Improving Communication among Multidisciplinary Team Members through Simulation-Based Competency

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Improving Communication among Multidisciplinary Team Members through Simulation-Based Competency

Submitted in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice at Eastern Kentucky University

Gina L. Purdue
Richmond, KY
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Abstract

The importance of nursing competency and development of expertise in the health care environment has been validated in the literature. Simulation is one evidence-based option for development of knowledge and competency that has been shown to be successful in aviation, college-based nursing education, and in nursing staff education. Results of this project support the benefit of a simulation-based program for evaluation and assurance of staff nurses’ competencies. Simulation-based competency was successful in improving communication among multidisciplinary team members through a specific communication technique: Situation-Background-Assessment-Recommendation (SBAR). The nurses showed significant improvements in both knowledge and confidence of SBAR and the majority of nurses rated the experience as positive.

*Key words:* Simulation-based education, competency, knowledge, confidence, multidisciplinary communication, SBAR, Benner, Ottawa Model of Research Use
Improving Communication among Multidisciplinary Team Members through Simulation-Based

Competency

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Improving Communication among Multidisciplinary Team Members through Simulation-Based Competency

Nurses require continued education and preparation to maintain competency and achieve clinical expertise. The challenge for nurse leaders becomes how to professionally develop nurses in the practice setting. The purpose of this project was to implement a simulation-based program for evaluating and assuring nursing clinical competencies. The program was implemented at a rural critical access hospital. The initial session of the program focused on improving communication among multidisciplinary team members through a specific communication technique: Situation-Background-Assessment-Recommendation (SBAR). The project was based on Patricia Benner’s (1984) From Novice to Expert concept and implemented utilizing the Ottawa Model of Research Use (OMRU) practice framework.

Background and Significance

According to the Institute of Medicine (IOM, 2011), the United States is home to more than three million nurses. Hospital nurses, who make up well over half the population of nurses, are responsible for providing quality care to complex clients and maintaining quality standards set forth for hospitalizations such as core measure sets (Joint Commission, 2012a), National Patient Safety Goals (Joint Commission, 2012b), and nursing-sensitive indicators (National Database of Quality Indicators, 2012). Benner (1984) noted that the major reason for hospitalizations is the need for expert nursing care.

The IOM (2011) related that nurses in today’s health care system are charged with coordinating the care of increasingly complex clients. This increase in complexity has been noted as a trend for some time. Benner (1984) noted that patient acuity levels have increased as
well as the number of diagnostic and treatment interventions. The IOM also noted that evidence links nursing care to quality care for patients. This is validated with the development of quality standards, such as nursing-sensitive indicators, in which nursing care directly affects patient outcomes. For instance, nursing care to prevent hospital acquired infections such as pneumonia, bloodstream infection, and urinary tract infection is essential. Nearly 100,000 people die annually in the United States from hospital acquired infections (Klevens et. al, 2007).

Medication errors are another area of quality concern in which nursing is at the center of prevention.

Nurses must maintain a commitment to patient care and the nursing process – assessment, diagnosis, planning, implementation, and evaluation to promote quality patient outcomes. Inherent within the nursing process are the roles and responsibilities of the nurse including clinical decision making, teaching, collaborating, managing care, communicating, patient advocacy, etc. Nurses must juggle a variety of roles and responsibilities, in which critical thinking is essential, to provide quality patient care. Receiving the best care based on the best evidence is an expectation of communities served by health care organizations (Everett & Sitterding, 2011). Therefore, maintaining the status quo is not an option in today’s dynamic, complex health care environment (Shirey, 2011). Competency and expertise is desired to enhance the delivery of care and promote the profession of nursing.

**Theoretical Foundation**

According to Patricia Benner (1984), clinical expertise is central to the advancement of nursing practice. Benner introduced her philosophy From Novice to Expert in 1984. Benner studied clinical practice in an attempt to discover and describe knowledge in nursing practice,
considering both practical (“know how”) and theoretical (“know that”) knowledge. Benner adapted the concepts of The Dreyfus Model of Skill Acquisition—novice, advanced beginner, competent, proficient, and expert—to the progression of the nurse in professional knowledge development.

Benner (1984) noted that the novice nurse is the nurse with no experience in situations in which they are expected to perform. This may be considered the nursing student or the nurse in a new situation or practice area. The novice is taught about situations through objective attributes, which are measurable properties that can be explained without previous experience in a situation (Benner, 1984). According to Benner, the advanced beginner is one who can demonstrate marginally acceptable performance and can identify the common situational components termed as aspects. In contrast to attributes, aspects are recurring, meaningful situational components that require prior experience to recognize (Benner, 1984). Next, the competent nurse develops competence when the nurse begins to see actions in the terms of conscious planning that can lead to decisions on which aspects currently and in the future are important and which can be ignored (Benner, 1984). The competent nurse is usually the nurse with two to three years of experience. The proficient performer sees things as a whole as opposed to aspects and performance is guided by maxims (Benner, 1984). A maxim is a cryptic skilled performance that requires a certain level of experience to recognize (Benner, 1984). The proficient nurse learns from experience and knows what to expect in a given situation and how to modify plans in response to events (Benner, 1984). Finally, Benner described the expert nurse as one who has a host of experiences and an intuitive grasp of each situation, honing in on a problem without wasteful consideration of other options (Benner, 1984).
Throughout Benner’s (1984) discussion of the progression of the nurse in professional knowledge development, experience is what appears to move the nurse from one level to the next. According to Benner, experience is the active refinement of preconceived notions and expectations through encounters. Benner related that experience and continuity of care is essential in providing holistic patient care. Benner also related that clinical knowledge is gained over time. Six areas of practical knowledge were identified: graded qualitative distinctions; common meanings; assumptions, expectations, and sets; paradigm cases and personal knowledge; maxims; and unplanned practices. Benner (2009) noted that theory and practice support one another and only when this happens can true expertise be achieved.

Complimentary to Benner’s (1984) theory, a qualitative study by Khomeiran, Yekta, Kiger, and Ahmadi (2006), found that experience was identified as the most important factor influencing competency development. Khomeiran et al. also found that nurses identified theoretical knowledge, such as that described by Benner, as important for competency development. Establishing nursing competency, incorporating both practical and theoretical knowledge, is essential.

**Simulation as a Technique to Address Nursing Competency**

The literature documents the benefits of professional development for nursing staff. Ozcan and Shukla (1993) found that a targeted staff development program improved nursing competencies and productivity. Not only can continued competency development produce quality patient outcomes and enhance the profession of nursing, it can also address issues in the work environment. Professional development has the ability to increase retention of nurses and
improve satisfaction (Cooper, 2009; Kirsch, 1990). According to Bland Jones and Gates (2007), the cost of nurse turnover ranges from $22,000 to $64,000.

One current, evidence-based approach that is being utilized in professional development programs is simulation. Simulation has been shown to be successful in the field of aviation and has become a trend in schools of nursing to educate nursing students. It is more recently being implemented in the practice setting to promote competency and professional development of nursing staff. Simulation can incorporate technical and non-technical skills, or practical and theoretical knowledge, to promote the nursing process, critical thinking, and the roles and responsibilities of the nurse. Eight articles were reviewed to obtain thoughts on applicability of simulation in practice. Studies were a mixture between focuses on technical and non-technical skills in both the education and practice settings. Common themes emerged among the studies.

In a quasi-experimental study with RN-BSN students in Florida, Blum, Hickman, Parcells, and Locsin (2010) investigated outcomes of an intervention designed to increase caring behaviors during a 15-week course. The intervention combined two hours of weekly didactic instruction followed by two hours of laboratory practice. Ten minute prerecorded nurse patient simulation was available on lab based computers weekly- each focusing on a different health alteration. Small groups played the role of the nurse during the second session to practice caring behaviors. In week eight, a 20-minute nurse-patient simulation demonstrating an emergency situation was presented in the classroom. The study population was 68.4% female, predominately non-Caucasian, and below 30 years of age. The large majority had less than five years of nursing experience which was primarily medical surgical and telemetry. Participation was voluntary from a convenience sample of students, but the entire class chose to participate
(N=20, attrition one). Pre- and post-intervention caring behaviors were measured via the Caring Behaviors Inventory (Cronbach alpha .81 to .93), a 42-item questionnaire that requires self-identification of the specified caring behavior. Significant increases (p<.0083) in the following caring dimensions and total nurse caring were noted: respectful deference to others (t=6.25), assurance of human presence (t=4.05), positive connectedness (t=6.49), attentive to other’s experience (t=4.17), and total nursing care. However, no significant difference was found in professional knowledge and skill (t=2.21). Limitations of this study included a small convenience sample with no comparison group, could not control for various work environments, and results may have been influenced by other courses as the entire curriculum is caring based.

