-.182	-.008
3	1	.213*	.038	.000	.114	.313
	2	.065	.034	.288	-.024	.154
	4	-.030	.030	.892	-.110	.049
4	1	.244*	.037	.000	.145	.343
	2	.095*	.033	.023	.008	.182
	3	.030	.030	.892	-.049	.110

Note. Based on estimated marginal means.
*. The mean difference is significant at the .05 level.
b. Adjustment for multiple comparisons: Sidak.

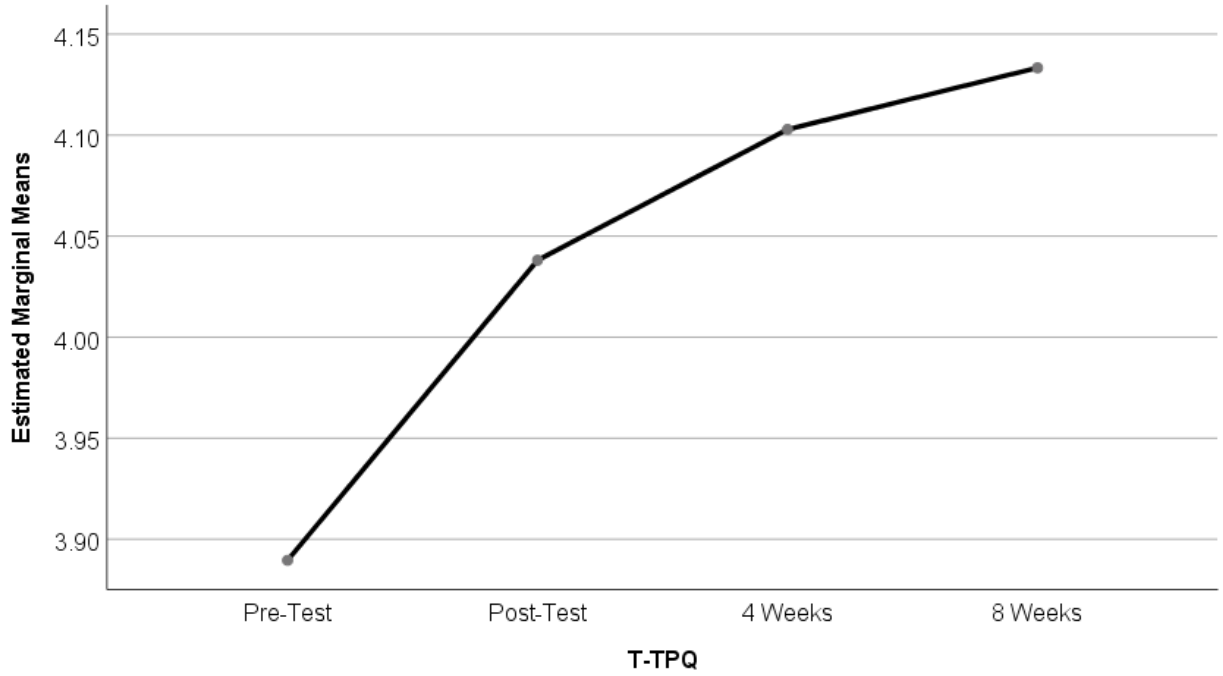

Figure 4. The within-subject group means for the T-TPQ.

Discussion

Summary

The results confirm the maturity (average age 49.7 years), role experience (25.11 years), and stability (10.64 years) of the staff comprising the participating population. The group of participants demonstrated familiarity with each other and the workplace by self-reporting an average of 43 hours worked per week (individual range of 30-60 hours a week). Over three-quarters of the participants were college educated, and over 40% were certified in their respective specialties, as would be anticipated within a hospital-based procedural unit. An unanticipated demographic finding was that nine of the 17 participants reported prior formal training in teamwork. However, the existence of previous education did not prohibit additional benefit from the intervention.

Approximately 50% of the eligible population elected to participate, and all completed the educational program as well as the up to eight-week post evaluations. Within the group, perceptions of teamwork and communication were improved with the training. Training was interactive and incorporated examples consistent with the site-specific experiences of the participants, as encouraged by the TeamSTEPPS® program. Active discussion and participation during the educational sessions was encouraged. By appealing to the expressed concerns and desires of the target population and utilizing a theoretical framework supportive of a group moving through a process simultaneously while promoting self-efficacy, the results indicated improvement through training. These results were statistically significant as collected via the validated T-TPQ.

Interpretation

Staff engagement was crucial in this process, as it requires effort to change old habits and modify behaviors developed actively and passively to observed experiences. The staff were stakeholders in this process and actively engaged in its success. Therefore, this process entailed teaching, practicing, providing feedback, and remediating behaviors. Some behaviors that have been learned and often reinforced over many years needed to be addressed for the success of the intervention. As with changing any habit, it required effort, focus, determination, support, and a goal that was visible and attainable.

Consistent with the documented literature in other healthcare institutions and service area types, TeamSTEPPS® demonstrated improvement in perceptions of teamwork and communication not only immediately post-education, but also in subsequent time intervals post-intervention. Although not statically significant, the continued increased positivity in perceptions at four weeks was surprising. By observation, that timeframe coincided with an increased patient

procedural volume, additional conflict causing scenarios, and a spike in employee absenteeism from medical, familial, and other struggles. The strength of the program and the effort of the population to employ new skills were paramount in that unanticipated progression toward a statistically significant increase at the final survey.

Empowerment was nurtured and encouraged, initially requiring cultivation within the group. However, once embraced, the feeling of empowerment thrived through the incorporation of that concept by both formal and informal leaders. This staff is not powerless, a matter of fact, they are an influential, highly trained group of professionals with a specific skill set, they are not only difficult to replace, but they are also costly to create. Teaching a new skill set, unifying the team, enabling them, and motivating them to take the time and effort to make an organized, positive first step will reap them and their patients' great benefits. The group progression incorporation into this process was beneficial, even in the over 50% of the population who self-reported prior training.

Limitations

Limitations to the generalizability for the results are the use of a relatively small, convenience sample within a single community hospital. Not all CCRC staff were included within the potential population, as providers were excluded from participating. Also, a more extended evaluation of the long-term effects was beyond the scope of this project.

Bias was introduced, as volunteers demonstrate the quality of self-selection and the data collected were a form of self-reporting within the context of the nature of any survey-based project. Based on the project design, the mandatory training opportunities required non-reimbursed attendance in the evening adding potential discriminating factors for some qualifying population in addition to fatigue after a full shift. The offering of multiple sessions on varying

days within a two-week period was an attempt to minimize those effects. Regardless, some interested staff could not attend because of personal conflicts, thereby limiting participation. Other potential confounding factors were the perception of an increased workload by partaking, as well as the overall increased seasonal patient volume of a coastal community in the setting of staff summer vacations, sick leaves, and unfilled staff positions.

Implications for Advanced Nursing Practice

The eight DNP Essentials, as put forth by the American Association of Colleges of Nursing, are required foundational competencies for the successful completion of the DNP degree (American Association of Colleges, 2006). This project by design, execution, and subsequent analysis has incorporated these essentials. The final academic product demonstrates the experiences, immersion, and growth required for completion of a terminal degree in advanced practice nursing.

