

Interprofessional Education Through Telecommunication with Undergraduate Nursing

Students and Medical Residents

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Abstract

This quality improvement project was implemented using four interprofessional simulations (IPS) involving a critical change in a patient's status. Senior level undergraduate Bachelor of Science in Nursing students contacted medical residents through Facetime phone calls to report a change in patient condition. The simulation debriefing was conducted using Skype to connect students from different healthcare programs and institutions for interprofessional education (IPE). The Inter-Professional Critical Event Report Evaluation Tool was used to detect student improvement using Introduce, Situation, Background, Assessment, and Recommendations (ISBAR) which represents a communication technique used in healthcare and created for safe, structured handoff reports. Mean scores were calculated and compared over time. The Interprofessional Education Collaborative (IPEC) is an emerging model for training health professionals to collaborate in educational and clinical settings. The IPEC Competencies Self-Assessments Tool Version 3 was used to measure improvement in student's self-efficacy. Interprofessional (IP) competencies were self-assessed by the nursing students prior to the initial simulation and repeated after each of the four simulations, to determine improvement in scores over time. Descriptive, parametric and non-parametric tests were used to analyze differences in the means of the two domains over time. A repeated measures ANOVA was conducted for both the Interactions Domain and the Values Domain, resulting in statistical significance with ($p < .001$) for the IP Values Domain and ($p < .001$) for the IP Interactions Domain. Friedman's test was used and the results showed significant difference in the median values ($p < .001$) for the IP Values Domain and ($p < .001$) for the IP Interactions Domain. This quality improvement project showed statistically significant improvements in the student nurses' self-efficacy using IP interactions and IP values. This approach using Facetime and Skype made IPE possible for

nursing students and medical residents from different learning institutions, who were located a considerable distance apart. This highly effective quality improvement project has the flexibility and portability to be maintained over time for continued improvement. Having strategies which are effective at promoting engagement of students from different professions is essential to promote interprofessional learning experiences necessary for moving beyond profession-specific educational efforts, and helping prepare future health professionals for enhanced team-based care of patients for improved population health outcomes.

Keywords: undergraduate, nursing, simulation, IPE, IPEC Competencies, telecommunications, ISBAR

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Quality of patient care depends on teamwork, communication and a collaborative work environment. The Joint Commission has reported approximately 90 % of medical errors result because of ineffective communication (Joint Commission, 2008). The National Patient Safety Goals issued by the Joint Commission address communication annually. A key barrier to effective communication and collaboration is hierarchy relationships. Traditional ways of educating in nursing and medicine have supported hierarchy relationships or stratified levels of superiority to inferiority, which lead to a breakdown in communication, teamwork and collaboration. These hierarchy relationships have formed between nursing and medicine because of academia's traditional educational model of educating in silos (O'Daniel & Rosenstien, 2008; Gilligan, Outram, & Levett-Jones 2014).

Identified by Gilligan, Outram, and Levett-Jones (2014), a primary result of ineffective communication skills of newly graduated nursing students, stem from programs designed with isolation curriculum. Isolation of curriculum, referred to as a silo teaching method, creates isolated communication and lacks relationship building between health disciplines. The Institute of Medicine (IOM) has called for newer methods of educating healthcare professions, and to include IPE, to help dissolve these hierarchies, which threaten quality healthcare (IOM, 2011). IPE is a healthcare education method, with disciplines learning together during their educational process, to understand each other's roles and break down barriers. To disassemble hierarchies and positively impact healthcare outcomes, IPE should be introduced during the educational process. The Interprofessional Education Collaborative (IPEC) a panel of experts developed core competencies for collaborative practice. The work of this group was aimed at promoting

engagement of students from different professions in interactive learning with each other, in order to move beyond profession specific educational efforts (IPEC, 2014).

Hierarchies can be observed between physicians, nursing professionals, and especially newly graduated nurses. According to Benner, et al. (2010) newly graduated nurses are unprepared to handle the demands and stresses of effective communication required when communicating with a physician. The Institute of Medicine (IOM) report on *The Future of Nursing*, addresses the need for major changes in the United States (U.S.) healthcare system and practice, and suggests equally profound changes in the education of nurses both before and after they receive their licenses (Institute of Medicine, 2011). IPE is an important focus when it comes to improving nurse-physician communication, preventing errors, and impacting patient outcomes (Garbee et al., 2013; Moore, Dolansky, & Singh, 2012; Vecchia & Sparacino, 2015).

New nurses lack confidence and skills when calling physicians with acute changes in patient condition. IPE using interprofessional simulation (IPS) has been shown to be an effective way to improve communication between disciplines (Booth & McMullen-Fix, 2012; King, Conrad, & Ahmed, 2013). The National Council of State Boards of Nursing (NCSBN) is encouraging nursing programs to introduce simulation and to utilize best practices when doing so. Their landmark simulation study, which concluded in 2014, looked at the benefits of using simulation in nursing education and concluded that up to 50% of clinical education, can substitute traditional clinical experiences with evidence-based simulation (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014).

IPS decreases anxiety in emergencies, improves communication, and promotes retention of skills (Wilson, & Wittman-Price, 2015). These are desirable attributes which could enhance education for graduating nurses to be more work ready upon graduation. Studies show IPE

through simulation to be a highly effective pedagogy (King, Conrad, & Ahmed, 2013; Booth, & McMullen-Fix, 2012; Garbee et al. 2013), yet many challenges arise when structuring and organizing collaborative events with other disciplines such as medical residents. These IPE events often involve large numbers of people in the same space. These types of events not only take time to organize and facilitate, but can potentially require expensive resource management as well. This quality improvement (QI) project is one way IPE through simulation can occur in a convenient and economical way, to impact safety in new nurses and improve quality and outcomes at the bedside.

The hallmark of good simulation is to make it as close to real life as possible for the best impact and learning. Although large collaborative type of IPE events can improve communication between professions, the event itself is unlike the real environment of a hospital unit or a clinic, where the communication and collaboration would normally occur in practice. Virtual programs do exist to fill this need, but are expensive, which can be prohibitive when educational resources are limited. To have a method which is both convenient and fiscally responsible can be a value to healthcare educational programs such as nursing schools. The ability to work IPE in to an already existing curriculum would be a benefit, and is what this scholarly project has attempted to do.

The rural nursing program in which this project was conducted, does not have easy access to other disciplines such as medicine in which to practice interprofessional communication (IPC) through simulation. FaceTime and Skype were used as a modality to permit the incorporation of IPE into this rural Bachelor of Science (BSN) nursing program. The project included embedded cues and the use of ISBAR in communicating the findings to the physician. Research studies were identified and reviewed which focused on communication for

improved quality and safety in nursing and improved patient outcomes. Although the main theme throughout the studies was improving IPC using simulation and ISBAR, there were a few additional concepts investigated as to how to successfully carry this out.