In another study in the education setting, Rosenzweig et al. (2008) conducted a quasi-experimental study with an added qualitative component to determine if a didactic module applied in a simulation laboratory would increase the acute care nurse practitioner (ACNP) students’ comfort level and perceived ability in initiating difficult communication. The study was a convenience sample of all students in an ACNP course with lab component during 2005 and 2006 classes. No demographic data were collected. Participation in the workshop was mandatory as part of the course, but evaluation was voluntary. A total of 38 students from two classes participated with 27 students completing all repeated data measures (pre, immediately post, four months post). The ACNP students participated in an initial didactic session followed by a two hour communication simulation lab utilizing trained actors as standardized patients (SP’s) to practice the skills of empathetic communication, breaking bad news, angry patient, and motivational interviewing. The evaluation questionnaire consisted of 10 questions (six scored on
a 7-point Likert scale and four open-ended) administered prior, immediately post, and four months post. Return included 27 prior, 37-38 immediately post, and 30 four months post. Descriptive statistics were used to analyze group means. Data were analyzed using nonparametric analysis (descriptive and nonparametric unrelated two sample test). Results showed that students’ confidence in initiating difficult conversation improved immediately and four months post ($p \leq .001$). Students self-rating of ability to communicate were significantly greater immediately and four months post ($p \leq .001$). The lab was rated favorably with SP’s receiving the most favorable evaluations. Limitations noted for this study included a small convenience sample with no comparison group, lack of faculty expertise, and cost of SP’s.

An additional study conducted primarily with nurse practitioner students was a quasi-experimental study by Jeffries et al. (2010) that investigated the development, implementation, and evaluation of outcomes of a cardiovascular assessment curriculum for first year advanced practice nursing students across four universities in the U.S. The sample was a convenience sample of 36 students (all retained). Of the participants, 44% were 26 to 35 years of age, primarily Caucasian, no previous graduate physical assessment course, and 43% from critical care. The implemented curriculum consisted of a CD-ROM based introductory program with PowerPoint presentation, learner guide, cardiovascular case design, Harvey simulator used at participants’ own pace tracked by a logbook, some instructor led sessions (eight hours) and some independent learning. Outcomes were measured pre- and post-intervention with the Cognitive Knowledge and Diagnostic Reasoning exam, a 31-item multiple choice exam, and the Cardiopulmonary Skills Performance checklist, which scored skills based on importance (higher priority=higher score) and assigned an overall percentage. Learner self-efficacy and learner
satisfaction were also evaluated post-intervention. Content validity of the instruments was determined by a group of six advanced practice nurse experts from the Miami Nursing Simulation Group. Results showed that for cardiovascular knowledge, there was an overall 22 percentage point gain in knowledge from pre- to post-test across all four groups. Significant (p<.05) pre- to post-test improvement was found in all clinical scenarios (normal, systolic murmur, and diastolic murmur) and in all heart sounds assessment areas (aortic, pulmonary, tricuspid, and mitral). Significant improvement was noted in confidence level by the participants (p<.05). High levels of satisfaction were noted by learners and instructors. Limitations of this study included small convenience sample with no comparison group and the cost of the curriculum.

A study also in the graduate setting, but this time in an Australian university, was a quasi-experimental study by Gordon and Buckley (2009). This study examined the extent to which acute medical-surgical graduate students’ engagement and confidence in performing both technical and non-technical skills in patient clinical emergencies were enhanced following high fidelity simulation. The aspects of simulation that participants found most useful to their learning were also examined. A convenience sample of 50 students was recruited (all retained) between 2007 and 2008. The population consisted of 46 females with a mean age of 34.1 years, average nursing experience of nine years, and primarily medical-surgical specialty. Following 14 hours of live lecture, participants engaged in two workshops practicing technical skills related to assessment and management of patients with acutely deteriorating conditions. Students also participated in a team building exercise. Results were analyzed pre-and post-intervention through the use of 14 Likert scale questions in which participants rated ability and confidence in
skill performance. Technical skill analysis showed a significant increase in confidence in recognizing an unstable patient (p=.02), identifying priorities (p<.01), and confidence in ability to initiate interventions to correct airway obstruction, breathing difficulties, and altered circulation and perform defibrillation (all p<.001). Non-technical skill analysis showed a significant increase in confidence in being the leader until the emergency team arrives, performing handover during an emergency, and supporting the emergency team leader (all p<.001). Results also showed a significant increase in confidence in sharing information and keeping others informed during an emergency, voicing concerns to the team, listening and responding to others on the team, and using resources and external reports (all p<.001).

According to the staff the most valued aspects were: formal debriefing 94%, practicing roles and responsibilities 90%, viewing their performance on video 86%, managing the cases with a mannequin simulator 82%, practicing assertiveness 75%, practicing the role of team leader 58%, and practicing patient handover 54%. Limitations included a convenience sample with no comparison group and students received specific theory components which could also improve confidence.

Kaddoura (2010) explored new graduate nurses’ perception of factors that helped promote their critical thinking, learning, and confidence throughout their critical care nursing training. This qualitative study included 10 BSN graduates employed as RNs at a major non-profit teaching hospital affiliated with a major U.S. academic medical school. All were retained throughout the study. Average age of the participants was 25 years (range 22 to 32), all were English speaking and 90% were white American. Study participants completed one eight-hour day of simulation every three weeks as part of a critical care training program. Semi-structured
interviews were completed after the training program. Data were analyzed through qualitative content analysis. Three key themes emerged in support of simulation: Just-in-time learning of cognitive and psychomotor skills; fostering critical thinking and leadership skills through feedback on simulation; and safety in a non-threatening environment. Various subthemes emerged including encouraging holism; bridging the theory practice gap; enhancing communication and delegation; safety; managing stress; and increasing confidence. Limitations noted were small sample size as with many qualitative studies and convenience sample.

A randomized control trial by Shapiro et al. (2004) also looked at the use of simulation in practice. Shapiro et al. investigated the utilization of high fidelity simulation based team training on clinical team performance when added to an existing didactic teamwork curriculum. The setting was the Emergency Department (ED) of a 700-bed level I trauma center in Rhode Island. Twenty participants (four attending physicians, four resident physicians, twelve ED nurses) were randomly selected and assigned to four groups composed of one attending, one resident, and three nurses. Participants were included if employed in the ED for three or more years and had recently completed the Emergency Team Coordination Course. There were two experimental groups that received a daylong simulation of three scenarios with increasing complexity and two control groups that received no intervention. All groups were retained throughout the study. The Team Dimensions Rating Form consisting of five 7-point behaviorally anchored rating scales previously validated in aviation safety studies and the MedTeams project was utilized to measure outcomes pre-and post-intervention through observation in the ED. To evaluate the simulation experience, participants completed five 5-point Likert scale questions at the end of the simulation training day. No significant results were found on the Team Dimensions Rating.
Form. However, the experimental group showed a trend towards improvement in teamwork behavior ratings after simulator based intervention (p=.07) in comparison with the comparison group (p=.55). Also, three of five team dimensions of the experimental group (which were slightly lower than the comparison group pre-intervention) surpassed the comparison group post-intervention. Overall, the participants were very satisfied with the experience. One limitation was that caregivers were not blinded to the intervention.