DNP Essential I. The project demonstrated an understanding of the scientific underpinnings of practice through knowledge of ethical concerns, analytical processes, and organizational science awareness. Theoretical support came from a social science construct with delineated goals of improving healthcare outcomes after assessment of need was completed. The crucial aspect of the short-term and longer-term evaluation was executed utilizing a validated tool.

DNP Essential II. Quality improvement is central to organizational and systems leadership. The data collected was explicitly focused on communication skills and techniques. The nature of this EBP project was a quality improvement outcome for not only the staff population but also the patient stakeholders in the form of increased safety.

DNP Essential III. The execution of EBP successfully reflects a need for analytical methods and scholarship. A review of the literature, followed by the design of a program addressing a recognized quality improvement opportunity with a plan for data collection, analysis, and evaluation, reflects the core of this requirement. The future dissemination of project results, inclusive of this manuscript, is a vital component of this essential.

DNP Essential IV. Utilization and evaluation of information management systems and technology in patient care is critical in modern healthcare. This project incorporated staff education and communication skills in its execution. While there are verbal, written, and electronic forms of communication utilized and considered within the project population, no specifics were related to evaluating data collection systems at the time of the project. However, future project effect analysis will include the Press Ganey customer service scores and Quantros incident reports for the prior six months as compared to the six months post education completion. This review will signify the patient safety goal assessment of the project.

DNP Essential V. Advocacy and health care policy are a crucial element of TeamSTEPPS®. The process levels the traditional hierarchy of the healthcare team to advocate for optimal incident reporting and discussion. Effective communication and teamwork have been demonstrated and frequently cited in the literature and by authoritative bodies as a critical aspect of effective care delivery and optimal patient safety.

DNP Essential VI. The importance of interprofessional collaboration is reflected in successful healthcare systems. This project incorporates nursing, technologist, technician, and ancillary support staff within the active population. The core concepts of TeamSTEPPS® integrates a multidisciplinary approach for success within the didactic as well as audiovisual

components of the education. The demographics of the population reflect the various disciplines in a ratio somewhat consistent with the proportion of the entire potential population.

DNP Essential VII. Population health maintenance and clinical improvement was a goal of this project. A review of the national patient safety data raises awareness for the universal need of this concept as well as the local evaluation of the staff concerns regarding our opportunities. The project incorporated a validated educational program into an appropriate environment not yet studied per published literature with executed subsequent analysis. The demonstrated sustainability and plans for continued evaluation reflect the goal for improved population outcomes.

DNP Essential VIII. The final essential is related to the role of advanced practice nursing in healthcare. This project demonstrated analysis of a situation and through leadership the implementation of an EBP approach to clinical outcome improvement. The roles of educator, leader, and mentor were shown and effectively incorporated into the process. Skill sets including organizational, economic, and clinical fundamentals were employed in all aspects of the planning, execution, analysis, and evaluation of this project.

Conclusions

The TeamSTEPPS® program is a validated, effective educational program with significant literature-based support. A social cognitive theoretical framework supports the trainable skills through reinforcement, engagement, and empowerment. These behaviors will facilitate sustainability, especially with potential longer-term plans of exercising the program throughout the service line. Team training can have transformational results in safety cultures when the clinical environment supports the process of learning becoming behavior. An

opportunity for further sustainability analysis of this project in the future would include repeat T-TPQ administration at six- and 12-months post-education respectively.

The primary trial to sustainability will be the organizational memory–inclusive of the people, the routine, and the culture. The staff demographics have demonstrated the years of professional experience as well as a lengthy history within this institutional setting, to challenge. The need for each member of the population to actively participate in exercising the learned skills for the success of a teamwork program is vital. That requirement will be a potential challenge and barrier to success and sustainability. However, continued feedback and coaching of the staff has proven beneficial in addition to the ongoing leadership support. A willingness to continue to evaluate the process and celebrate the successes will be crucial moving forward.

Sustaining this educational endeavor in the population selected ultimately requires recognition for continued behavioral modification. Individual staff members, such as the Magnet champion, the Professional Ladder buddy, and the Journal Club coordinator have stated a continued interest in the goals of this project. These individuals will be significant contributors to the long-term success of the TeamSTEPPS® process. The unit level managerial and service line administrative support of this process will also be crucial to sustainability and future introduction to other units and the provider level of clinicians. As reflected using the pairwise comparisons with Sidak corrections, sustainability in the project has been demonstrated at the eight-week measurement.

As the project ends, the process will not. Tangible engagement will be encouraged through the journal club having continuing efforts regarding teamwork, communication, and periodic reviews of the literature for new materials. Additionally, nurses will be invited to continue to utilize this program toward their professional ladder requirements via intra- or inter-

unit participation. Administrative desire to build the project into a service line initiative will encourage the venture population to remain engaged. Also, higher goals will come to fruition as providers, and other units who interact routinely in the exchange of patient care are guided into the method in which the CCRC staff has been trained. The CCRC staff may well reinforce their skill set by mentoring for other units and their physicians, who will directly affect their day-to-day work life.

Plans for dissemination of this project's dataset include the cardiovascular service line and the Nursing Research Council within the host facility initially. Moving into 2019, presentation at the Current Tides and Future Waves of Nursing Conference in Atlantic City, New Jersey, is planned as well as publication. The Doctor of Nursing Practice website will be contacted for sharing and journals for submission include Nursing Management, Journal of Nursing Administration, Journal of Cardiovascular Nursing, and Cath Lab Digest.

The content and format of this scholarly report was based on the most recent Standards for Quality Improvement Reporting Excellence or SQUIRES 2.0 recommendations (Ogrinc et al., 2015). Theses publication guidelines strive to clarify subject matter and improve consistency in academic quality improvement project dissemination. Therefore, the substance of this manuscript is to strengthen the future utilization processes of knowledge that is known.

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Appendices

Appendix A. Certificate of Completion

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **DAWN MUTCHKO** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 02/22/2018.

Certification Number: 2662051.

Appendix B: CITI Certification

Completion Date 17-Mar-2018
Expiration Date 16-Mar-2021
Record ID 26506395

This is to certify that:

Dawn Mutchko

Has completed the following CITI Program course:

CITI Good Clinical Practice (Curriculum Group)
CITI Good Clinical Practice Course (Course Learner Group)
1 - GCP (Stage)

Under requirements set by:

Geisinger

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wbf8866be-c84b-458a-af9b-838bebbeaad0-26506395

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Dawn Mutchko (ID: 7061485)
- **Institution Affiliation:** Geisinger (ID: 1860)
- **Institution Email:** Dawn.Mutchko@atlanticare.org
- **Institution Unit:** Cardiac Cath Lab
- **Phone:** 6094047642

- **Curriculum Group:** CITI Good Clinical Practice
- **Course Learner Group:** CITI Good Clinical Practice Course
- **Stage:** Stage 1 - GCP
- **Description:** This course is for investigators and staff who conduct FDA regulated research or international research with investigational drugs and devices according to ICH Guidelines.