Project Question

Does an IPS using FaceTime phone calls to medical residents, and Skype, for debriefing improve IPC and student self-efficacy in undergraduate pre-licensure nursing education when compared to the usual education format?

Problem Statement

Nurses and physicians continue to have difficulties in communicating effectively, owing to differences in communication styles, and the current educational silos (O'Daniel & Rosenstien, 2008; Gilligan, Outram, & Levett-Jones 2014). Communication breakdown resulting in errors, is the highest cause of sentinel events in healthcare (Joint Commission, 2008). Critical elements of ensuring patient safety include the ability of a nurse to communicate effectively with other health care professionals, and convey pertinent information to the physicians in an organized and concise manor. Nursing students rarely perform the function of calling the physician on the phone during their clinical rotations due to patient safety issues. As new graduate nurses work to achieve confidence and accuracy in their communications, they rarely receive feedback from physicians about the quality or usefulness of their reports (Guhde, 2014).

Purpose of the Project

Although IP high fidelity simulation experiences have been shown effective in improving communication between disciplines (Booth & McMullen-Fix, 2012), not all nursing programs have access to other healthcare professional such as medical residents to facilitate these important educational opportunities. It is an expectation for healthcare programs to graduate students ready to work collaboratively, yet students continue to be educated in silos (Gilligan et

al., 2014). While there is a definite need for improved communication skills of students in health professions, undergraduate nursing students lack opportunities to collaborate through IPE, leaving the newly graduated nurse with little IP experience, low levels of self-efficacy and challenges communicating with physicians.

The main purpose of this QI project was two-fold. First, to determine the effect of using Skype and FaceTime to create an IP simulation aimed at improving communication between BSN nursing students and medical residents, through improved scores on the IP critical event report tool. Secondly to determine if this IPE simulation could improve self-efficacy of the nursing students by improving the self-assessed IPEC scores over time of the IP Values Domain and the IP Interactions Domain, on the IPEC Competency Self-Assessment Tool Version 3.

Project Goals

The goal of this project was to improve IP communication skills and self-efficacy of senior level nursing students in a rural prelicensure BSN program, through IPE simulation using FaceTime phone calls to medical residents, and Skype for debriefing. Having strategies which are effective at increasing engagement of students from different health professions is essential to promote valuable IP learning experiences and help prepare future health professionals for enhanced team-based care of patients for improved population health outcomes.

The following is a summary of the goals of the project:

- 1) Introduce IP learning activities in a BSN curriculum
- 2) Integrate IPE experiences to develop IP communication with other healthcare disciplines.
- 3) Evaluate the undergraduate student's IP communication using the ISBAR communication method.
- 4) Evaluate the undergraduate student's IP self-efficacy prior to and after each simulation

Theoretical Framework

Bandura's Social Learning Theory 1977 is the theoretical framework on which this project was developed. Ideas from both behaviorists and cognitive orientations are combined in this theory (Merriam, Caffarella, & Baumgartner, 2007). Bandura's theory is frequently used with simulation because it effectively outlines evidence based steps used in simulation that create new knowledge through critical thinking and clinical reasoning, particularly during the simulation and debriefing processes.

Bandura contends that people learn by observing others and model behaviors they observed by applying them to situations as needed (Rutherford-Hemming, 2012). In his theory, Bandura states that role modeling is not just mimicking others but becomes a learned behavior psychologically embedded in the brain. People will apply these learned behaviors not only to the situations observed but go beyond them and apply the behaviors to other situations as needed (Bandura, 1977). This theory supports the use of simulation to create knowledge and learned behaviors which can be brought into clinical practice at the bedside and applied to a variety of situations.

Bandura's social learning theory emphasizes that although the learning process begins through the observation, such as observing during the simulation, expertise is developed through practice with external and internal self-regulatory feedbacks. This is similar to what is occurring during the debriefing step in simulation with the processing of new information where the student is thinking about their thinking. Rutherford-Hemming (2012) suggests that with the changes in healthcare where students are given less exposure to patients and apprenticeship training, simulations can be a viable solution. Applying Bandura's Social learning theory to simulation, combines the role modeling with cognitive learning to deepen their understanding of

the presented knowledge. The following are Bandura's proposed four meditational processes and their application in simulation

- (1) **Attention:** Daily, we observe many behaviors most of them not so noteworthy, but for a behavior to influence others and be imitated, it needs to grab our attention. Attention is therefore very important, and simulation can do this when we have students observe and contribute in critical events during high fidelity simulation. Participating in the debriefing process after the simulation can also help to grab the student's attention and will help influence the student to retain and imitate the behavior.
- (2) **Retention:** To facilitate retention of a behavior it not only needs to be noticed, but it requires remembering the behavior in order to be able to repeat it. Having a memory to attach to the behavior helps one remember the behavior and they can repeat it. A simulation scenario creates an event to remember so students can refer back to the scenario to retain and repeat the preferred behavior. The repetition of using the ISBAR and seeing it repeated during the simulation will help the students to retain the process and be able to use it appropriately when needed.
- (3) **Reproduction:** We often see a behavior but just can not imitate it. Reproduction is the ability to repeat a behavior that someone has just modeled or demonstrated for us. If a person does not have the skills, they are less likely to be able to reproduce the behavior. Students learn about ISBAR and IP communication in didactic courses, but may not have a confidence level in the skills for this activity. Knowing you can reproduce a behavior correctly influences our decisions whether to try and imitate it or not. Simulation offers the student the ability to observe and repeat behaviors to ensure they can be demonstrated correctly when needed in actual practice.

(4) **Motivation:** Motivation or the will to imitate a behavior is influenced by the perceived reward or punishment that may follow the behavior. The example in simulation might be calling a physician when you have a concern. Having been rewarded in simulation for a call performed appropriately a student will be more likely to repeat this behavior in their future practice. If the reinforcement is not seen important enough they will not imitate the behavior. Having had a resident complement the student on their use of the ISBAR during debriefing, it may just be the needed influence to perform this behavior as taught.

Project Objectives

- 1) Implement four IPE simulations for senior level pre-licensure BSN nursing students using FaceTime phone call to medical residents and Skype for debriefing.
- 2) Determine if the IPE simulation would improve students' self-assessed IPEC competencies in two domains, IP interactions and IP values using the IPEC Competency Self-Assessment Tool Version 3. by comparing the pre- and post-self-assessment survey results.
- 3) Determine if this IPE simulation would improve the use of the ISBAR communication format through improved scores on the Inter-Professional Critical Incident Report Evaluation Tool.