Crannell (2012) utilized simulation to assess nurses’ ability to administer chemotherapy as well as educate nurses on chemotherapy administration. The study took place on an inpatient oncology unit a quasi-experimental design. The simulation environment was as close to the actual patient administration setting as possible. The sample was a convenience sample of 69 RN’s representing 97% of the unit. The unit conducted an educational session that was made up of a question and answer session to assess competency of chemotherapy orders and safe handling procedures followed by a simulation in the laboratory using case based scenarios. Debriefing occurred to review and reinforce concepts. Tools utilized were Biotherapy Guidelines and Recommendations as well as a pre and post simulation evaluation survey to rate confidence level on a 5-point Likert scale of performing five skills (66 pre surveys received, 64 post surveys received). Skills included verification of orders, order transcription and verification, safe handling, administration, and spill management. Confidence levels were noted to have increased in all five skills to over 99% confident or very confident in chemotherapy administration. The educational session was noted as valuable by the staff. Limitations included convenience sample with no comparison group, tools were not validated, and there was no analysis to determine if increases in confidence levels were statistically significant.
A correlational study by Henry and Waltmire (1992) utilized simulation in a slightly different method compared to the other studies discussed in either education or practice. Henry and Waltmire investigated the ability of a knowledge test, a self-evaluation tool, and computerized clinical simulations to discriminate between nurses with varied level of knowledge and experience and to compare the learning needs identified from the three types of instruments. The study was conducted in a 441-bed tertiary medical center. The sample was a convenience sample of 142 participants (all retained) working in eight critical care units of various specialties. The sample was majority female (81%), educated at the BSN level (53.5%), and currently or previously ACLS certified (86%). The average age was 33 with an average of eight years nursing experience and 5.7 years of critical care experience. A brief presentation and demonstration was presented during inter-shift report then simulations were completed. One tool used to analyze the results was the Basic Knowledge Assessment Tool (BKAT) Version 3, a 100 item cognitive examination that reflects general critical care knowledge (Cronbach’s alpha = .80). Another tool was the Cardiovascular Self-Assessment Tool (CST) consisting of 38 ordinal scale items. Tach-Man, a computer program that generates clinical simulations related to recognition and management of tachyarrhythmias was also utilized. Items in the simulation were assigned points based on expert consensus (-1=harmful or detrimental, 0=not essential but not detrimental, +1 = essential or correct). A proficiency score was assigned based on the subject’s choices divided by the experts’ number of +1s and converted to a percent. Participants received two atrial flutter scenarios and two ventricular tachycardia scenarios. Results showed that experienced critical care nurses had significantly higher (t=3.68, df = 27, p<.001) BKAT scores than less experienced nurses as well as CST scores (t=5.44, df=25, p<.001), BKAT scores were
significantly higher for currently and previously ACLS-certified nurses \((F=23.2, \text{df}=2, \ p<.001)\) as was CST scores \((F=39.4, \text{df}=2, \ p<.001)\) and proficiency scores were significantly higher for ACLS-certified nurses compared with non-certified \((F=3.58, \ p=.033)\). Computerized clinical simulations identified specific learning needs for the group and also supported the importance of professional certifications and level of experience. Limitations included small sample size of non-ACLS certified and inexperienced nurses as well as a convenience sample.

**Synthesis of the literature.** These studies contain several commonalities. For studies that reported demographics, the majority of participants were females (Blum et al., 2010; Gordon & Buckley, 2009; Jeffries, et al., 2010) which is reflective of typical nursing practice. The average age was under 35 (Kaddoura, 2010; Blum et al., 2010; Jeffries, et al., 2010; Henry & Waltmire,1992), which is lower than the average age of 45 for nurses in practice (American Association of Colleges of Nursing [AACN], 2012). The majority of the participants were BSN. This may not be reflective of practice today, but the IOM (2010) recommends that by 2020 80% of nursing staff should hold a BSN degree. Varying years and levels of experience were investigated – from the new nurse and up. Both Caucasians and non-Caucasians were assessed as well as different locations around the U.S. and Australia.

Common outcomes of the studies were increased knowledge with technical (Jeffries et al., 2010; Kaddoura, 2010) and non-technical nursing skills (Blum et al., 2010; Kaddoura, 2010; Shapiro et al., 2004) as well as increased confidence levels (Crannell, 2012; Gordon & Buckley, 2009; Jeffries et. al, 2010; Rosenzweig et. al, 2008). Simulation was shown to be flexible in different settings to address different skill needs. Varying types of simulation were utilized (standardized patients, high fidelity, computerized, etc) supporting that simulation can be
implemented in different ways depending on the resources of the hospital. One consideration, however, is that most studies were conducted in either a large hospital or medical center (Henry & Waltmire, 1992; Kaddoura, 2010; Shapiro et al., 2004) or a university (Blum et al., 2010; Jeffries et al., 2010; Rosenzweig et al., 2008) and likely had adequate resources and simulation supplies. All studies reporting participants’ satisfaction found that the simulation experience was valuable (Crannell, 2012; Gordon & Buckley, 2009; Jeffries et al., 2010; Kaddoura, 2010; Rosenzweig et al., 2008).

**Relationship to theory.** According to Benner (1984), staff development programs need to promote clinical knowledge development so that each nurse learns from clinical experience. Simulation has the ability to enhance the progression of the nurse in knowledge development by providing experiences that the nurse may or may not have the opportunity to encounter and by creating experiences that develop and refine practical knowledge. Simulation, as discussed previously, has been shown successful with different levels of learners and to enhance varying types of skills.

Knowing where each nurse is located on the path from novice to expert is essential to be able to encourage the move to the next level. Benner discussed implications for teaching learning based on the level of knowledge attainment. For example, the novice nurse needs to focus on attributes whereas the advanced beginner needs to focus on aspects. Both attributes, such as analyzing vital signs, and aspects, such as bowel sound comparison or evaluation of patient readiness to learn, can be developed with the use of simulation. Benner denotes that the competent nurse can benefit from decision-making games and simulation to plan and coordinate complex patient care demands. According to Benner, both the proficient nurse and the expert
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nurse benefit from case studies, which could easily be designed as simulation scenarios. Though each level of nurse may require a different focus to meet their individual needs, there are certain focuses that need to be enforced and re-enforced regardless of the level of knowledge development. Such focuses include the quality standards introduced earlier – core measure sets (Joint Commission, 2012a), National Patient Safety Goals (Joint Commission, 2012b), and nursing-sensitive indicators (National Database of Quality Indicators, 2012). These types of standards can also be addressed or incorporated into simulation experiences. For example, all simulations may include the expectation that nurses identify their patient with two identifiers as recommended by the National Patient Safety Goals (Joint Commission, 2012b). Simulation can standardize experiences to maintain similar opportunities and encourage compliance with policies, expectations, and standards.

Several authors have suggested strategies for successful simulation. Brewer (2011) suggested that preparation is required of both participants and leaders. Participants should prepare for simulation activities by completing any assigned material. Waxman (2010) suggested a list of skills and a tutorial or a laboratory session to prepare for needed psychomotor skills. Waxman also suggested readings, multimedia learning modules, and attendance at lectures for cognitive competency during simulation. Leaders prepare the setting, scenario, and guidelines.

A realistic setting is important to make the scenarios as life-like as possible (Brewer, 2011). According to Brewer, one benefit to scenario development is the fact that it can make the patient become more or less serious just as patients do in real life. This is useful in allowing the nurse to realize successful critical thinking and nursing judgment in positive patient outcomes or
to see the negative outcomes of poor choices or lack of intervention in a safe environment.

Components that can be included in the simulation scenario include individual participation, team interaction, cooperative learning, and documentation of the session (Brewer, 2011). Waxman (2010) recommended written scenarios be validated through peer review, clinical expert review, evidence review, and the pilot testing process.

Waxman (2010) also related that each simulation experience should have evidence-based learning objectives and scenario guidelines. Likewise, Brewer (2011) denoted that participants should understand expectations. Leaders should develop clear evaluation criteria (Brewer, 2011). The lab coordinator creates scenarios and designs a list of interventions that are expected to be performed by the participants during each step. The interventions are checked off as participants respond appropriately.

It is common practice to evaluate learners’ experience with simulation. Waxman (2010) denoted that the assessment instrument will vary for each scenario. An example assessment instrument is an evidence-based tool developed by Todd, Manz, Hawkins, Parson, & Hercinger (2008) called the Creighton Simulation Evaluation Instrument (C-SEI). This tool provides standardized evaluation and a record of learners’ competency. Adamson et al. (2011) reported internal consistency of this tool (Cronbach’s alpha .98). According to Todd et al. (2008), the C-SEI is made up of four sections essential in developing competencies of the nurse—assessment, communication, clinical judgment, and patient safety (Appendix A). Parsons et al. (2012) suggested utilizing a worksheet (Appendix B) for each simulation scenario with specific components expected listed under each competency. This recommendation complements the recommendations of Waxman (2010) and Brewer (2011) as previously discussed. The
worksheet is a checklist-type format. Checklists have been shown to promote competency in health care (Gawande, 2010).

Post-simulation should include debriefing, an essential component for the learning process. According to Waxman (2010), debriefing is the most critical element of the simulation experience. Debriefing includes a discussion of what was done best and what could have been done differently – a perfect time to discuss items on the checklist that were left out, delayed, or performed too early. Waxman denoted that one advantage of simulation is the development of reflective skills. Debriefing can be accomplished through discussion as well as videoing the simulation experience and replaying the video for participants. Gordon and Buckley (2009) found that the most valued aspect of simulation by participants was formal debriefing. Obtaining participant feedback on the simulation activity is also an important post-simulation piece for future improvement.

A Need for Competency Development Identified

Marcum and Wallace Memorial Hospital is a small rural facility that has identified a need for improved nursing competency to enhance the delivery of care to the service population. The hospital is designated as a Critical Access Hospital (CAH). CAH designation has enabled the hospital to maintain financial stability with cost-based reimbursement while providing service to an area of need. The facility is responsible for meeting the regulations of a CAH facility including maintaining an average length of stay of 96 hours. The facility has recently become a Level IV Trauma Center. The hospital stabilizes and transfers patients from the Emergency Department (ED) to a higher level of care and also offers a 25-bed inpatient unit with telemetry for stable patients in observation, acute inpatient, or swing bed (short-term rehabilitation) status.
A variety of outpatient services are offered including endoscopy, infusions, transfusions, and cardiac stress testing.