- **Record ID:** 26506395
- **Completion Date:** 17-Mar-2018
- **Expiration Date:** 16-Mar-2021
- **Minimum Passing:** 75
- **Reported Score*:** 95

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Geisinger (ID: 14099)	16-Mar-2018	No Quiz
The CITI Good Clinical Practice Course for Clinical Trials Involving Drugs and Devices (ID: 1360)	16-Mar-2018	3/3 (100%)
Overview of New Drug Development (ID: 1361)	16-Mar-2018	5/5 (100%)
Overview of ICH GCP (ID: 1362)	16-Mar-2018	4/4 (100%)
ICH - Comparison Between ICH GCP E6 and U.S. FDA Regulations (ID: 1354)	16-Mar-2018	5/5 (100%)
Conducting Investigator-Initiated Studies According to FDA Regulations and GCP (ID: 1355)	16-Mar-2018	3/3 (100%)
Investigator Obligations in FDA-Regulated Research (ID: 1356)	16-Mar-2018	4/5 (80%)
Managing Investigational Agents According to GCP Requirements (ID: 1357)	17-Mar-2018	5/5 (100%)
Overview of U.S. FDA Regulations for Medical Devices (ID: 1358)	17-Mar-2018	3/3 (100%)
Informed Consent in Clinical Trials of Drugs, Biologics, and Devices (ID: 1359)	17-Mar-2018	4/4 (100%)
Detecting and Evaluating Adverse Events (ID: 1360)	17-Mar-2018	4/4 (100%)
Reporting Serious Adverse Events (ID: 1361)	17-Mar-2018	4/4 (100%)
Audits and Inspections of Clinical Trials (ID: 1363)	17-Mar-2018	5/5 (100%)
Monitoring of Clinical Trials by Industry Sponsors (ID: 1362)	17-Mar-2018	3/5 (60%)
Completing the CITI GCP Course (ID: 1364)	17-Mar-2018	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

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Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Completion Date 17-Mar-2018
Expiration Date 16-Mar-2021
Record ID 26506394

This is to certify that:

Dawn Mutchko

Has completed the following CITI Program course:

Biomedical Research - Basic/Refresher (Curriculum Group)
Human Subject & Data Only Researchers & Staff, IRB Members & Staff (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Geisinger

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w073b0aa0-0b82-4ca2-ab44-822b3e8e3b0e-26506394

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Dawn Mutchko (ID: 7061485)
- **Institution Affiliation:** Geisinger (ID: 1860)
- **Institution Email:** Dawn.Mutchko@atlanticare.org
- **Institution Unit:** Cardiac Cath Lab
- **Phone:** 6094047642

- **Curriculum Group:** Biomedical Research - Basic/Refresher
- **Course Learner Group:** Human Subject & Data Only Researchers & Staff, IRB Members & Staff
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 26506394
- **Completion Date:** 17-Mar-2018
- **Expiration Date:** 16-Mar-2021
- **Minimum Passing:** 75
- **Reported Score*:** 96

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Geisinger (ID: 14098)	16-Mar-2018	No Quiz
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	17-Mar-2018	5/5 (100%)
History and Ethics of Human Subjects Research (ID: 498)	17-Mar-2018	7/7 (100%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	17-Mar-2018	5/5 (100%)
Informed Consent (ID: 3)	17-Mar-2018	5/5 (100%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	17-Mar-2018	4/4 (100%)
Research and HIPAA Privacy Protections (ID: 14)	17-Mar-2018	5/5 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	17-Mar-2018	4/5 (80%)
History and Ethical Principles - SBE (ID: 490)	17-Mar-2018	4/5 (80%)
Records-Based Research (ID: 5)	17-Mar-2018	3/3 (100%)
Vulnerable Subjects - Research Involving Workers/Employees (ID: 483)	17-Mar-2018	4/4 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

Verify at: www.citiprogram.org/verify/?b57f04d6c-5468-41a0-a85a-a780625f9429-26506394

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Completion Date 17-Mar-2018
Expiration Date 16-Mar-2021
Record ID 26506396

This is to certify that:

Dawn Mutchko

Has completed the following CITI Program course:

RCR for Researchers, Research Staff, and Administrators (Curriculum Group)
RCR for Researchers, Research Staff, and Administrators (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Geisinger

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w29dbd933-529c-40a8-b3af-cb004fae5420-26506396

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Dawn Mutchko (ID: 7061485)
- **Institution Affiliation:** Geisinger (ID: 1860)
- **Institution Email:** Dawn.Mutchko@atlanticare.org
- **Institution Unit:** Cardiac Cath Lab
- **Phone:** 6094047642

- **Curriculum Group:** RCR for Researchers, Research Staff, and Administrators
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 26506396
- **Completion Date:** 17-Mar-2018
- **Expiration Date:** 16-Mar-2021
- **Minimum Passing:** 75
- **Reported Score*:** 86

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Using Animal Subjects in Research (RCR-Basic) (ID: 13301)	17-Mar-2018	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID: 13566)	17-Mar-2018	5/5 (100%)
Introduction to RCR (RCR-Basic) (ID: 17009)	17-Mar-2018	3/3 (100%)
Authorship (RCR-Basic) (ID: 16597)	17-Mar-2018	4/5 (80%)
Collaborative Research (RCR-Basic) (ID: 16598)	17-Mar-2018	5/5 (100%)
Conflicts of Interest (RCR-Basic) (ID: 16599)	17-Mar-2018	4/5 (80%)
Data Management (RCR-Basic) (ID: 16600)	17-Mar-2018	4/5 (80%)
Financial Responsibility (RCR-Basic) (ID: 16601)	17-Mar-2018	4/5 (80%)
Mentoring (RCR-Basic) (ID: 16602)	17-Mar-2018	5/5 (100%)
Peer Review (RCR-Basic) (ID: 16603)	17-Mar-2018	5/5 (100%)
Research Misconduct (RCR-Basic) (ID: 16604)	17-Mar-2018	4/5 (80%)
Plagiarism (RCR-Basic) (ID: 15156)	17-Mar-2018	4/5 (80%)
Research, Ethics, and Society (RCR) (ID: 15198)	17-Mar-2018	2/5 (40%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

Verify at: www.citiprogram.org/verify/?k4e99742f-416b-4d2b-affd-4e3c3449fc94-26506396

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix C: HSRC Approval

HUMAN SUBJECTS REVIEW COMMITTEE (HSRC) PROTOCOL FORM

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HSRC Protocol Form Completion Overview

The information and question responses provided by the person or persons submitting this form must be accurate and complete. Be sure to review the Protection of Human Subjects Policies and Procedures document on the university's webpage for additional information (http://www.wilmu.edu/academics/humansubjects/materials.aspx) prior to submitting this document.

This HSRC Protocol form must be used when the research does not conform to one of the U.S. Department of Human Services, Office for Human Research Protections (OHRP) Exempt Categories in 45 CFR 46.101(B) - (HRP-312) (see https://www.hhs.gov/ohrp/regulations-and-policy/regulations/45-cfr-46/index.html#46.101 for the categories).

This document is set up as a fill-in form. Your mouse pointer and a "left click" will select fields within the document or you can press the "tab" key to advance the cursor between fields in the form. All fields requiring lengthy responses (paragraphs v. sentences) will automatically expand to accept your information along with adjusting the document pagination. Please note, information can be copied (cut and pasted) into any field of the document and the instructions shown in red text will not appear on printed pages.