Definition of Terms

Embedded Cues: Information throughout the simulation such as signs, symptom, or clues which are intentionally implanted to provide information for the progression of the simulation and helps participants progress through the simulation so they can reach the listed objectives (INACSL 2016; NLN-SIRC 2013).

Confederate: Confederate is a term used to describe an embedded participant or role player utilized in the simulation. Individuals may be assigned a positive or negative role, distractor, or

another role that guides the simulation dependent on the goals of the simulation (INACSL, 2016).

Debriefing: Part of the simulation process aimed at reflective thinking, which typically occurs after the simulation has been completed. The debriefing process when performed correctly heightens participant self-confidence and enhances learning (Decker et al., 2013).

Hierarchies: Separations in professional positions based on culturally created standards which create barriers to communication and have negative impacts on patient outcomes (O'Daniel & Rosenstien, 2008).

High Fidelity: Is a type of simulated experience which uses a high level of interactivity and realism for the learner. This includes a standardized patient or a full scale computerized simulator for the patient mannequin. This raises the virtual reality and creates an extremely realistic learning experience (INACSL 2016; NLN-SIRC 2013).

INACSL standards of best practice: Standards set forth by the International Nursing Association for Clinical Simulation and Learning (INACSL), which were designed to advance the science of simulation, share best practices, and provide evidence-based guidelines for implementation and training (INACSL, 2016).

IPEC competencies: Core competencies for IP collaborative practice developed by the IPEC expert panel to help prepare future health professionals for enhanced team-based care of patients and improved population health outcomes (IPEC, 2016).

Interprofessional education: Application of a pedagogy in which students from two or more professions come together to learn as a team with the objective of cultivating a collaborative practice through interactions between professions. This approach is characterized by improved client or patient centered healthcare (Clark, 1993).

Monoprofessional: Single professional or vocational program such as lab technicians, radiology technicians, speech and language therapy learning pedagogy exclusive of other professions and programs. This is an example of learning in silos (Bergur, 2017).

Pre-brief: An informational or orientation session held prior to the start of a simulation and given to the participants to set the stage for a scenario, and assist participants in achieving scenario objectives (Lopreiato, 2016).

Primary nurse: Simulation role of the student who is taking the lead in the simulations and making the Facetime calls to the medical resident.

Telecommunication: Exchange of information over a significant distance by electronic means and refers to all forms of voice, data and video transmission, when the exchange of information between communication participants includes the use of technology (Techopedia nd.).

Skype: Voice over internet service which includes video as well. Its name came from a combination of the two words sky and peer and has been shown to be especially useful in education for developing communication skills (Langenau, Kachur, & Horber, 2014).

FaceTime: Proprietary video calling product developed by Apple Inc. and is available on supported mobile devices such as iPhone 4, iPad 2, iPod Touch, or Mac Computers. Unlike Skype or Facebook Messenger, FaceTime exclusively supports one-on-one calling, no group calls, and can only be used to call someone with a supporting Apple device (Barbee, 2018).

IPEC Competency Self-Assessment Tool Version 3: Drawing on the validity of the IPEC competencies, the IPEC Competency Self-Assessment Tool version 3 was designed to assess self-efficacy related to the IP interactions domain and the IP values domain at the healthcare degree program level, through individual self-assessment. (Lockeman, 2015)

Interdisciplinary Critical Incident Report Evaluation Tools: Interdisciplinary Critical Incident Report Evaluation Tool developed by is based on the ISBAR communication format, to evaluate student interdisciplinary critical incident reports (Guhde, 2010).

Review of the Literature

A review of the literature was conducted to evaluate IP communication training, the use of the ISBAR tool, and educational strategies used to offer communication training for nurses. An emphasis was placed on what was already known about the use of high fidelity simulation in nursing education as a teaching and learning modality. This quality improvement project also incorporated FaceTime and Skype technologies as a way of creating an IP simulation experience. The review of the literature focused on research covering the following topics; simulation in nursing education, high fidelity simulation for clinical experience, IP simulation for improved confidence and self-efficacy, ISBAR as a communication tool and IPEC core competencies. The following are the findings of the literature review.

Use of High Fidelity Simulation as an Education Modality

Fronza, Liu and Bauman (2013) published a study in which a systematic review was conducted regarding the use of simulation in undergraduate education. After their inclusion and exclusion criteria were met, the review included seven studies conducted between January of 2009 and June of 2015. After synthesizing their results, they found students indicated satisfaction with simulation, that it fostered confidence and self-efficacy, as well as skills and knowledge acquisition. The study also indicated that IP simulation experiences were a valued approach in teaching. Several of the studies are qualitative and discuss student perspectives of simulation.

Doolen et. al. (2016) conducted a thematic analysis of the review of seven simulation reviews that met the inclusion criteria out of 2,309 reviews. The focus of this review was to examine simulation reviews on the use of high-fidelity simulation in undergraduate nursing education. Although it was a narrow focus it was purposeful. It brought awareness that simulation needs to be prioritized in undergraduate education as a valid learning tool. The review suggested a need for methodologically sound research that translates simulation outcomes to future performance and practice.

The National Councils of State Boards of Nursing (NCSBN, 2014) conducted a landmark study which set out to determine if simulation could be used to replace up to 50% of traditional clinical experience with comparable outcomes in National Council Licensure Examination (NCLEX) pass rates and clinical skill acquisition. This comparison study using randomized controlled longitudinal multi - site design confirmed that high-fidelity simulation is comparable in outcomes to traditional clinical experiences when similar standards to the study are implemented.

A total of 600 students enrolled in prelicensure programs at participatory study sites between the years of fall of 2011 and May 2013 participants from ten interested nursing programs. Control groups partook in traditional clinical learning and the study groups had varying amounts of clinical replaced with simulation 25% or 50%. Assessment Technologies Institute (ATI) RN comprehensive predictor tests, NCLEX results, the Creighton competency evaluation instrument (CCEI), the new graduate performance survey (NGNPS). Global assessment of clinical competency and readiness for practice, and the Critical Thinking Diagnostic test, were all used to determine the results of the study. The study did confirm that up to 50% of traditional clinical experience can be replaced with high-fidelity simulation with

comparable results under similar study conditions. This study did what Doolen et al (2016) was recommending, to obtain solid research on the topic of high-fidelity simulation in nursing education.