The facility is a member of Catholic Health Partners (CHP). The hospital is not Joint Commission accredited, but does strive for Joint Commission standards in the delivery of care and patient outcomes. Performance measures (Appendix C) are reported to the Centers for Medicare and Medicaid Services (CMS), Anthem BlueCross, and the Kentucky Trauma System (Level IV Verified Trauma System). Medicare is the primary source of reimbursement for the inpatient unit and Medicaid is the primary source of reimbursement for the Emergency Department (Appendix D). In 2011, the organization provided care to over 15,000 ED patients and over 1200 observation, acute, and swing patients (see Appendix E).

The organization employs 43 nurses (23 inpatient, 18 ED, and 2 endoscopy). Nurses are primarily associate degree prepared, but the majority is currently enrolled in baccalaureate programs as strongly encouraged by the hospital. The nursing staff wears a number of hats as part of a small organization. Resources such as respiratory therapy, physical therapy, and occupational therapy are limited at times. Recently there has been some change in leadership roles and responsibilities with the addition of two clinical leaders. The nurse turnover rate more than doubled from 2010 to 2011. Overall employee satisfaction was 4.51 in 2010, 4.07 in 2011, and 3.76 in 2012. The facility goal for 2012 was 4.41.

Nursing competency is essential in maintaining the trauma certification, providing quality care to the community, and promoting financial stability within the facility. In the past, the hospital has not had a formal competency program though a clinical educator role has been recently created. Nursing competency needs have been primarily identified within the inpatient
unit. Nursing competency concerns identified by Chasity Ware, Chief Nursing Officer, Marcum and Wallace Memorial Hospital include: (a) the nurses have limited opportunities and experiences, in turn limiting skills and development of expertise, (b) patients are possibly transferred that could remain within the facility if the nurses were better prepared, (c) the inpatient nurses are less prepared for emergency situations, (d) documentation is lacking, (e) newly employed nurses need a better orientation experience, (e) communication and reporting skills are lacking, and (e) medication errors is an area for improvement. Stakeholders for this program include the nursing staff, clinical leaders, Director of Nursing Services, Clinical Educator, Risk Manager, CEO, and Safety Officer. Professional nursing development is a concern for this facility in relation to the challenges presented within today’s health care system and the ability to fulfill the mission of the organization.

The hospital strives to promote a quality patient experience. This patient experience is termed the “Mercy Experience.” The Mercy Experience is made up of core values, mission, Key Result Areas, and Mercy Standards. The values of this organization include compassion, excellence, human dignity, justice, sacredness of life, and service (Mercy Health Partners, n.d.). Each core value is essential in guiding the mission which is “...to extend the healing ministry of Jesus by improving the health of our communities with emphasis on people who are poor and underserved” (Mercy Health Partners, n.d., pg. 1). The Mercy Standards define and direct the commitment to providing the best possible outcomes and experiences for employees, families, and employees (Mercy Health Partners, n.d.). The Mercy Standards include effective communication, compassionate care, responsiveness, accountability, teamwork, and respect. These Standards support the Key Result Areas identified in the strategic plan. The Key Result
Areas are quality, human potential, physician engagement, growth, and stewardship (Mercy Health Partners, n.d.). Competency in nursing care delivery is a must for achieving the Mercy Standards.

**Project Purpose**

The purpose of this project was to establish a simulation-based program for evaluating and assuring nursing clinical competencies at Marcum and Wallace Memorial Hospital. The Statement of Mutual Agreement for Capstone Project was signed by the student, capstone advisor, and CEO of Marcum and Wallace Memorial Hospital prior to implementation (Appendix F).

**Project Description**

The project established a simulation-based program to implement clinical competency evaluation on a quarterly basis. For this project, the first quarterly clinical competency evaluation was implemented and evaluated. Based on data from this project, the remaining quarterly simulation-based competencies were planned and will be implemented by the newly appointed clinical educator.

SBAR was chosen for the first quarterly competency based on direction from Chasity Ware, Chief Nursing Officer and primary admitting physicians of Marcum and Wallace Memorial Hospital. The hospital uses the SBAR format as a communication technique between nurses and physicians. SBAR communication is recommended by the Institute of Healthcare Improvement (2011) as an easy-to remember, concrete way to communicate that will also encourage teamwork and promote a culture of safety. SBAR promotes an organized conversation that promotes reporting of essential information. *Situation* refers to the
identification of the nurse and patient and current problem or concern. **Background** includes medical history and current assessment and treatment. **Assessment** is the nurse’s opinion of the condition. **Recommendation** includes the nurse’s recommendations or requests for care.

**Practice Framework**

For this program, the OMRU (Logan & Graham, 1998) was used to guide implementation. The OMRU was a good fit for promoting simulation particularly with hospital clinical competencies. The OMRU has been used in pressure ulcer practice (Logan et al., 1999) as well as a skin care program (Graham & Logan, 2004), both of which addressed an established nursing-sensitive indicator. The OMRU describes three phases containing a total of six primary elements necessary to consider when implementing research into practice. Phase I includes profiling the evidence-based intervention, assessing the practice environment and potential adopters, and considering project barriers and supports. Phase II includes developing strategies for implementation of the intervention and adopting the intervention in practice. Typically, nurses will go through five stages before innovation is established: awareness, development of positive attitudes, cognitive intention to use the innovation, use of the innovation, and continued use. Phase III consists of evaluating the program outcomes (Logan et al., 1999).

**Barriers and Supports**

There were two barriers identified in this project implementation. First, the facility had no history of a formal competency program. Most professional development was completed through online modules, meetings, or in-services. The nurses were not accustomed to simulation-based competency in clinical practice and will go through a “learning curve” with this new type of competency. A second barrier was the nurses’ perception of a busy environment in which
they have many roles. The nurses perceive they have limited time for preparation and participation in professional development.

Despite the barriers, the project was facilitated by several factors. One support identified is a newly appointed clinical educator. Another support identified was that many nurses are returning to school so they are in the “learning mode” and a competency program at the hospital might enhance their coursework and vice versa. Though the nurses have not been accustomed to simulation-based competency in the practice environment, the nurses may have been exposed to simulation-based competency in nursing school, through mock codes for trauma certification purposes, or nursing certifications such as CPR, Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS). Another benefit identified was the resources available for education at the hospital. The hospital does have several mannequins available for use with simulation. The hospital has an online module option for didactic material as well as a new SMART Board that can be utilized for educational purposes. Additional resources might include pertinent stocked supplies to make the simulation experiences realistic (i.e. IV tubing, nasal cannulas, etc) and nursing staff time. One last facilitator identified was the support for the project and the student by the hospital. Based on the project supports, the introduction and implementation of simulation-based competency in clinical practice should be a natural and seamless transition.

**Project Design**

The project design was a pre-test, post-test design. Following Institutional Review Board (IRB) approval (Appendix G) in January 2013, the nursing needs assessment was conducted along with project planning and pre-testing. Project implementation and post-testing was
completed in February. Analysis and dissemination of data extended from February to April (Appendix H).

Methods

After obtaining Institutional Review Board (IRB) approval, all inpatient staff nurses were offered the opportunity to participate in the project. A verbal script (Appendix I) was used to recruit participants. Initially, the participating nurses were given a cover letter (Appendix J), and completed a packet that was made up of the Nursing Competency Needs Assessment (Appendix K), Pre-Competency Self-Evaluation made up of three Likert scale questions on SBAR (Appendix L), and a five-question multiple choice knowledge test on SBAR (Appendix M). All responses were anonymous, but coded with a unique identifier only known to the participant. Participants completed the packed four to five weeks prior to the simulation sessions.

The participants were offered the opportunity to prepare for the simulation experience. Approximately 10 days prior to the scheduled simulation sessions, attendants at the regularly scheduled nursing staff meeting were presented a PowerPoint presentation on SBAR using the hospital SMART Board. One week prior to the start of the simulation sessions, a PowerPoint with voice overlay was loaded onto the computer at the nurses’ station as a reference for nurses to prepare for the scheduled competency session. A three-ring binder containing SBAR documents was placed at the nurses’ station as an additional learning resource. Included in the binder were the printed PowerPoint slides, three evidence-based articles (Boaro, Fancott, Baker, Velji, & Andreoli, 2010; Dunsford, 2009; Wacogne & Diwakar, 2010) and two instruments - SBAR Guidelines and SBAR Worksheet (Institute of Healthcare Improvement, 2011).
Next, each nurse was scheduled for an individual simulation competency session. Prior to the session, participants were informed of competency expectations in the areas of communication and critical thinking (Appendix N). The nurse was given the Patient Information Sheet (Appendix O) and asked to simulate a verbal SBAR conversation with the author acting as the simulated physician. The nurse would then document the “simulated physician’s” response as a verbal order to validate appropriate documentation. For this project, the simulated scenario was an elderly patient with pneumonia, which is one of the most common true patient scenarios at the hospital.