Information added to this form must be typed, with the exception of signatures. Typed signatures are not acceptable. In addition, the information should be thoroughly reviewed for correct grammar, spelling, and punctuation prior to submitting the document to the Human Subjects Review Committee.

Academic Level

☒ 1. Doctoral Dissertation/Capstone

☐ 2. Master's Thesis/Capstone

☐ 3. Undergraduate

☐ 4. Faculty

☐ 5. Other _____

Forms Check List

Assemble materials in the order shown below

☒ 1. Human Subjects Protocol

☒ 2. Human Subject Certificate

☒ 3. Consent Forms

☒ 4. Instruments

☒ 5. Other Introductory Letter, TeamSTEPPS® Teamwork Perceptions Questionnaire Manual

RECORD AND REVIEW OF RESEARCH PROTOCOL

Contact Information (Type or print the information into the appropriate areas)

Principal Investigator: Mutchko (Last) Dawn (First) Kathleen (Middle)

Student ID: W 0000009919

Project Status

New ☒ Renewal ☐ Re-evaluation ☐

Instructor or assigned faculty sponsor: Charles Dolan, DHSc, MBA, CPHRM, PHR, FACHE

Project Information

Title of study (12 to 15 words max):

Development and Evaluation of a TeamSTEPPS® Program Among Cardiac Procedural Unit Staff in a Mid-Atlantic Community Hospital to Improve Teamwork and Patient Safety

Research purpose or issue:

The purpose of this evidence-based project is to improve teamwork and communication among staff in a cardiac catheterization and electrophysiology laboratory. Opportunities previously cited by staff regarding teamwork and communication improvement via their responses to the annual employee engagement Likert-type scale survey and during staff meetings were considered in this quality improvement initiative. Relevant engagement survey question topics across the organization included employees working well together to provide high quality customer service, the organization actively working to improve safety, organizational actions reflecting employee safety as a top priority, employee comfort in reporting safety issues, and perceived coworker understanding of what keeps employees safe at work. While these survey responses reflected opportunities, the responses varied from unit to unit. Open discussions within staff meetings have noted challenges with efficient case flow related to physician availability communication, bidirectional transfer of patients between units, critical patient data sharing between units, etc. The new Assistant Vice President (AVP) for the cardiovascular service line approached the Director of Professional Nursing Development regarding teamwork and communication

concerns. These issues were presented to her by staff across the service line as she met with each individual and encouraged open dialogue. She has also directly observed evidence supporting the issues cited by staff. The Director of Professional Nursing Development proposed this opportunity to the DNP student as a project topic. Upon the DNP student meeting with the AVP, the concept of TeamSTEPPS® (Team Strategies and Tool to Enhance Performance and Patient Safety) was introduced. The strategy for the initial introduction of the TeamSTEPPS® program was to select a core group of AtlantiCare employees with whom to develop the skills, then evaluate and plan the expansion of the program throughout the service line. TeamSTEPPS® is an evidence-based program for optimizing healthcare team performance to enable rapid and efficient responses to any situation that could arise via effective teamwork and communication. Effective communication and teamwork have been demonstrated to reduce clinical errors, improve patient safety, and improve procedural efficiency (Gaston & Short, 2016). Lack of teamwork and effective communication have been linked to preventable medical errors (Schumacher, 2015). TeamSTEPPS® education transitions group members from individual to team-driven care. The structure is based on four teachable skills: communication, leadership, situation monitoring, and mutual support. Team effectiveness focuses on barriers, tools, strategies, and outcomes. The learning strategies incorporated into the program are information (evidence-based knowledge creates awareness), demonstration (video vignettes and case studies), practice (role-play, tools, problem solving, and team planning), feedback (debrief, networking and measures) and remediation (coaching and continuous improvement). While there have been studies published related to emergency departments, ORs, intensive care units as well as ambulatory and public health departments, etc., no published reports for procedural units caring for a diverse outpatient, inpatient, and critical care population were discovered.

References:

Gaston, T., & Short, N. (2016, April). Promoting patient safety. *Journal of Nursing Administration*, *46*(4), 201-207. https://doi.org/10.1097/nna.0000000000000333

Schumacher, P. (Ed.). (2015). Sentinel event statistics released for 2014. Retrieved from https://www.jointcommission.org/assets/1/23/jconline_April_29_15.pdf

External Research

If the research will involve other organizations, it is necessary to obtain permission from these organizations prior to collecting data. Some organizations have Institutional Review Boards (IRBs), and it may be necessary to obtain formal approvals from these IRBs. In other cases, a document from an appropriate organizational executive specifically approving the research would be sufficient. The researcher is responsible for determining what type of approval is required and obtaining the approval.

In cases where approval from Wilmington University's HSRC is required as a precondition to obtaining approval from another organization, the HRSC's approval will be provisional, requiring the additional step of obtaining research approval documents from other organizations before receiving full approval from Wilmington University's HSRC.

If the research involves other organizations, please fill out this section.

YES	NO	
☒	☐	Do these organizations require approval by their IRBs?
☐	☒	Has IRB approval been obtained? If YES, please attach the approval to this submission
☐	☒	Have other permission documents been obtained? If YES, please attach the approvals to this submission.

Other relevant information or comments:

AtlantiCare Regional Medical Center – a member of Geisinger requires approval from Wilmington University's HSRC prior to presentation to their IRB.

Population Information

Population to be studied: Gender M&F Age >18 Race/ethnicity All available

Number of groups and number of participants in each group:

The population will be in the form of a convenience sample of the Cardiac Catheterization and Rhythm Center (CCRC) non-physician staff at a mid-Atlantic community teaching hospital. Including the clinical manager and the nurse manager, there will be a total of 21 registered nurses, eight radiology technicians, three patient care associates, and three office staff members for a total of 35 potential participants.

How participants will be selected:

All non-provider staff in the department will be eligible to participate.

What qualification criteria will be used to include participants in the sample?

The sample population will be a convenience sample of non-physician, full-time, and part-time staff employed within the CCRC in which English is their primary language.

What criteria will be used to exclude potential participants in the sample?

Excluded from this project sample will be providers (MD, DO, APN, CRNA), non-employees of the CCRC and any pool or float staff. Physicians are being excluded at the request of administration due to the staff being AtlantiCare Regional Medical Center employees, and the physicians are employees of AtlantiCare Physician Group, a separate entity. Providers will be included in the future after the program has been fully implemented with the non-provider staff, which would be outside of the scope of this project.

How subjects will be recruited?

CCRC staff will be introduced to the project before initiation during staff meetings with unit level and service line managerial support. There the opportunities previously cited by staff regarding teamwork and communication improvement via their responses to annual employee engagement surveys and staff meetings will be revisited. A summary of the project purpose and the TeamSTEPPS® program will be shared. By aligning staff concerns with a solution opportunity, staff will be encouraged to participate in the project during those staff meetings and via electronic communication (see Introductory Letter). As this is a quality initiative, non-nursing staff will be eligible to receive contact hours. Nursing staff will have the opportunity to utilize participation in the clinical professional ladder program. The educational date, time, and location will be posted in advance so that staff will have the opportunity to attend if they elect to do so.