Communication Using ISBAR

Lancaster, Westphal, and Jambunathan (2014) conducted a study using ISBAR to promote clinical judgement in undergraduate nursing students. The researchers wanted to discover how students notice and interpret multiple embedded clinical cues and reflect these using ISBAR during a nursing pharmacology course. Although their results were not statistically significant, they did show that ISBAR was an effective tool in which to communicate these embedded cues, and to promote clinical judgement.

Kesten (2011) stresses that skilled communication and respectful interactions among the healthcare team members are critical to achieve optimization of quality patient care outcomes. Kesten (2011) published a study using a randomized, controlled, and experimental design comparing didactic alone to role play plus didactic, to teach the use of ISBAR and to determine whether this type of skilled communication instruction influences nursing students' knowledge. They used a convenience sample of senior nursing students and were randomly assigned. The sample group consisted of 104 senior nursing students. The intervention and control groups were not significantly different. The objective was to have students demonstrate appropriate use of the ISBAR tool. The mean performance scores of the didactic plus role-play students were significantly higher than those who had didactic instruction alone ($t = -2.6, p = 0.005$).

Meester, Verspuy, Monsieurs, and Van Bohaert, (2013) conducted a study which showed that ISBAR improves nurse to physician communication and reduces unexpected death. A pre- and post-intervention study which aimed to determine the effect of ISBAR on the incidence of

serious adverse events (SAE's) in hospital wards. After introducing ISBAR researchers found increased perception of effective communication and collaboration in nurses, an increase in unplanned intensive care unit (ICU) admissions and a decrease in unexpected deaths. They found after the introduction of ISBAR communication nurses were better prepared to call a doctor. They found there was a shift in earlier detection of serious adverse events and improved patient outcomes attributable to ISBAR.

Interprofessional Education Using Simulation

Kostoff, Burkhardt, Winter, and Shrader (2016) studied IP simulation using pharmacy students and nursing students to determine the impact of an IP simulation using the ISBAR communication tool on pharmacy students' self-perception of IP competence and reactions towards IP collaboration. Quantitative and qualitative methods were used to assess student satisfaction of the simulation, perceived competency, reactions toward IP collaboration, and future use of IP communication tools such as the ISBAR following the simulation. Using a convenience sample, 96 pharmacy students collaborated with nursing students within a required applications-based capstone course, on multiple patient cases in various settings using the ISBAR communication tool over the telephone. A retrospective pretest posttest survey design was used, with both parts administered simultaneously after the IPE intervention. Pharmacy students' responses to all 20 items on the Interprofessional Collaborative Competency Attainment Survey (ICCAS) completed after participating in the simulation indicated significant positive changes.

The conclusion of this study indicated the simulation was beneficial and student responses on satisfaction surveys were positive with a mean score of 4.2 on a 5-point Likert

scale. The student's self-perceptions of IP competence and attitudes toward IP collaboration increased while using IPS and the ISBAR tool.

Reising, Carr, Shea, and King (2011), conducted a comparison of communication outcomes in traditional versus simulation strategies in nursing and medical students to understand IP communication within the context of the educational environment. A prospective, descriptive survey design was used that included both quantitative and qualitative data. A convenience sampling of forty-one senior BSN students and nineteen second-year medical students were eligible to participate. Two medical students and three to four nursing students were randomly assigned to either the traditional roundtable or the simulation intervention. After participating in the scenario, students were provided with a survey to complete on a variety of indicators including: sense of their role on the clinical team, changing viewpoints of their role on clinical team, stress of the experience, managing group interaction, nervousness, and respectful communication. Both nursing and medical students overwhelmingly noted that the encounter was helpful in the context of learning IP communication skills by 100%, and that they had a better sense of their role on the clinical team 98.3%. The majority of students 55% also had a change in how they viewed their role on the clinical team. The study overwhelmingly concluded that a collaborative effort between nursing and medical students is a valuable encounter.

Shrader, Dunn, Blake, and Phillips (2015) determined the impact of incorporating standardized colleague simulations in a clinical assessment course and evaluating the impact on student confidence and IP communication skills. A qualitative design was used for assessing a convenience sample of one hundred students who completed the presurvey and post survey using a Likert scale. Student comments on self confidence in IP communication were evaluated. Four simulations using standardized colleagues portraying attending physicians in inpatient and

outpatient settings. Students interacted with the colleagues using the ISBAR communication technique and were evaluated on providing recommendations while on simulated inpatient rounds and in an outpatient clinic. For the outpatient-ISBAR simulations the mean score increased from 8.4 to 9.6 out of a possible 12 points from the first simulation to the second simulation($p<0.0001$). Student performance also improved for inpatient simulations. Mean scores increased from 4.69 to 5.62 out of 8 from the first to second simulation($p<0.0001$). Self-confidence in IP communication significantly improved in both inpatient and outpatient simulations, incorporating standardized colleague simulations into a required course improved students' self-confidence and performance regarding IP communication.

Skype and FaceTime as Educational Tools

Langenau, Kachur, And Horber, (2014) conducted a study where physician residents participating in four Web-based clinical encounters addressed pain with remote standardized patients. After completing a questionnaire regarding their experience with Skype 97% of the study participants indicated the format was convenient, and a practical learning exercise. Communication between the healthcare professional and the patient is extremely important to learn and develop throughout the education and career of the nurse and using Skype has been shown to be a valuable and effective teaching resource for reinforcing communication skills for students. A study by Langenau et al. supports the application of Skype in the suggested nursing education use for IP simulation.

Son, Ahmed, Omar, Wong, Mahtani, and Burzic, (2015) used a convenience sample for their qualitative design study trying to establish an alternative e-learning tool to provide medical education to a country in need of support. The study incorporated participants such as the emergency department registrar, pediatric doctors, medical student, Somalian pediatric lecturers,

and several final year medical students for the slowly growing medical community in Somali at undergraduate and postgraduate level. A convenience sample was used based on participants of the course. Six sessions over a period of eight weeks were arranged to deliver teaching on topics with a focus on clinical reasoning and emergency management skills. The initial feedback was positive and all participants agreed that Skype added a useful alternative to the limited distant learning opportunities. All participants felt Skype with its audiovisual functions to be a very useful alternative to the existing teaching tool. Over 80% of the participants would like more teaching in the form of Skype sessions. All participants identified network issues as a disadvantage and limiting factor. Delivering distant online teaching sessions via Skype with its audiovisual functionality, instead of purely text based online services, offers more advantages especially during clinical examination based or simulation sessions.

Summary

Skilled communication and respectful interactions among the healthcare team members are critical to achieve optimization of quality patient care outcomes (Kesten 2011). A summary of the literature concludes the use of IPS fosters confidence and self-efficacy, as well as skills and knowledge acquisition. IP simulation experiences are a valued approach which needs to be prioritized in undergraduate healthcare education as a valid learning tool.