During the session, each nurse’s simulation experience was evaluated with the C-SEI. Nurses were debriefed to review and discuss the simulation experience and the SBAR process. One copy of the C-SEI was given to Human Resources as proof of the SBAR competency and one copy was kept for data collection. The nurses completed a Post-Competency Self-Evaluation on SBAR made up of four Likert scale questions (Appendix P) and repeated the knowledge test on SBAR, coding both with the number used for the pre-simulation assessments. Twenty participants completed the simulation experience and post-assessments.

**Instruments**

**Nursing Competency Needs Assessment**

The Nursing Competency Needs Assessment was developed by the author. The assessment was made up of three items to assess competency desires of the participants. The first item asked participants to consider the importance of staff development in deciding on a job. This is important information for nursing recruitment and retention. The second item asked participants to determine clinical nursing competencies for which they would like a refresher
course. Listed clinical nursing competencies were those pertinent to patient care at the hospital. The final item asked participants to determine which of the most common patient admissions and concerns for which they would like a refresher course. It is essential for the nurses to be comfortable in caring for diagnoses they see most often.

**SBAR Knowledge Test**

The SBAR Knowledge Test was designed by the author to determine the participants’ knowledge on the use of SBAR. The questions were designed to test the purpose of SBAR and the placement of information being reported. The test was made up of one true/false question and four multiple choice questions, each with six possible answers of which participants could choose more than one answer. Participants could score a maximum of 25 points on the knowledge test - one point for the true/false question and one point for each answer within the multiple choice questions. The knowledge test was administered pre-simulation and post-simulation.

**SBAR Pre-Competency Self-Evaluation**

The SBAR Pre-Competency Self-Evaluation was designed by the author to assess participants’ knowledge and confidence pre-simulation. The SBAR Pre-Competency Self-Evaluation was a 4-point Likert scale (1=Strongly Disagree, 4= Strongly Agree) in which participants self-rated their knowledge and confidence with SBAR and the importance of SBAR in providing quality care.

**SBAR Post-Competency Self-Evaluation**

The SBAR Post-Competency Self-Evaluation was designed by the author to assess participants’ knowledge and confidence post-simulation. The SBAR Post-Competency Self-
Evaluation was a 4-point Likert scale (1=Strongly Disagree, 4= Strongly Agree) in which participants self-rated their knowledge and confidence with SBAR and the importance of SBAR in providing quality care as with the SBAR Pre-Competency Self-Evaluation. The SBAR Post-Competency Self-Evaluation included one additional item for the participants to rate the simulation’s effect on knowledge and ability to perform SBAR.

C-SEI

The C-SEI was used to evaluate the simulation-based competency of each participant. As previously noted, the tool was developed by Todd et al. (2008). Adamson et al. (2011) reported internal consistency of the C-SEI (Cronbach’s alpha .98). In order to receive permission to use the C-SEI, the author had to complete a computerized training course and become a certified user of the tool. The C-SEI is made up of four sections (assessment, communication, critical thinking, and technical skills). For each item, simulation participants are scored one point if competency is demonstrated and zero points if they do not demonstrate competency. As every simulation experience may not contain each C-SEI item, a “not applicable” response is also an option. For this simulation, only specific items in the communication (SBAR, documentation, responding to abnormal findings, and professionalism) and critical thinking (interpreting vital signs, interpreting laboratory data, interpreting objective data, performing outcome-driven interventions, rationale for interventions, and reflection of simulation experience). The participant had to score at least eight of the ten possible points to pass the SBAR simulation competency.
Results

Data were analyzed using Statistical Package for Social Sciences (SPSS) Version 19. The 20 participants had an RN license were all female, primarily ADN prepared, and primarily Caucasian (Table 1). Years of nursing experience ranged from six months to 19 years of nursing experience (Table 2).

Nursing Competency Needs Assessment

The Nursing Competency Needs Assessment revealed that 80% of nurses considered staff development as an important job consideration. The most commonly requested topics for education were congestive heart failure, legal documentation, oxygen administration through varying masks, nasogastric tube placement, and central line associated bloodstream infection (Figure 1). As previously discussed, SBAR was chosen for the first quarterly competency based on direction from Chasity Ware, Chief Nursing Officer, and primary admitting physicians of Marcum and Wallace Memorial Hospital. Remaining quarters will be planned based on the Nursing Needs Assessment results in combination with other hospital-specific data.

SBAR Knowledge Test

Pre-test scores ranged from 9 to 24; post-test scores ranged from 21 to 25. A paired-sample t-test showed significant increases in knowledge test scores from pre-test (M= 20.0 ± 3.67) to post-test (M=23.8 ± 1.47), t (19) = 4.60, p=0.00 (two-tailed). The mean increase in knowledge test scores was 3.80 with a confidence interval ranging from 2.07 to 5.53. The eta squared statistic (.53) indicated a large effect size (Table 3).
Table 1

Participant Description

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Licensure</td>
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<td></td>
<td>ADN</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Race</td>
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</tr>
<tr>
<td></td>
<td>African American</td>
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Table 2

*Years of Nursing Experience*

<table>
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<tr>
<th>Range</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of Nursing Experience .5 to 19</td>
<td>7.18 ± 6.43</td>
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</tbody>
</table>
Figure 1. Nursing Competency Needs Assessment Results. N=20.
Table 3

*SBAR Knowledge Test Scores Pre- and Post-Simulation-Based Education*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Score Pre-Simulation</td>
<td>20.00 ± 3.67</td>
<td>4.60</td>
<td>19</td>
<td>.001*</td>
</tr>
<tr>
<td>Total Score Post-Simulation</td>
<td>23.80 ± 1.47</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* N=20.
SBAR Self-Evaluation

SBAR knowledge. A paired-sample t-test showed significant increases in SBAR knowledge self-ratings from pre-evaluation (M= 2.85 ± .59) to post-evaluation (M=3.30 ± .73), t (19) = 2.27, p=0.04 (two-tailed). The mean increase in knowledge test scores was .45 with a confidence interval ranging from .04. to .87. The eta squared statistic (.21) indicated a large effect size (Table 4).

SBAR confidence. A paired-sample t-test (Table 2) showed a significant increase in mean confidence self-ratings from pre-evaluation (M= 2.85 ± .59) to post-evaluation (M=3.40 ± .50), t (19) = 2.98, p=0.01 (two-tailed). The mean increase in confidence self-ratings was .55 with a confidence interval ranging from .16. to .94. The eta squared statistic (.32) indicated a large effect size (Table 4).

SBAR importance. A paired-sample t-test showed a significant increase in perception of importance of SBAR pre-evaluation (M= 3.15 ± .67) to post-evaluation (M=3.75 ± .72), t (19) =5.34, p=0.00 (two-tailed). The mean increase in perception of importance of SBAR was .60 with a confidence interval ranging from .37. to .84. The eta squared statistic (.60) indicated a large effect size (Table 4).

C-SEI

All 20 nurses scored all 10 available points on the C-SEI during the simulation-based evaluation. This was based on their demonstration of a satisfactory level of competency in communication (SBAR, documentation, responding to abnormal findings, and professionalism) and critical thinking (interpreting vital signs, interpreting laboratory data, interpreting objective
Table 4

*Competency Self-Evaluation on SBAR Pre- and Post-Simulation-Based Competency*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
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<tr>
<td>Knowledge Pre-Simulation</td>
<td>2.85 ± .59</td>
<td>2.27</td>
<td>19</td>
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<tr>
<td>Knowledge Post-Simulation</td>
<td>3.30 ± .73</td>
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<td></td>
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</tr>
<tr>
<td>Confidence Pre-Simulation</td>
<td>2.85 ± .59</td>
<td>2.98</td>
<td>19</td>
<td>.008*</td>
</tr>
<tr>
<td>Confidence Post-Simulation</td>
<td>3.40 ± .50</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Importance of SBAR in Providing Quality Care</td>
<td></td>
<td>5.34</td>
<td>19</td>
<td>.001*</td>
</tr>
<tr>
<td>Pre-Simulation</td>
<td>3.15 ± .67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of SBAR in Providing Quality Care</td>
<td>3.75 ± .72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Simulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* N=20.
data, performing outcome-driven interventions, rationale for interventions, and reflection of simulation experience).