Describe the procedures that the participants will undergo in the proposed research project including the physical location and duration of subject participation. Attach a copy of all research instruments, e.g., surveys, questionnaires, interview questions, etc.:

TeamSTEPPS® is an evidence-based program created by the United States Department of Health and Human Services, Agency for Healthcare Research and Quality (AHRQ) for optimizing healthcare team performance to enable rapid and efficient responses to any situation that could arise via effective teamwork and communication. The structure is based on four teachable skills: communication, leadership, situation monitoring, and mutual support. Tools focus on barriers, strategies, and outcomes. The learning strategies incorporated into the program are information (evidence-based knowledge creates awareness), demonstration (video vignettes and case studies), practice (role-play, tools, problem solving, and team planning), feedback (debrief, networking and measures) and remediation (coaching and continuous improvement). An informational email will be sent to all unit staff approximately four weeks in advance of training. The email introduces TeamSTEPPS® and will provide identified dates for the training. Staff members will be informed that the training will be three hours in length. The education program will be held in a classroom located on the hospital campus. Before the educational session begins, participants will complete the consent form that explains their rights and responsibilities as well as the voluntary nature of participation and option to withdrawal at any time. After consent is obtained, a survey called the TeamSTEPPS® Teamwork Perceptions Questionnaire (T-TPQ) will be completed before the education beginning (copy attached). T-TPQ assesses individual perceptions toward the five targeted components of teamwork: team structure, leadership, situation monitoring, mutual support, and communication. Participants will subsequently undergo three hours of TeamSTEPPS® education with didactic and audiovisual education per the AHRQ curriculum. A post-course T-TPQ (which will be identical to the pre-course T-TPQ) will be conducted upon class completion to assess for immediate changes based on the education completed. The post-course (T-TPQ) will be repeated at four (4) and eight (8) weeks after the education to evaluate the evolution of perceptions of teamwork as well as maintenance of post-education knowledge.

Confidentiality and Security *Please answer yes or no to the following questions:*

YES	NO	
☒	☐	Procedures have been taken to ensure that individuals cannot be identified via names, digital identifiers (e.g., email address, IP address), images, or detailed demographic information.
☒	☐	Code to name association data/information is securely and separately stored. (Participants are given codes and the codes are securely stored separately from their answers.)
☒	☐	All data is maintained in encrypted and/or password-protected digital/electronic files.
☒	☐	Individually identifiable information will be securely maintained for three years past the completion of the research, and then destroyed rendering the data unusable and unrecoverable.

Please provide further information concerning any "**NO**" answers given above (including cases where a procedure is not applicable). Describe any other procedures you are taking to maintain anonymity, confidentiality, or information security.

The surveys will be completed in a paper format with an individual identifier. Individuals will not be identified by their names on the surveys. The survey data will be entered into an electronic format and kept on a password-protected computer.

Research Protocol *Please answer yes or no to all questions below.*

Does this research involve:

YES	NO	
☐	☒	prisoners, probationers, pregnant women (if there is a medical procedure or special risk relating to pregnancy), fetuses, the seriously ill or mentally or cognitively compromised adults, or minors (under 18 yrs.) as participants
☐	☒	the collection of information regarding sensitive aspects of the participants behavior (e.g., drug, or alcohol use, illegal conduct, sexual behavior)
☐	☒	the collection or recording of behavior which, if known outside the research, could place the participants at risk of criminal or civil liability or could be damaging to the participant's financial standing, employability, insurability, or reputation
☐	☒	procedures to be employed that present more than minimal risk[1] to participants
☐	☒	deception or coercion
☐	☒	benefits or compensation to participants (beyond the general benefits of the knowledge to be gained or small gifts/lottery prizes)
☐	☒	a conflict of interest (e.g., teacher/student, employer/employee; could there be perceived coercion to participate; is there any financial interest in this research)

If you answered "**NO"** to all of the questions, please proceed to the next page.

If you answered "**YES"** to any of the questions your proposal must clearly indicate why the use of participants in any of these categories is scientifically necessary and what safeguards will be employed to preserve the participants' anonymity/confidentiality. The proposal must identify all risks (physical, psychological, financial, social, other) connected to the proposed procedures, indicate clearly how such risks to participants are reasonable in relation to anticipated benefits, describe methods to protect or minimize such risks[1], and access their likely effectiveness. Consent/assent forms must be included for research involving minors.

[1] Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the proposed research are not greater than those ordinarily encountered in everyday life or during the performance of routine physical or psychological examinations or tests

Consent Forms

YES ☒ NO ☐ Is a consent form included with this study? If so, attach a copy.

YES ☐ NO ☒ Are child assent forms included with this study? If so, attach a copy.

> Minors must provide an affirmative consent to participate by signing a simplified form, unless the principal investigator can provide evidence that the minors are not capable of assenting because of age, maturity, psychological state, or other factors.

Please refer to the informed consent outline and checklist and the assent outline, which can be found in the Human Subjects Review Committee section of the Wilmington University website.

Implied consent – For some exempt or expedited research, it is not necessary to have a signed consent form. For example, a relatively short survey of competent adults which is anonymous and deals with noncontroversial topics could use a less formal means of providing information. In such cases, the person's voluntary participation indicates implied consent. Typically, the invitation to participate would be less legal in tone than a consent form but would provide information about the principle investigator, study purpose, voluntary participation, nature/duration of participation, and anonymity/confidentiality.

If implied consent is being used, attach a copy of the invitation

Who is obtaining consent? *Check all that apply:*

Principal Investigator ☒ Research Assistant ☐ Other ☐ (specify) _____

How is consent being obtained?

Consent will be reviewed before initiation of the education. By attending the educational event, consent is implied; however, individuals will be asked to review and sign a paper consent form. These signed consents will be scanned into a computerized system and maintained on a password-protected computer.

What steps are being taken to determine that potential subjects are competent to participate in the decision-making process?

The participants are staff members of the CCRC, their employment in that capacity implies their competence to participate in consenting to this project and understanding the explanations given. All potential participants will be given the opportunity to ask questions regarding the study. Consent will be obtained in an ADA compliant manner.

Obligations of Principal Investigator:

The HSRC meets on the second Thursday of each month September to May and as needed during the summer months. Protocol must be received two weeks before that date.

Any substantive changes made to the research protocol must be reported to college representatives of the HSRC for review prior to implementation of such change. Any complications, adverse reactions, or changes in the original estimates of risks must be reported at once to the HRSC chairperson before continuing the project.

According to federal regulation all data, including signed consent form documents must be retained for a minimum of three years past the completion of the research.

I have read and understand my obligations as an investigator. I certify that the research proposal is accurate and complete.

Print name: Dawn Mutchko

Signature: [redacted] Date: 3/18/2018

Instructor or Assigned Faculty Sponsor:

Print name: Dr. Charles Dolan

Signature: [redacted] Date: 3/18/2018

This form must be signed by an appropriate Wilmington University dean or executive prior to being submitted to the HSRC if any of the following describes your situation:

- Wilmington University faculty who wish to conduct research that involves human subjects
- Wilmington University employees who are students at other schools and wish to collect data from the University, its students, or employees
- Outside researchers who wish to collect data from the University, its students, or employees

The executive signing this form is responsible for conferring with institutional research or other parts of the university which would need to support the research.