ISBAR has been found to improve nurse to physician communication and reduce unexpected death. (Meester, Verspuy, Monsieurs, & Van Bohaert, 2013). ISBAR is an effective tool to promote clinical judgement during simulation and to communicate imbedded cues (Kostoff, Burkhardt, Winter, & Shrader 2016). Reducing barriers to IP communication through IPE can be accomplished through technologies such as FaceTime and Skype.

Project Design/Implementation

Project Goals

This QI project was developed to improve IP communication using ISBAR between health professionals to better prepare nursing students to be practice ready and increase safety in practice through IPE. The purposes of this project include preparing nursing students to organize and deliver clinical reports to the physician in a concise and organized manner, and impact student confidence with IP collaboration. The use of FaceTime and Skype provides an alternative method to facilitate IP simulation for a rural BSN nursing program when other professions such as medical residents are not readily available.

Project Setting

The simulations took place on a rural university campus in their newly constructed simulation lab. This lab has four simulation rooms. One room was dedicated to the simulation for the day, and the other three rooms were set up for the nursing students to use to make their phone calls to the residents via Facetime. The rooms were soundproof and provided the privacy they needed to communicate with the residents confidentially. The medical residents were located on a medical campus one hour from the university campus, but communicated with the nursing students via Facetime. The residents had didactic activities occurring simultaneously and would be paged to call the nursing student via Facetime. When paged, the resident would leave their didactic activity to return the page. The resident would call the student back using Facetime in an empty room to provide a quiet environment in which to converse with the nursing students. Once the call was completed they would return to their activity and await any additional phone calls to complete the day. The debriefing occurred via Skype in a classroom across the hall from the

simulation lab, to allow the Skype program to be brought up on the projector screen in the classroom and allow the students to see the resident who was talking.

Participants

The project was created for the senior level BSN students taking their critical care nursing course; Medical/Surgical Nursing III (Med-Surg III) for the BSN during the fall of 2017. All students enrolled in the course were at least 18 years of age and were required to participate in the simulations as part of their course grade. Students who opted to participate in the data collection phase of the project voluntarily signed the consent at the beginning of the course and were told they could withdraw their consent at any time. Only one student chose to withdraw their consent, and one student who had not signed the consent at the beginning of the course had opted in during the semester by signing and submitting their consent form. There was a total of 19 students registered for the course and participating in the simulations. Data was collected from all students participating in the simulations, but only the data from the 18 participating students was used for the project data analysis. The data collection occurred after the final simulation, but the unveiling of the consent forms did not occur until after the final grades for the course were posted. This was to protect the students right to not participate, and to not have it affect their grade for the course.

Timeline

This quality improvement project was conducted between the months of September and December of 2017. The simulations occurred on four separate Wednesdays, one each month, during the nursing students' class time. The dates chosen for simulations were coordinated with the scheduled didactic days of the medical residents' program.

The class used for this project was a two-and-a-half-hour timeframe. Four groups were randomly assigned at the beginning of the project. These groups were rotated through a one-hour simulation process which included the pre-brief, simulation and Facetime phone call. Two of the groups would start out in the simulation lab, while the other two groups completed their course exam. The final half hour of the two-and-a-half-hour class time was allotted for the entire group's debriefing session with the residents using Skype. This was repeated each of the simulation days and included a rotation of the groups.

Procedures

Skype and Facetime telecommunication technologies were used to create an IPE experience between students in healthcare from two different healthcare programs. The value of using a video phone call was chosen over voice only, to simulate a face-to-face encounter and promote authentic communication and relationship building. Skype and Facetime are two voice over internet protocol (VOIP) telecommunication tools, which have been used in education to promote communication and would facilitate this IPE.

Senior level BSN students collaborated with medical residents to create an IP simulation. The IPEC competency self-assessment tool was used to collect quantitative data about the nursing students' self-efficacy. Data was collected prior to the first simulation for a baseline and then again after each simulation day. The Inter-Professional Critical Incident Report Evaluation Tool was used to collect quantitative data to scores the accuracy with which the nursing students reported critical patient information using the ISBAR communication format when conversing with the medical residents during FaceTime phone calls.

There were four separate days of simulation one per month during the fall semester of their senior year of nursing school. Each nursing student was given two opportunities to be the

primary nurse and to speak to a medical resident using Facetime. Skype was used for debriefing after the simulations, to create an IP experience and facilitate communication during the debriefing process. A debriefing process was used after each simulation and provided time to discuss how things went. Both groups were offered the opportunity to provide feedback, including positive and constructive feedback, to help learn from each other.

The INACSL standards of best practice for debriefing were implemented but adjusted to meet the altered physical arrangement using Skype. Participation in the simulations were mandatory for the class. The project was explained on the first day of class, and the students were made aware that participation in the data collection at the end of the project was optional. Consent forms (Appendix E) were presented, explained and collected on the first day of class by the nursing program director, to protect the student's right not to participate or feel coerced to participate in the project.

To provide randomization of the groups, data collection packets were divided by four different colors and passed out randomly to the students on the first day of class. These color groups became the method to evenly distribute the students and create the rotations of the simulations. The distributed packets were used to keep the five copies of the measurement tool organized for each student. The students were instructed to self-identify their packet by choosing a four-digit number and writing it on the front of the packet prior to returning it in on the first day. These packets were kept under a double lock system in the simulation control room and brought out on each simulation day. Students would retrieve their own packets from the collection.

The two-and-a-half-hour class time was divided up so students would alternate between testing and simulation. Once the final simulation and Facetime phone calls were completed, the

students would reconvene to debrief as a group with the medical residents via Skype. After debriefing on the fourth and final simulation day, students submitted their data packets for the project. Once the final course grades were posted, the names of those who had given consent to participate in the data collection portion of the project were revealed.

The simulations were based on the patients from Elsevier Virtual Clinical Excursions (VCEs). This software program is a simulated hospital unit with six patients. Each patient has a chart to review, and video clips which show conversations with the patient about their condition. These VCE patients were the scenarios which the simulations were based on. In preparation for the simulation the student would receive assignments which included reviewing the chart for a particular VCE patient. Prior to the simulation day the students were required to spend time in the assigned patient's chart reading, learning about the patient they would be caring for, and recording information on their report sheet (Appendix I). This preparation activity was similar to what they already do in their nursing clinical while caring for patients. The preparation time helped them be prepared for the simulation and to answer questions about the patient which the residents might ask.