**Simulation Ratings**

The majority of nurses rated the simulation experience positively. Seventeen out of 20 nurses strongly agreed that the simulation experience improved their knowledge and ability to perform SBAR (Figure 2).

**Discussion**

Similar to studies reviewed in the literature, this program evaluation found that simulation could improve the knowledge and confidence of participants. The simulation experience was rated positively by participants. Simulation techniques discussed by both Brewer (2011) and Waxman (2010) to promote a positive simulation experience were used. Both participants and the author were engaged in preparation for the simulation activity. A realistic scenario was developed and clear expectations were developed and discussed. The simulation experience was evaluated with a standardized tool and participants were debriefed post-simulation.

The OMRU was a good fit for this program implementation. The phases were logical for this program and flowed well. In the second phase of the OMRU, good communication is essential. The nurses’ opinions were assessed through the Nursing Competency Needs Assessment. Keeping the nurses updated on the progress of quality measures and evaluations from simulation experiences and providing short term wins is also important (Kotter, 1996). In this project, the nurses were given one-to-one feedback during simulation debriefing. A positive educational experience initially followed by additional educational activities will enhance the
Figure 2. Rating of Simulation Experience Post-Simulation-Based Education. N=20.
acceptance of simulation-based program a simulation-based program for evaluation and assurance of staff nurses’ competencies. A positive learning experience will also encourage commitment to the competency topic to improve patient care and meet expectations of quality standards.

One limitation to this program evaluation was a small sample size. Another limitation is that due to the small sample size, analysis for individual items on the knowledge test was not possible. SPSS was unable to determine the improvement of some individual questions from pre-test to post-test due to small numbers in the Chi-Square.

Implications for Practice

Results of this project supported continuation of a simulation-based program for evaluation and assurance of staff nurses’ competencies. Based on data from the Nursing Competency Needs Assessment along with other sources of assessment such as manager feedback, physician feedback, performance measures, patient surveys, occurrence reports, admission/transfer data, and other patient data sources, competencies for the remaining three quarters of the year were planned. The second quarter will focus on legal documentation. This was the most requested clinical competency by the nurses and will also complement the first quarter SBAR education by extending verbal communication to written communication. Third quarter clinical competency will be congestive heart failure (CHF). CHF education has also been requested by the nurses. The CHF diagnosis is frequently seen at the hospital and is also a core measure (Joint Commission, 2012a). Fourth quarter competency will consist of oxygen delivery through varying masks. This was requested by the nursing staff and is an essential skill for the leading admitting and transfer diagnoses of pneumonia and bronchitis. Long term
evaluations of the simulation-based program would include quality measures, nurse turnover rates, and employee satisfaction rates.

**Conclusion**

The importance of nursing competency in today’s health care environment has been validated in the literature. Results of this project support the benefit of a simulation-based program for evaluation and assurance of staff nurses’ competencies. Simulation-based competency was successful in improving communication among multidisciplinary team members through a specific communication technique: Situation-Background-Assessment-Recommendation (SBAR). Significant improvements in both knowledge and confidence were found and the majority of nurses rated the experience as positive.
References


Appendix A

Creighton Simulation Evaluation Instrument (C-SEI)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>ASSESSMENT</th>
<th>COMMUNICATION</th>
<th>CRITICAL THINKING</th>
<th>TECHNICAL SKILLS</th>
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</thead>
<tbody>
<tr>
<td>Obtain Patient Subjective Data</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Obtain Patient Objective Data</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Performs Follow-up Assessments as Needed</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Assesses in a Systematic &amp; Orderly Manner Using the Correct Technique</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>0</td>
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</tr>
<tr>
<td>Communicates Effectively with Patient and S.O. (verbal, nonverbal, traching)</td>
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<td>0</td>
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<tr>
<td>Writes Documentation Clearly, Consistently, &amp; Accurately</td>
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</tr>
<tr>
<td>Responds to Abnormal Findings Appropriately</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Promotes respect/professionalism</td>
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<tr>
<td>Interprets Vital Signs (T, P, R, BP, Pain)</td>
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<tr>
<td>Interprets Lab Results</td>
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<td>Interprets Subjective Laboratory Data (corrected relevant from relevant data)</td>
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<tr>
<td>Formulates Measurable Priority Outcomes</td>
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</tr>
<tr>
<td>Interprets Outcome (from relevant)</td>
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<tr>
<td>Provides Specific Rationals for Interventions</td>
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<tr>
<td>Evaluates Interventions and Outcomes</td>
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</tr>
<tr>
<td>Reflects on Simulation Experience</td>
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</table>

**Student Participants**

**Faculty Evaluator:**

**Total Score**

**Passing Score**

If not applicable, no score is given.

Passing score = 0.75 x number of items used.

*Individual comments on clinical evaluation form.*

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*Revised 10/09*
Permission for use of C-SEI

Creighton University
School of Nursing

Agreement for use of the Creighton Simulation Evaluation Instrument (C-SEI)

I understand that I have been granted permission by the creators of the C-SEI to use the C-SEI for academic and/or research purposes. I confirm that I have completed the required training prior to use of the C-SEI and have no questions on the use of the instrument. I agree that all individuals working with the C-SEI at my facility have also completed the required training prior to using the instrument. I agree that I will use the C-SEI only for its intended use. I agree that I will not alter the C-SEI in any way. I understand that I may be asked to share results on any validity or reliability data as determined with the creators of the C-SEI prior to the initiation of the study.

Signed: Gina Purdue
Printed name: Gina Purdue
Date: 11/7/12

Signed: Maggie Powers, Ph.D., RN
Printed name: Maggie Powers
Date: 11/20/12
Appendix B

Worksheets for Use with the C-SEI

**ASSESSMENT Discussion Worksheet**

**Obtain Pertinent Subjective Data**
- 
- 
- 

**Obtain Pertinent Objective Data**
- 
- 
- 

**Performs Follow-Up Assessments as Needed**
- 
- 
- 

**Assesses in a Systematic & Orderly Manner Using the Correct Technique**
- 
- 
-
**COMMUNICATION Discussion Worksheet**

**Communicates Effectively with Providers (delegation, medical terms, SBAR, RBO)**
- 
- 
- 

**Communicates Effectively with Patient & SO (verbal, nonverbal, teaching)**
- 
- 
- 

**Writes Documentation Clearly, Concisely, & Accurately**
- 
- 
- 

**Responds to Abnormal Findings Appropriately**
- 
- 
- 

**Promotes Realism/Professionalism**
- 
-
<table>
<thead>
<tr>
<th>CRITICAL THINKING Discussion Worksheet</th>
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<tr>
<td><strong>Interprets VS (T, P, R, BP, pain)</strong></td>
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<tr>
<td><strong>Interprets Labs</strong></td>
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<tr>
<td><strong>Interprets Subjective/Objective Data (recognize relevant from irrelevant data)</strong></td>
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<td>•</td>
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<tr>
<td><strong>Formulates Measurable Priority Outcomes</strong></td>
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</tbody>
</table>
### TECHNICAL SKILLS Discussion Worksheet

**Use Patient Identifiers**
- 
- 
- 
- 

**Utilizes Standard Precaution: Including Hand Washing**
- 
- 
- 
- 

**Administers Medications Safely**
- 
- 
- 
- 

**Manages Equipment, Tubes, & Drains Therapeutically**
- 
- 
- 
- 

**Performs Procedures Correctly**
- 
- 
- 
-
## Hospital Performance Measures

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>2011 Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Satisfaction – Overall hospital rating</td>
<td>69%</td>
</tr>
<tr>
<td>Catheter Acquired Infections</td>
<td>1 occurrence</td>
</tr>
<tr>
<td>Medication Errors</td>
<td>87 occurrences</td>
</tr>
<tr>
<td>Inpatient Falls</td>
<td>15 occurrences</td>
</tr>
<tr>
<td>Pneumonia Core Measure Set</td>
<td>88%</td>
</tr>
<tr>
<td>Congestive Heart Failure Core Measure Set</td>
<td>96%</td>
</tr>
<tr>
<td>30 day Readmissions</td>
<td>10.5%</td>
</tr>
</tbody>
</table>
Appendix D