(If needed) Dean or Executive:

Print name: _____

Signature: _____ Date: _____

PROTOCOL REVIEW

This section is to be completed by the HSR Committee Person.

Principal Investigator: _____

Date Submitted: _____

The protocol and attachments were reviewed:

The proposed research is approved as:

☐ Exempt ☒ Expedited ☐ Full Committee ☒ Provisional (see External Research section)

The proposed research was approved pending the following changes:

☒ See attached letter

☐ Resubmit changes to the HSRC chairperson

The proposed research was disapproved:

☐ See attached letter for more information.

HSRC Chair
or Representative

Barbara H Sartell EdD, ANP-BC, WCC
Printed Name

[redacted]
Signature Date 3/22/2018

HSRC Chair
or Representative

_____
Printed Name

_____
Signature Date _____

Appendix D: Letter of Approval

WILMINGTON UNIVERSITY

May 2, 2018

Dear Dawn Mutchko,

Wilmington University's Human Subjects Review Committee (HSRC) is pleased to inform you that your Doctor of Nursing Practice project proposal *TeamSTEPPS ® Implementation Among Cardiac Procedural Unit Staff in a Mid-Atlantic Community Hospital* was reviewed on 5/2/18. The project was categorized as expedited; therefore, approved for implementation without full committee review in accordance with Federal Regulations 45CFR46.101. Your signed HSRC form is attached.

Now that your project has been approved by the HSRC, there are elements of the Federal Regulations that you must comply. Wilmington University adheres strictly to these regulations:

1. You must conduct your project exactly as it was approved by the HSRC.
2. Any additions or changes in procedures must be approved by the HSRC before they are implemented.
3. You must notify the HSRC promptly of any events that affect the safety or well-being of subjects.
4. You must notify the HSRC promptly of any modifications to your project or other responses that are necessitated by any events reported in items 2 or 3.
5. Your approval is provisional if you require Institutional Review Board approval from your organization. Once organizational approval has been obtained, please submit your signed approval to DNP Administrative Assistant, Courtney Parto via email: courtney.m.parto@wilmu.edu

The HSRC may review or audit your project at random or for cause. In accordance with Wilmington University policy and Federal Regulations 45CFR46.113, the HSRC may suspend or terminate your project if your project has not been conducted as approved and/or if other difficulties are detected.

While not under the purview of the HSRC, DNP students are responsible for adhering to US copyright law when using existing scales, survey items, and other works in the conduct of research/DNP projects.

In conclusion, you have developed an interesting evidence-based practice project aligned with the AACN DNP Essentials (2006). This is an important project for healthcare practices now and in the future. Best wishes for continued success.

Sincerely,

[redacted]

Barbara H. Sartell, EdD, ANP-BC, WCC
HSRC Committee Representative
Professor, DNP Program
College of Health Professions

[redacted]

Aaron Sebach, DNP, MBA, AGACNP-BC, FNP-BC
Chair, DNP Program
College of Health Professions

COLLEGE OF HEALTH PROFESSIONS
320 North DuPont Highway, New Castle, DE 19720-6491

Appendix E: AtlantiCare Permission

AtlantiCare
REGIONAL MEDICAL CENTER
A MEMBER OF GEISINGER HEALTH SYSTEM

RESEARCH STUDY TITLE: TeamSTEPPS® Implementation Among Cardiac Procedural Staff in a Mid-Atlantic Community Hospital: An Initial Step to Improve Teamwork and Patient Safety

STUDENTS or MULTISITE STUDY PI - PLEASE COMPLETE

PRINCIPAL INVESTIGATOR: Dawn Mutchko, MSN, RN, APN-C, FNP-C, DNP student

ARMC STUDY COORDINATOR/MENTOR: Nancy Powell, OhD, CNM, RNC-OB

ATLANTICARE NURSING RESEARCH COUNCIL TRACKING #: 2018.5

LOCATION OF STUDY: AtlantiCare Regional Medical Center

DATE: 4/6/2018

RECOMMENDATION:

Thank you for presenting your project during the ARMC NRC meeting 4/6/2018. Council members reviewed your proposal and support the forward motion of the aforementioned project. Please use the tracking number when completing the Geisinger IRB documentation as evidence of the ARMC NRC review. The ARMC NRC did not request additional information.

We are forwarding this letter along with the documentation you provided to Jennifer Hummel, ARMC IRB Coordinator. Please continue to work with Jennifer, as she will assist you through the Geisinger IRB submission process.

The NRC requests you provide quarterly updates and final results as well as any feedback you receive about conducting this project. In your final summary please include your findings, implications for nursing, and plan for dissemination.

We wish you great success in your endeavors. Please contact me with any questions.

[redacted] 4/6/2018

Elizabeth Hendricks, MSN, APN, PPNP-BC DATE
Co-Chair Nursing Research Council AtlantiCare Regional Medical Center

National Quality Award

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Appendix F: Request for Geisinger Approval

Questionnaire Report For: 2018 Research Conflict of Interest Questionnaire

Geisinger

Respondent: Dawn Mutchko
Department: ARMC
Email: Dawn.Mutchko@atlanticare.org
Phone:
Login ID: dawn.mutchko

Submitted On: March 26, 2018, 2:30 pm ET
Last Revision: March 26, 2018, 2:30 pm ET
Printed On: March 26, 2018, 2:30 pm ET

QUESTION 1 - COI.2018.01
(Answered on: March 26, 2018, 2:30 pm ET)

In the last twelve (12) months, did you or a family member, to the best of your knowledge, have a direct or indirect financial interest with, or, perform, render, or provide any type of services (paid or unpaid) to any vendor, entity or person that (a) does business with Geisinger, (b) supplies products or technologies to GHS or (c) competes with Geisinger

This includes attending any conferences, promotional or professional events, or trips related to your Geisinger Professional Responsibilities paid for or reimbursed by an outside source (profit or non-profit).

By way of example only, this would include acting as an officer, director, manager, employee, consultant or speaker for a vendor or other entity, attending an investigator meeting or owning stock in another company.

This excludes, however, income from investment vehicles, such as mutual funds and retirement accounts where you do not directly control the investment decisions made.

Entity 1

Indicate Yes or No

No

QUESTION 2 - COI.2018.02
(Answered on: March 26, 2018, 2:30 pm ET)

In the last twelve (12) months, have you or a family member, to the best of your knowledge, **received** any gifts, remuneration, entertainment (unrelated to business purposes) or other favors from any outside business or individual that does, or wants to do, business with Geisinger or is a competitor of Geisinger (please include any travel and lodging and/or food and beverage paid for by the vendor **that was not already disclosed in response to question #1**)

Entity 1

Indicate Yes or No

No

QUESTION 3 - COI.2018.03
(Answered on: March 26, 2018, 2:30 pm ET)

In the last twelve (12) months, have you or a Family Member, to the best of your knowledge, **given** any gifts, remuneration, entertainment (unrelated to business purposes) or other favors to any outside business or individual that does, or wants to do, business with Geisinger or is a competitor of Geisinger -- under circumstances from which it might be inferred that such action was intended to, or would, influence you in the performance of your duties

Entity 1

Indicate Yes or No

No

Appendix G: Geisinger IRB Determination Letter

Geisinger Institutional Review Board (GIRB)
Geisinger Medical Center
100 N. Academy Avenue
Danville, PA 17822-3069
570-271-8663Tel