Students had ample time to review the patient's chart for information on their own time prior to the simulation day to arrive knowledgeable about the patient's present condition and history. The students used the provided report sheet to help them collect pertinent data from the chart and to have this information readily available to answer questions the residents may ask about lab values and other tests.

The VCE program by Elsevier (2016) was software the students were required to purchase for a previous class, and it worked well in this simulation to prepare them to care for the patient in addition to having the knowledge to answer the resident's questions. They were

also able to bring a computer into the room with them to refer to the chart when answering questions and talking with the resident on Facetime. Additional resources were assigned such as websites, online videos and journal articles to review for the simulation as the pre-simulation assignment and pre-brief content. These assignments would provide them with information and insights on best practices for the upcoming patient condition change.

The INACSL Standards of Best Practice for Simulation were used in the creation and the implementation of these simulations including the pre- simulation assignment, the pre-brief and the de-brief (Appendix H). The simulations all focused on a critical change in patient condition, and the need to notify the physician for orders. These condition changes and their treatment were featured in the pre-assignment and given as part of the Med Surg III course as a graded assignment, to ensure the students were prepared for a quality simulation experience. While the student spoke with the resident via Facetime, their ISBAR process was evaluated and recorded using the Use the acronym. Once the patient report was completed, the nursing student would receive feedback from the medical resident on how well they did on their report. The evaluation tool promoted conversation and dialogue between the nursing student and resident.

There were 12 medical residents who rotated through the four simulation days. Three residents would participate with each simulation day and would receive three pages from the nursing students via the hospital operator. The residents received no prior information about the simulation patient, only what the student nurses told them during their Facetime call. This created a more realistic situation for the residents and challenged their critical thinking.

When the student called the operator, they would ask for their specific resident by name to be paged. The operator would ask the student for their call back number and their name, and where they were calling from. The students would give the operator their name, and personal

cellphone number which would be used for the Facetime call. Once this process was complete the students would wait for their return call from the resident which was always an unpredictable and varied wait time. During this wait time the students would continue to prepare for their Facetime call and give report to the next two students who would prepare for their phase of the simulation experience.

To help with the organization of the simulations and the timing of the resident pages, three of the four simulation rooms in the simulation lab were designated as the Facetime calling rooms, one for each of the three residents for that day. Instructions on calling the hospital operator and the name of the resident were printed out and taped to the table in each of the calling rooms. These instructions included the hospital operator's phone number and the paging process for the nursing students, to ensure the correct resident was being paged for the correct simulation sequence. The students would use their own smartphones when paging the residents through the hospital operator, and when the resident called back the nursing student would instruct them to call using Facetime if they had not already done so.

Phase one of the simulation was repeated three times, with each pair of students from this phase calling a different resident. As students arrived for their simulation time they would either be prepared for a phase one simulation or be sent into a calling room to receive report from a pair of nursing students and prepare to become part of a phase two simulation. After receiving report from the students this second group of students would also receive an update on what the resident had ordered to be done for the patient.

Phase two would incorporate the new orders received from the medical resident. Upon assessing the patient's condition, the student would find a decline in the patient's condition. This new pair of students would then page the resident who had given the original orders, and prepare

for their Facetime call with a condition update, and results of the previously ordered lab work, X-rays, medications etc. The residents would receive the update, and then give additional orders which would be used for phase three. Phase three would run similar to phase two.

The following are the conditions covered in the patient scenarios: Delirium in a post-surgical patient. respiratory failure in a patient with a history of chronic obstructive pulmonary disease (COPD), Sepsis in a patient with osteomyelitis, and finally acute alcohol withdrawal in a patient admitted with an infection and history of COPD. The objective for the simulations were to properly assess the patient for changes in condition, provide patient care as prescribed, and notify the physician of changes in condition for orders using the ISBAR communication format. The orders were implemented and the physician updated with patient condition as needed.

Each of these patient conditions were used, one each simulation day. The simulation progressed as a rolling simulation with two nursing students starting the simulation off by receiving a brief handoff from the simulation faculty, once they achieved their objective of caring for the patient and assessing for changes in patient condition which required notifying the physician, they would end the simulation and proceed to phase two of calling the physician. During phase two, they would prepare to call the resident by discussing the pertinent information to include in their report. They would also give a handoff to two additional students who would prepare to care for this critical patient.

The student data packets were kept locked in a file drawer in the simulation control room between simulations to protect the data. The packets were retrieved by the students and updated after each simulation day. The packet format of housing the data helped the student to recall how they had rated themselves the previous simulation and could accurately note any improvements.

Fiscal Considerations

The primary researcher incurred less than \$810.00 in expenses to facilitate the quality improvement project. The in-kind cost of the facilities was estimated at \$500.00 and the project manager salary was \$250.00 for the actual intervention time. Payment was presented to the standardized patient for travel/gasoline expense of \$50.00. Further costs were associated with the refreshments given to the residents after the project concluded. No costs were associated with the use of FaceTime and Skype. All simulation supplies were available for use as part of the simulation lab. Although not required for the project, the primary researcher acquired the Certified Healthcare Simulation Educator (CHSE) certification to guarantee the most up-to-date simulation methods were used. Membership fee to the Society for Simulation in Healthcare (SSH) and the cost of the certification exam totaled \$489.00.

Ethical Considerations

Upon project approval of the Doctorate of Nurse Practice (DNP) proposal committee, the Institutional Review Board (IRB) application and approval process was completed and approval granted by three institutions, the hospital where the residents were working, the nursing students' attending university, and the university hosting this scholarly project. The proposal was submitted to the Jacksonville University IRB for approval, which was obtained August 24, 2017 after having received exempt status on August 18, 2017 for the project from the Munson Medical Center IRB. Exempt status was then received from the Baker College IRB after submitting the application and approval letter from Jacksonville University IRB.

No project data was collected from the medical residents because the primary researcher was unable to control the details of the medical residents' didactic program. An official letter was created and distributed to the medical residents participating in the quality improvement

project (Appendix A). The intent of the letter was to inform the residents of important information about the project such as the purpose and objectives, their role in the project, and to make them aware that no data would be collected from or about them.

The physician educator was the responsible person for assigning the residents to participate in the simulations for their didactic learning day. The residents were not graded for their participation in this project. Some benefits for the residents were identified through participation in this QI project. One benefit is the evaluation of interprofessional communication as a program objective. This had been a challenging task for the medical educators to evaluate with the residents while they work with other disciplines. This simulation gave the resident faculty the opportunity to evaluate their communication performance with the BSN nursing students without impinging on confidentiality at the bedside, nor impacting their work on the hospital units. A second benefit was to provide an opportunity for the medical residents to participate in IPE with nursing students. The medical resident program does simulation at the hospital, but does not involve nursing students. The program had wanted to involve nursing students in their simulation exercises and this was a way to collaborate and facilitate a working relationship.