Hospital Payer Sources

**ED Payer Source**

<table>
<thead>
<tr>
<th>Source</th>
<th>ER Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Cross</td>
<td>973</td>
</tr>
<tr>
<td>Commercial</td>
<td>397</td>
</tr>
<tr>
<td>Champus</td>
<td>96</td>
</tr>
<tr>
<td>Medicaid</td>
<td>5,872</td>
</tr>
<tr>
<td>Medicare</td>
<td>2,781</td>
</tr>
<tr>
<td>Managed Care</td>
<td>1,212</td>
</tr>
<tr>
<td>Public Assistance</td>
<td>8</td>
</tr>
<tr>
<td>Self Pay</td>
<td>6</td>
</tr>
<tr>
<td>Unknown</td>
<td>87</td>
</tr>
<tr>
<td>Worker's Comp</td>
<td></td>
</tr>
</tbody>
</table>

**Inpatient Payer Source**

<table>
<thead>
<tr>
<th>Source</th>
<th>Total INP Admits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Cross</td>
<td>49</td>
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<tr>
<td>Commercial</td>
<td>9</td>
</tr>
<tr>
<td>Champus</td>
<td>-</td>
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<tr>
<td>Medicaid</td>
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<td>Public Assistance</td>
<td>60</td>
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<tr>
<td>Self Pay</td>
<td>63</td>
</tr>
<tr>
<td>Unknown</td>
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<tr>
<td>Worker's Comp</td>
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</table>
## Appendix E

Description of Hospital Visits

<table>
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<tr>
<th>Statistic</th>
<th>2011 Value</th>
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</thead>
<tbody>
<tr>
<td>Total ED patients</td>
<td>15,097</td>
</tr>
<tr>
<td>Leading ED Transfer Diagnoses</td>
<td>(1) Cardiac Episode/Chest Pain</td>
</tr>
<tr>
<td></td>
<td>(2) Femur Fracture</td>
</tr>
<tr>
<td></td>
<td>(3) Stroke and also (3) Abdominal Pain.</td>
</tr>
<tr>
<td>Total Inpatients</td>
<td>1281</td>
</tr>
<tr>
<td>Leading Inpatient Diagnoses</td>
<td>(1) Bronchitis</td>
</tr>
<tr>
<td></td>
<td>(2) Pneumonia</td>
</tr>
<tr>
<td></td>
<td>(3) Chest Pain</td>
</tr>
<tr>
<td>Leading Inpatient Transfer Diagnoses</td>
<td>(1) Chest Pain</td>
</tr>
<tr>
<td></td>
<td>(2) Pneumonia</td>
</tr>
<tr>
<td></td>
<td>(3) Bronchitis</td>
</tr>
</tbody>
</table>
Appendix F

Statement of Mutual Agreement

Eastern Kentucky University
Department of Baccalaureate and Graduate Nursing
Doctor of Nursing Practice Program

Statement of Mutual Agreement for Capstone Project

I. General Information

Student Name: Gina Purdue
Project Title: Improving Nursing Competency in Health Care Delivery
Agency: Marcum and Wallace Memorial Hospital
Agency Contact: Susan Starling, CEO

II. Brief description of the project

The Doctor of Nursing Practice (DNP) student will plan a competency program for the inpatient nursing staff. The student will ask the nursing staff to voluntarily complete a competency needs assessment. This survey along with hospital-specific data (patient population, quality data, physician comments, nursing leadership comments, etc) will aid the student in identifying the most needed competencies. Collaboration with nursing leadership will occur on a routine basis. The student will then implement a competency session utilizing simulation as the teaching technique. The Creighton Simulation Evaluation Instrument (C-SEI) will be utilized to assess the nurses’ performance during the simulation experience. Nurses will be asked to voluntarily complete a pre and post survey regarding the selected competency. No patient data will be accessed during this project and no patient interaction will occur.

III. Agreement of written and oral communication

The student will use the name of Marcum and Wallace Memorial Hospital and hospital specific data in the student’s academic work. The student requests permission to present and/or publish the aggregate data for dissemination of project results.

IV. Required Signatures:

[Signature] [Date]
Student

[Signature]
Date
Eastern Kentucky University
Department of Baccalaureate and Graduate Nursing
Doctor of Nursing Practice Program

Mary Ann White
Capstone Advisor

Agency Representative

12-5-12
Date

11/30/12
Date

Approved (Date)
Appendix G

IRB Approval

NOTICE OF IRB EXEMPTION STATUS
Protocol Number: 13-098
Institutional Review Board IRB00002836, DHHS PWA00003332

Principal Investigator: Gina Purdue
Faculty Advisor: Dr. Mary Hauser - Whitaker

Project Title: Improving Nursing Competency in Health Care Delivery

Exemption Date: 01/09/2013

Approved by: Dr. Jim Gleason, IRB Member

This document confirms that the Institutional Review Board (IRB) has granted exempt status for the above referenced research project as outlined in the application submitted for IRB review with an immediate effective date. Exempt status means that your research is exempt from further review for a period of three years from the original notification date if no changes are made to the original protocol. If you plan to continue the project beyond three years, you are required to reapply for exemption.

Principal Investigator Responsibilities: It is the responsibility of the principal investigator to ensure that all investigators and staff associated with this study meet the training requirements for conducting research involving human subjects and follow the approved protocol.

Adverse Events: Any adverse or unexpected events that occur in conjunction with this study must be reported to the IRB within ten calendar days of the occurrence.

Changes to Approved Research Protocol: If changes to the approved research protocol become necessary, a description of those changes must be submitted for IRB review and approval prior to implementation. If the changes result in a change in your project’s exempt status, you will be required to submit an application for expedited or full IRB review. Changes include, but are not limited to, those involving study personnel, subjects, and procedures.

Other Provisions of Approval, if applicable: None

Please contact Sponsored Programs at 859-622-3636 or send email to tiffany.hamblin@eku.edu or lisa.royalty@eku.edu with questions.
## SBAR Simulation Project Timeline

<table>
<thead>
<tr>
<th>Phase</th>
<th>Jan 2013</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
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<tr>
<td>IRB Approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruited participants with Verbal Script</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administered Nursing Competency Needs Assessment, Pre-Competency Self-Evaluation, and Knowledge Test on SBAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBAR educational resources available</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Simulation competency planned using the C-SEI worksheets</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBAR simulation competency implemented and evaluated with the C-SEI</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administered Post-Competency Self-Evaluation and Knowledge Test on SBAR</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation of project outcomes with SPSS version 19</td>
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<tr>
<td>Dissemination of Data</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Appendix I

Verbal Script for Recruitment

I am currently pursuing a Doctor of Nursing Practice (DNP). As part of the program requirements, I am conducting a project to determine if the implementation of competency-based education incorporating simulation can improve the knowledge and confidence of the nursing staff. The program will consist of an initial needs assessment survey. Based on your comments and hospital-specific data such as hospital services, patient population, and quality reports, a series of educational sessions will be planned. Each session will be made up of a didactic learning experience followed by a simulation experience. The session will be evaluated with an evidence-based instrument, but no identifiable information will be noted on the tool. You will be given a copy of the evaluation to turn in to the clinical leader for proof of competency. A pre-intervention survey and a short knowledge test will be completed. Immediately after the session, a post-intervention survey and short knowledge test will be completed. The study is voluntary and withdrawal from the project is permitted at any time. The surveys are anonymous. The aggregate results of the project will be presented written and orally. Your participation will be greatly appreciated.
Appendix J

Cover Letter

Improving Nursing Competency in Health Care Delivery
Gina Purdue, RN, MSN
Eastern Kentucky University
Department of Baccalaureate & Graduate Nursing

Dear Nurse,

I am a Doctorate in Nursing Practice (DNP) student in the Department of Baccalaureate and Graduate Nursing at Eastern Kentucky University in Richmond, KY. You are invited to participate in a project as fulfillment of the requirements for my completion of the program. The purpose of the project is to determine if the implementation of competency-based education incorporating simulation can improve the knowledge and confidence of the nursing staff. The project will be made up of a didactic learning experience followed by a simulation learning experience. The project involves no foreseeable risks or harm to you or your position within the organization.

You will be asked to complete a needs assessment, short knowledge test, and a survey prior to the educational session; be evaluated by an evidence-based instrument during the simulation experience; and complete a knowledge test and survey after the educational session. The didactic and simulation experience will be presented by me. The surveys will be anonymous and results will be reported only in aggregate in a final manuscript to be submitted to my faculty advisor as part of my course work.

Your participation in this project is voluntary. You are under no obligation to participate and you may withdraw from the project at any time.

If you have any questions about this project, please contact me at 606-723-6278 or my faculty advisor, Dr. Mary Hauser-Whitaker at 859-622-1973. Questions or concerns about your rights as a study participant may be directed to Dr. Whitaker or Sponsored Programs, Jones 414/Coats CPO 20, Eastern Kentucky University, Richmond, KY.