Geisinger

IRB Determination Notice
Activity Does Not Meet the Definition "Research"

April 9, 2018

Dawn Mutchko, DNP(c), MSN
AtlantiCare
1925 Pacific Ave
Atlantic City NJ 08401

RE: Research Protocol # **2018-071**
TeamSTEPPS® Implementation Among Cardiac Procedural Unit Staff in a Mid-Atlantic Community Hospital: An Initial Step to Improve Teamwork and Patient Safety

Dear Dawn Mutchko, DNP(c), MSN:

The above proposal was reviewed on April 6, 2018 by Geisinger IRB member(s). From the information you have provided, the proposal does not meet the definition of research as defined in 45 CFR 46.102(d). This proposal is not subject to the research regulations under the Federal Common Rule and oversight by the Institutional Review Board (IRB). This means you do not need to submit your proposal to the IRB for further review/approval. However, this proposal may be subject to other state, local or institutional regulations, policies or requirements. If you present or publish your work it cannot be presented or published as "research".

The specific definition of **research** under 45 CFR 46.102(d) is:

> *Research* means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

All documents associated with this proposal will be kept on file in the IRB Office.

If you have any questions or need further help, please contact the HRPP staff at (570) 271-8663. Please send any correspondence about this protocol to the IRB office at 30-69.

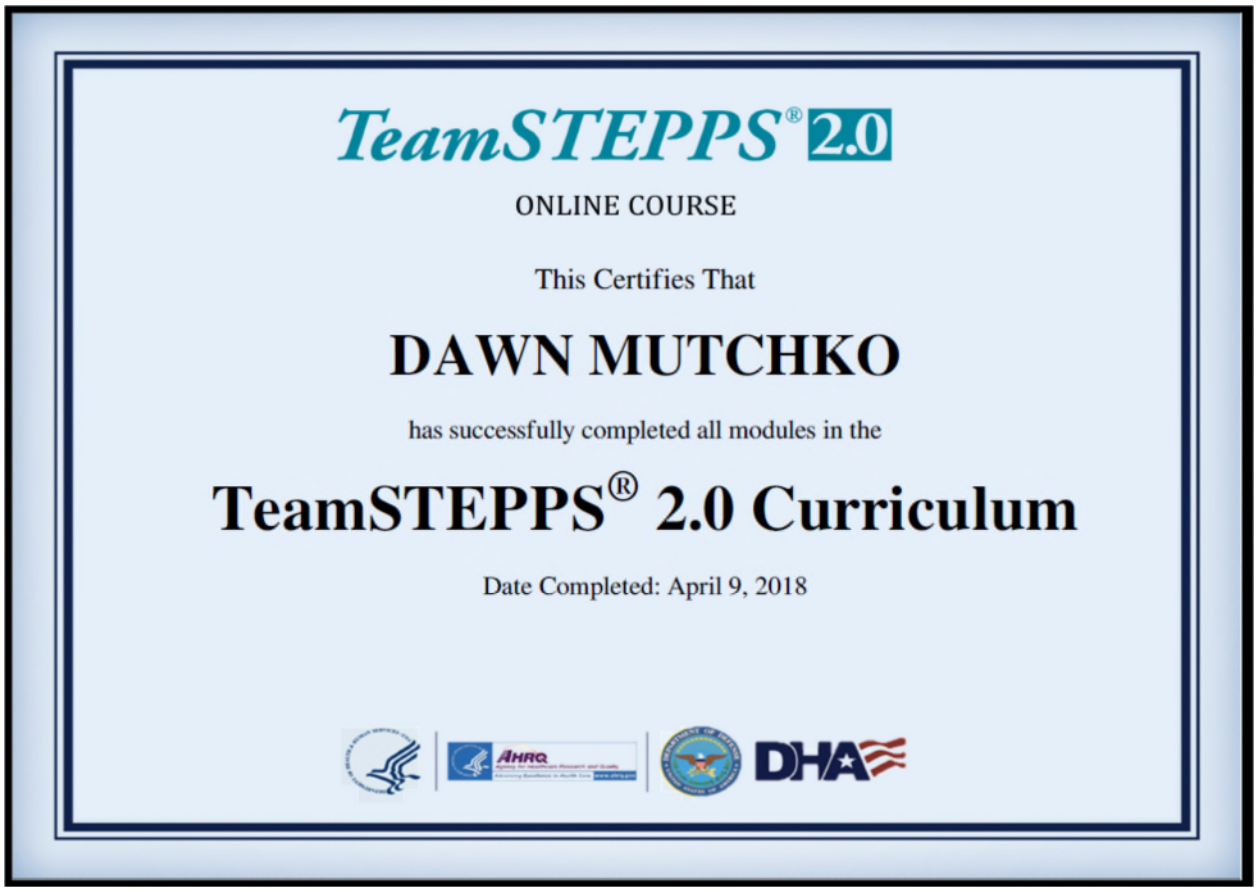
Sincerely,

[redacted]

Deb Henninger, MHSA, BSN, RN, CCRC
Director, IRB Operations & HRPP

CC: Jennifer Hummel; Elizabeth Hendricks; Nancy Powell

Appendix H: TeamSTEPPS®2.0 Certificate of Completion



Appendix I: TeamSTEPPS®2.0 Trainer Program Link

Registered participants of the TeamSTEPPS® 2.0 trainer program are permitted to utilize the various tools present based on their inclusion in the curriculum materials for the online module program. The researcher has completed the self-paced online trainer program. The documents are available for printing and duplication at https://www.ahrq.gov/teamstepps/instructor/index.html to augment the successful implementation of this EBP program at participating institutions.

Appendix J: TeamSTEPPS®2.0 Teamwork Perceptions Questionnaire

TeamSTEPPS®

Teamwork Perceptions Questionnaire

Instructions: Please complete the following questionnaire by placing a check mark [√] in the box that corresponds to your level of agreement from *Strongly Agree* to *Strongly Disagree*. Please answer every question, and select only one response for each question. The questionnaire is **anonymous**, so please do not put your name or any other identifying information on the questionnaire.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Team Structure						
1.	The skills of staff overlap sufficiently so that work can be shared when necessary.					
2.	Staff are held accountable for their actions.					
3.	Staff within my unit share information that enables timely decisionmaking by the direct patient care team.					
4.	My unit makes efficient use of resources (e.g., staff supplies, equipment, information).					
5.	Staff understand their roles and responsibilities.					
6.	My unit has clearly articulated goals.					
7.	My unit operates at a high level of efficiency.					
Leadership						
8.	My supervisor/manager considers staff input when making decisions about patient care.					
9.	My supervisor/manager provides opportunities to discuss the unit's performance after an event.					
10.	My supervisor/manager takes time to meet with staff to develop a plan for patient care.					
11.	My supervisor/manager ensures that adequate resources (e.g., staff, supplies, equipment, information) are available.					
12.	My supervisor/manager resolves conflicts successfully.					
13.	My supervisor/manager models appropriate team behavior.					
14.	My supervisor/manager ensures that staff are aware of any situations or changes that may affect patient care.					