The project was designed so all the nursing students participated in the simulation project as part of their didactic course, but the data collection portion of the project was voluntary through the submission of their data at the end of the course for participation in the analysis. A consent was obtained from all nursing students wishing to participate in the data portion of the project. These were collected with the principle investigator/course faculty not present, to eliminate any possibility of coercion. The consent forms were kept under lock and key in the program director's office and were revealed once the final course grades were posted. Students

were informed that participation in the data analysis portion was voluntary and they could withdraw their consent anytime during the project. This would be done anonymously by simply contacting the program director and requesting their consent be withdrawn. One student did withdraw consent at the end of the project. There was no extra work for students who consented to participate in the data analysis portion of this project. Participating or opting out of this project did not affect their course grade and the students were made aware of this prior to signing the consent.

Completed consents were collected the first day of class and kept under lock and key in the nursing program director's office, along with a student list matching the self-chosen identification numbers used on the data packets with a plan to be destroyed six months from the end of the project. All documentation of IPEC Competency Self-Assessment Tools were identified by number only during the project implementation period. The completed Interdisciplinary Critical Incident Report Evaluation Tools completed by the medical residents did have student identification on them, but were kept by the medical resident educator until the completion of the project and final grades were submitted. They were then matched to the corresponding IPEC self-assessment student packets for the data analysis process. These documents will be kept under a double lock system and destroyed December 9, 2018.

Data Analysis

Measurement Tools

Two tools were used to collect data. The first instrument was the Interdisciplinary Critical Incident Report Evaluation tool published by Guhde (2010) shown in Appendix B, and the second was the IPEC Competency Self-Assessment Tool Version 3 published by Lockeman (July 2015) and shown in Appendix C.

Interdisciplinary Critical Incident Report Evaluation Tool

Interdisciplinary Critical Incident Report Evaluation Tool developed by Guhde (2010) is based on the ISBAR communication format, to evaluate student interdisciplinary critical incident reports. To test the validity and reliability of the Inter-Professional Critical Incident Report Evaluation Tool, a pilot study was conducted with thirty-six students. Students were given instruction and practice in giving verbal reports on critical incidents during a medical surgical junior level laboratory course. Student reports were taped and listened to by trained evaluators using the evaluation tool to test interrater reliability. Using a paired t-test, it was found that the tool can measure a significant improvement in verbal reports ($t= 9.72$, $df 35$, $p < .000$). Interrater reliability was 94.8%. The tool can be used to identify weaknesses within a report so that students can receive specific feedback about their communication Guhde (2015). The use of the tool for this QI project encouraged communication accuracy, feedback, and conversation, between the nursing students and the medical residents, during the FaceTime phone calls.

The Interprofessional Critical Event Report Evaluation Tool states, on the form, it may be used and/or reprinted without the express permission of the author, provided written credit is given to the author Guhde (2010). Guhde highlighted the fact that graduate nurses are expected to give physicians concise reports on patient problems and stressed that educators need a method to evaluate whether student reports are effective. This tool is useful in improving communication between disciplines. Although the pilot study for this tool was conducted as part of a nursing lab exercise, Guhde (2015) suggested this tool might also be used to promote discussion between disciplines, and this was how it was used for this QI project. Below are the items on the tool for which the nursing students were evaluated, receiving one point for a yes when an item was correctly performed or zero points for a no or missing information.

Inter-Professional Critical Incident Report Evaluation Tool
I-Identifies self
I-Identifies patient
S-Patient problem
B-Background
A-Assessment
R-Recommendations
R-Read back
Patient problem identified early
Report follows orderly sequence
Pertinent information only
Extraneous information (List)

The tool is straight forward and lays out each section of the ISBAR acronym allowing a possibility of 10 points total for the following sections; I-Identifies self, I-identifies patient, S-Situation (patient problem), B-background, A-assessment, R-recommendations, R-read back. In addition to the ISBAR, there is a section which addresses if the patient problem was identified early, if the report followed an orderly sequence, if the report contained pertinent information only, and provides space to list extraneous information if needed. Once the tool is completed it is scored by adding up the total points. Using this tool allowed the medical residents to identify the strengths and weaknesses within the report so students could receive feedback about parts of the report done well in addition to what information was missed.

ISBAR was developed to improve communication hand-offs between health professionals and is an ideal format for students to be familiar with to improve safety. The Inter-

Professional Critical Incident Report Evaluation Tool was developed by Guhde (2010) to measure the effective use of the ISBAR protocol. Literature search did not reveal any additional studies using this tool other than the original validity and reliability study of the tool (Guhde, 2015).

IPEC Competency Self-Assessment Tool Version 3

Core competencies for interprofessional collaborative practice were developed by the Interprofessional Educational Collaborative expert panel (IPEC) and based upon the desired outcomes for graduating health care students ready to work collaboratively with other health professions. These core competencies fall into four domains and are meant to be used to help prepare future health professionals for enhanced team-based care of patients and improved population health outcomes. (IPEC, 2016).

The original IPEC Competency Self-Assessment Tool a 42-item questionnaire, included four domains of the IPEC competencies and was studied to establish the usability and psychometric properties of the questionnaire. The results demonstrated differences in scores by domain that can be used to structure future curricula, and provide valuable insights about the effects of different curriculum approaches to interprofessional education (Dow et.al., 2014).

The IPEC Competency Self-Assessment Tool Version 3 is a 16-item survey and includes 2 of the original four domains based on the IPEC core competencies. This shorter version of the original 42-item tool was designed by Lockeman (2015), and is clustered around two factors, interprofessional values domain and interprofessional interactions domain. This tool can provide a measure to determine the success of the various educational programs at preparing students for collaborative practice through interprofessional education (Lockeman, Dow, DiazGranados, McNeilly, Nickol, Koehn, & Knab, 2016). Based on a five-point Likert scale, this self-

assessment tool instructs the user to select and circle the number that corresponds with the user's level of agreement or disagreement of the statement, 1 being strongly disagree and 5 being strongly agree for each of the 16 statements (Appendix C). The even items pertain to the Interprofessional values domain, and the odd items pertain to the Interprofessional interactions domain.