Respectfully,

Gina Purdue, MSN, RN
DNP Student
Eastern KY University
Appendix K
Nursing Competency Needs Assessment

ID_______-_________
Mother’s date of birth - Father’s date of birth (i.e. mother - March 14 and father - November 2 = 0314-1102). If any date of birth is unknown, replace the date with 1111.

Nursing Competency Needs Assessment

1. Is the staff development program at a facility an important consideration when applying for or accepting a job? Yes or No

2. Are there skills on which you would like a refresher? Circle all that apply.
   1. Pharmacology Update
   2. Dosage Calculation
   3. Catheter Associated Urinary Tract Infection (CAUTI)
   4. NG tube Placement
   5. Oxygen Administration through Varying Masks
   6. Sterile Wound Dressing
   7. Central Line Associated Bloodstream Infection (CLABSI)
   8. SBAR communication tool
   9. Legal Documentation
   10. Physical Assessment
   11. Other__________________________

3. Are there disease processes or patient diagnoses in which would like a refresher? Circle all that apply.
   A. Most Common Admission Diagnoses at MWMH:
      1. Bronchitis
      2. Pneumonia
      3. Chest pain

   B. Frequent Patient Issues at MWMH
      4. CHF (core measure)
      5. Hypertension
      6. Abdominal Pain

   C. Other ________________________________
Appendix L

Pre-Competency Self-Evaluation

ID _______ - _________

Mother's date of birth - Father's date of birth (i.e. mother - March 14 and father- November 2 = 0314-1102). If any date of birth is unknown, replace the date with 1111.

Competency Self-Evaluation

Nursing Competency: _________ SBAR ________________

Please answer the questions using the following Likert Scale:

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have sufficient knowledge of SBAR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I have sufficient confidence in performing SBAR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. SBAR is important to provide quality care.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix M

Knowledge Test on SBAR

1. SBAR is a tool used to communicate with the physician but not the healthcare team.
   a. True
   b. False

2. Which components should be included in the “S” portion of the conversation? Select all that apply:
   a. Patient’s name
   b. Nurses of opinion of condition
   c. Current problem or concern
   d. Suggestions or requests for care
   e. Medical history
   f. Current assessment and treatment

3. Which components should be included in the “B” portion of the conversation? Select all that apply:
   a. Patient’s name
   b. Nurses of opinion of condition
   c. Current problem or concern
   d. Suggestions or requests for care
   e. Medical history
   f. Current assessment and treatment

4. Which components should be included in the “A” portion of the conversation? Select all that apply:
   a. Patient’s name
   b. Nurses of opinion of condition
   c. Current problem or concern
   d. Suggestions or requests for care
   e. Medical history
   f. Current assessment and treatment

5. Which components should be included in the “R” portion of the conversation? Select all that apply:
   a. Patient’s name
   b. Nurses of opinion of condition
   c. Current problem or concern
   d. Suggestions or requests for care
   e. Medical history
   f. Current assessment and treatment
Appendix N

Simulation Criteria

**Creighton Simulation Evaluation Instrument™ (C-SEI)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
<th>Score</th>
<th>Group Comments</th>
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<tbody>
<tr>
<td><strong>ASSESSMENT</strong></td>
<td>Obtains Pertinent Objective Data</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtains Pertinent Objective Data</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provides a Thorough Assessment as Needed</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assesses in a Systematic &amp; Orderly Manner Using the Correct Technique</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>COMMUNICATION</strong></td>
<td>Communicates Effectively with Patient and S. C. (verbal, nonverbal)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Communicates Effectively with Patient and S. C. (verbal, nonverbal)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Writes Documentation Clearly, Correctly, &amp; Accurately</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Responds to Abnormal Findings Appropriately</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provides Reassurance Measures</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>CRITICAL THINKING</strong></td>
<td>Interprets Vital Signs (P, R, B, BP, P/B)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Interprets Lab Results</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formulates Measurable Priority Outcomes</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Performs Outcome Oriented Interventions</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provides Specific Reason for Interventions</td>
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<td></td>
<td>Evaluates Interventions and Outcomes</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Reflects on Simulation Experience</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TECHNICAL SKILLS</strong></td>
<td>Uses Standard Procedures Including Hand Washing</td>
<td>1</td>
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<tr>
<td></td>
<td>Administers Medications Safely</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manages Equipment, Tubes, &amp; Drains Therapeutically</td>
<td>1</td>
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</tr>
<tr>
<td></td>
<td>Performs Inpatient Care</td>
<td>1</td>
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**Student Participants**

[Student Names]

**Faculty Evaluation:**

[Faculty Comments]

*Individual comments on clinical evaluation form*

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Revised 10/09
## Communication Criteria

<table>
<thead>
<tr>
<th>Communication Discussion Worksheet</th>
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<tr>
<td><strong>Communicates Effectively with Providers (delegation, medical terms, SBAR, RBO)</strong></td>
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<tr>
<td>- Appropriately uses SBAR</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td><strong>Communicates Effectively with Patient &amp; SO (verbal, nonverbal, teaching)</strong></td>
</tr>
<tr>
<td>- NIA</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td><strong>Writes Documentation Clearly, Concisely, &amp; Accurately</strong></td>
</tr>
<tr>
<td>- NIA</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td><strong>Responds to Abnormal Findings Appropriately</strong></td>
</tr>
<tr>
<td>- Determines abnormal assessments:</td>
</tr>
<tr>
<td>- <strong>Temp 101.4, HR 110, R 22, O2 sat 96%, 2L PUL</strong></td>
</tr>
<tr>
<td>- LVL Afebrile, WBC 18.0, pt an antibiotic organism is resistant to</td>
</tr>
<tr>
<td><strong>Promotes Realism/Professionalism</strong></td>
</tr>
<tr>
<td>- in SBAR communication</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>CRITICAL THINKING Discussion Worksheet</td>
</tr>
<tr>
<td>--------------------------------------</td>
</tr>
</tbody>
</table>
**Interprets VS (T, P, R, BP, pain)**
- Temp 101.4, HR 110, R 22, Bp 92/64, 90% 2L
- 
- 

**Interprets Labs**
- WBC 19,0, sputum ox showing pt is on antibiotic
- 

**Interprets Subjective/Objective Data (recognizes relevant from irrelevant data)**
- RUL + LUL rhonchi
- 
- 

**Formulates Measurable Priority Outcomes**
- N/A
- 
- 

<table>
<thead>
<tr>
<th>Performed outcome-driven interventions</th>
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</thead>
<tbody>
<tr>
<td>- offer opinions/recommendations to MD</td>
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<tr>
<td>- antibiotic</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provides specific rationale for interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- offer opinion/recommendation to MD:</td>
</tr>
<tr>
<td>- antibiotic</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluates interventions &amp; outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- N/A</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Reflects on simulation experience</th>
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</thead>
<tbody>
<tr>
<td>- thoughts on experience</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
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</table>
Appendix O

Patient Information Sheet

**Patient:** Mary Wallace, **Age:** 68, **Room Number:** 1-2

**Admission Diagnosis:** Pneumonia  **Admission Date:** Yesterday

**History:** Diabetes, Hypertension

**Current VS:** Temp 101.4, BP 125/85, HR 110, Respirations 22, O2 Sat 90% 2L/NC

**Physical Assessment:** Alert and Oriented x 4, HR Regular, RUL and LUL rhonchi, RLL and LLL diminished, + BS, good cap refill, skin warm and dry, no edema noted, IV #20 RAC intact, tolerating cardiac diet

**Meds:** Metformin 500mg po BID, Low Dose SS with Novolog ACHS, Lisinopril 20mg, A/A nebs every 4 hrs, Levaquin 750mg IV daily, NS @125 mL/hr, Solumedrol 80mg every 8 hrs, Tylenol 650 mg every 4 hrs prn

**Labs:**

<table>
<thead>
<tr>
<th>Sputum culture: Streptococcus pneumoniae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocephin</td>
</tr>
<tr>
<td>Levaquin</td>
</tr>
<tr>
<td>Zosyn</td>
</tr>
<tr>
<td>Erythromycin</td>
</tr>
</tbody>
</table>

WBC: 18.0
Hgb: 13.8
Hct: 42
Glucose: 148
Na: 141
K: 3.8
BUN: 16.0
CR: 1.2
Appendix P

Post-Competency Self-Evaluation

ID________ - __________

Mother's date of birth - Father's date of birth (i.e. mother: March 14 and father: November 2 = 0314-1102). If any date of birth is unknown, replace the date with 1111.

Competency Self-Evaluation

Nursing Competency: ________ SBAR __________

Please answer the questions using the following Likert Scale:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have sufficient knowledge of SBAR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I have sufficient confidence in performing SBAR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. SBAR is important to provide quality care.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The simulation experience enhanced my knowledge and ability to demonstrate SBAR.</td>
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