PLEASE CONTINUE TO THE NEXT PAGE ⇨

TeamSTEPPS®

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Situation Monitoring						
15.	Staff effectively anticipate each other's needs.					
16.	Staff monitor each other's performance.					
17.	Staff exchange relevant information as it becomes available.					
18.	Staff continuously scan the environment for important information.					
19.	Staff share information regarding potential complications (e.g., patient changes, bed availability).					
20.	Staff meets to reevaluate patient care goals when aspects of the situation have changed.					
21.	Staff correct each other's mistakes to ensure that procedures are followed properly.					
Mutual Support						
22.	Staff assist fellow staff during high workload.					
23.	Staff request assistance from fellow staff when they feel overwhelmed.					
24.	Staff caution each other about potentially dangerous situations.					
25.	Feedback between staff is delivered in a way that promotes positive interactions and future change.					
26	Staff advocate for patients even when their opinion conflicts with that of a senior member of the unit.					
27.	When staff have a concern about patient safety, they challenge others until they are sure the concern has been heard.					
28.	Staff resolve their conflicts, even when the conflicts have become personal.					

PLEASE CONTINUE TO THE NEXT PAGE ⇨

TeamSTEPPS®

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Communication						
29.	Information regarding patient care is explained to patients and their families in lay terms.					
30.	Staff relay relevant information in a timely manner.					
31.	When communicating with patients, staff allow enough time for questions.					
32.	Staff use common terminology when communicating with each other.					
33.	Staff verbally verify information that they receive from one another.					
34.	Staff follow a standardized method of sharing information when handing off patients.					
35.	Staff seek information from all available sources.					

Appendix K: Introductory Letter to Potential Participants

Introductory Letter to Potential Participants

Dear Cardiac Catheterization and Rhythm Center staff,

I am performing an evidence-based practice (EBP) project regarding teamwork and communication, as part of my doctoral program at Wilmington University. This important topic is a key component contributing to patient safety and staff satisfaction. I would value your participation in this educational program.

If you choose to participate, you will be asked to complete a pre-test, attend a three-hour educational program, and complete a post-test. You will also be asked to complete the survey again at four and eight weeks, after the education program. Responding to the pre-test survey should take approximately five minutes, and the post-test should take approximately four minutes. Your answers, while not anonymous, will be confidential and known only to the investigator. Participation is voluntary, and you may decline to answer one or more questions or stop at any time without any penalty.

Registered nurses who complete the pre-test, the entire three-hour education, and the three post-tests will be eligible to use their participation in this EBP toward their professional ladder project. The period for the project will be June, July, and August of 2018. At the completion of the project, only the data, without identifiers, may be shared with the Wilmington University and the Geisinger Medical Center Institutional Review Board, Wilmington University faculty, staff who participated in the project, AtlantiCare leaders, and possible publication.

If you have any questions, please feel free to contact me, my research mentor, Nancy Powell, PhD, CNM, RNC-OB [redacted] or my DNP Project Chair, Charles Dolan, DHSc, MBA, CPHRM, PHR, FACHE [redacted]

I look forward to sharing this program with you and improving the care we give our patients and ourselves,

Dawn K. Mutchko, DNP(c), MSN, RN, FNP-C, APN-C

Appendix L: Survey and Education Consent Form

Survey and Education Consent Form

Purpose of Project

The purpose of this evidence-based practice (EBP) project is to evaluate the effectiveness of the TeamSTEPPS® training on communication and teamwork strategies.

Description of the Project

I was selected to participate in this project because I am a full-time or part-time non-physician, English speaking staff member, of legal age employed by the Cardiac Catheterization and Rhythm Center. I am being asked to participate in an EBP project titled *Development and Evaluation of a Team STEPPS® Program Among Cardiac Procedural Unit Staff in a Mid-Atlantic Community Hospital to Improve Teamwork and Patient Safety*. This project is being conducted by Dawn Mutchko, DNPI, MSN, RN, FNP-C, APN-C from the Wilmington University, toward completion of the requirements for a Doctor of Nursing Practice degree.

If I agree to take part in this study, I will be asked to complete a survey. This survey will ask about individual perceptions of group-level team skills and behavior. It will take me approximately four minutes to complete. I will then participate in three (3) hours of curriculum training and will be re-surveyed four- and eight-weeks post education completion.

Benefits

While I may not directly benefit from this project; my participation may increase employee satisfaction, patient safety, and may help to establish a communication framework for the cardiovascular service line.

Risks

There is minimal risk that I may experience minor discomfort relating to the education scenarios associated with this project. In the event I perceive any discomfort, I may leave the education session, or decline to participate in the survey, at any time.

Confidentiality

While my answers in this study will not be anonymous to the investigator, they will be confidential. Risks will be minimized by assigning a non-name identifier to my responses. My name and any identifying information will not be shared with anyone. All paper and electronic documents will be kept confidential in accordance with applicable regulations. I understand that the Wilmington University and the Geisinger Medical Center Institutional Review Board may review my data. The data will be stored in the investigator's home office, in a locked cabinet, and all related computer documents will be password protected. If the outcomes of the project are presented or published, there will be no identifiers.

Termination of Participation

I am aware that my participation in this project is voluntary and I can withdraw at any time. While completing the survey, I am free to skip any question. I understand that if I withdraw from

the project, I will not receive any credit toward the Professional Ladder for Registered Nurses nor will licensed staff me eligible for continuing education hours.

All of my questions have been answered to my satisfaction. If I have any further questions about this project, I may contact the investigator, Dawn Mutchko telephonically at [redacted] or by electronic mail at [redacted]

Charles Dolan, DHSc, MBA, CPHRM, PHR, FACHE is the supervising DNP Project Chair for this project and he can be contacted via electronic mail at [redacted]

This project has been approved by Wilmington University's Human Subjects Review Committee and the AtlantiCare/Geisinger IRB.

I understand that my participation is voluntary and that refusal to participate will have no penalty to me. I am free to withdraw at any time without penalty. I voluntarily give my consent to participate in this project. I understand I will be given a copy of this consent.

_____ _____

Signature Date

_____

Print name

Appendix M: Project Population Demographics

Project Population Demographics

Individual identifier: first initial, last initial, month & day of birth – example I am D M 0 9 1 9

___ ___ ___ ___ ___ ___

Please circle your response:

Have you ever received formalized teamwork training before: YES NO

How old are you today? _____

Sex: Female Male Transgender

Race: African American Alaskan American Indian Asian
Caucasian Hawaiian Other: _____

Hispanic: YES NO

Primary language: English Spanish Other: _____

Highest level of education completed: High School diploma/GED
Associates degree
Bachelors degree
Masters degree
Doctoral degree

Are you certified in your specialty: YES NO

Current role in CCRC: Ancillary
Patient Care Technician
Radiology Technologist
Registered Nurse

Average number of hours worked per week in the CCRC? _____

Number of years in this current position (at CCRC): _____

Number of years in current role (any facility): _____

Appendix N: Budget

Budget

Item	Cost to Project
Modular TeamSTEPPS® Training	$0
ASRT CEU application fee	$60
Food/beverages for sessions	$150
Nursing staff CEUS	$0
Paper	$0
Photocopying	$0
Educational rooms	$0
Presentation equipment/utilities	$0
TOTAL	$210