IPEC Competency Self-Assessment Tool Version 3

1. <i>Interactions</i> -I am able to choose communication tools and techniques that facilitate effective team interactions.
2. <i>Values</i> - I am able to place the interests of patients at the center of in a professional healthcare delivery.
3. <i>Interactions</i> -I am able to engage other health professionals in shared problem solving appropriate to the specific care situation.
4. <i>Values</i> - I am able to respect the privacy of patients while maintaining confidentiality in the delivery of team-based care.
5. <i>Interactions</i> -I am able to inform care decisions by integrating the knowledge and experience of other professions appropriate to the clinical situation.
6. <i>Values</i> - I am able to embrace the diversity that characterizes the healthcare team.
7. <i>Interactions</i> -I am able to apply leadership practices that support affective collaborative practice.
8. <i>Values</i> - I am able to respect the cultures and values of other health professions.
9. <i>Interactions</i> -I am able to engage other health professionals to constructively manage disagreements about patient care.
10. <i>Values</i> - I am able to develop a trusting relationship with other team members.
11. <i>Interactions</i> -I am able to use strategies that improve the effectiveness of interprofessional team work in team-based care.

12. <i>Values</i> - I am able to demonstrate highest standards of ethical conduct in my contributions to team-based care.
13. <i>Interactions</i> -I am able to use available evidence to inform effective teamwork and team-based practices.
14. <i>Values</i> - I am able to act with honesty and integrity in relationships with other team members.
15. <i>Interactions</i> -I am able to understand the responsibilities and expertise of other health professions.
16. <i>Values</i> - I am able to maintain competence in my own profession appropriate to my level of training.

The goal of this questionnaire was to help define the success of educational institutions at graduating collaborative health profession students. According to the Institute of Medicine (IOM), educators should prepare students to assess their own interprofessional competency and account for the potential effects of the practice environment on attitudes and overall performance (Institute of Medicine, 2009). These competencies are being used to transition healthcare educational programs from the prescribed and structured educational experience to a more self-directed, patient-oriented learning associated with professional practice.

Validation of the IPEC Competency Self-Assessment tool was completed through a two-phase study conducted in 2015 and lasting two years. The study included a multi-institutional sample and a cross sectional design, with students from several professional degree programs. Data from the first phase was used to refine the tool to the current 16 items. The second phase of the study using the current 16-item tool included students from allied health (n=127), dentistry (n=40), medicine (n=248), pharmacy (n=102), and social work (n=34). This online survey also included the nine-item Interprofessional Socialization and Valuing Scale (ISVS-9A) (King et al, 2016), to collect evidence of convergent validity. Higher scores were reported on the

Inerprofessional Values subscale than on the Interprofessional Interactions subscale, but the subscale scores were highly correlated with each other ($r = .84, p = .000$).

Internal consistency reliability for each subscale was high with Cronbach's alpha = 0.92 for the Interprofessional Interaction scale and alpha = 0.93 for the Interprofessional Values scale. For the 410 respondents who completed both instruments, scores from the ISVS-9A were highly correlated with both the Interprofessional Interaction subscale of the IPEC Competency Self-Assessment ($r = .68, p = .000$) and the Interprofessional Values subscale ($r = .66, p = .000$). In both phases of the study confirmatory factor analyses reveal that responses to survey items constructed directly from the IPEC competency statements fall into highly correlated factors.

According to Lockeman et.al (2016), Mean item responses and subscale scores on both subscales were higher for students who indicated that they had been a member of a healthcare team during their education and training than those who had not. Additionally, students who were further along in their training programs tended to have higher scores. Since practice and experience are common predictors for confidence in one's own abilities these findings support the use of the tool for accurately distinguishing different levels of self-efficacy.

Dr Kelly Lockeman PhD, director of Evaluation and Assessment for the Center for Interprofessional Education and Collaborative Care at Virginia Commonwealth University was contacted by email concerning the use of the IPEC Competency Self-Assessment tool version 3 for this quality improvement project. Permission was granted for the use of the tool, with no further permission needed (Appendix D). A caution was also offered, since the tool was developed as a research measure, results would be highly dependent on sample size. The use of the tool with only a small group of individuals may not show improvements that are statistically

significant. Dr. Lockeman indicated the tool could be used promote self-reflection and discussion during the debrief. Would those be of value to QI?

Data Analysis Discussion

Data was collected on hard copies of the two tools. The data from the Interprofessional Critical Report Evaluation Tools was kept confidential by the resident educator, and all copies were retained until the completion of the project, and then given to the principle investigator. The pre- and post-surveys of the IPEC Competency Self-Assessment Tool Version 3 were kept in a packet and self-identified by the nursing students for confidentiality. The packets were kept under lock and key in the simulation office. All data will be kept under a double lock system with a plan to be destroyed December 9, of 2018. No electronic videotaping of the Interprofessional simulations were produced.

Interprofessional Critical Event Report Evaluation Tool Results

The students were involved in 4 simulations over the duration of the project, but only 2 FaceTime phone calls were made per student when performing the role of the primary nurse. The residents evaluated the nursing students' accuracy of using the ISBAR format during the FaceTime calls using the Interprofessional Critical Event Report Evaluation Tool.

Summary statistics were run on the data from the Interprofessional Critical Incident Report Evaluation Tool. The data collected from the critical event reporting form was added for a single score and the overall means were calculated for a comparison. No hypothesis testing was run on this data since it was not applicable to all across groups. Only the overall means were calculated for a comparison across time.

Skewness and kurtosis were also calculated shown in Table 1. When the skewness is greater than 2 in absolute value, the variable is considered to be asymmetrical about its mean.

When the kurtosis is greater than or equal to 3, then the variable's distribution is markedly different than a normal distribution in its tendency to produce outliers (Westfall & Henning, 2013). Therefore, the data is normally distributed with no outliers.

The scores from the student Facetime calls from each simulation were averaged to calculate a mean score for comparison. Summary statistics were calculated and a comparison of the means was done looking for improvement over time. Table 1 shows the mean scores and summary statistics for the Interprofessional Critical Event Report Evaluation Tool .

Table 1

Summary ISBAR Report Statistics Table for Interval and Ratio Variables

Variable	<i>M</i>	<i>SD</i>	<i>n</i>	<i>SE_M</i>	Skewness	Kurtosis
Simulation 1	8.43	0.79	7	0.30	-0.86	-0.64
Simulation 2	9.33	0.52	6	0.21	0.71	-1.50
Simulation 3	9.33	1	9	0.33	-1.50	1.31
Simulation 4	8.80	1.14	10	0.36	-0.08	-1.48

Note. '-' denotes the sample size is too small to calculate statistic.

The students were evaluated on their effective use of the ISBAR report format by the residents during the FaceTime phone calls. Table 1 shows a comparison of the mean scores from each simulation using the Inter-Professional Critical Event Report Evaluation Tool. The mean score increased from 8.43 to 9.3 out of a possible 10 points from the first simulation to the second. The mean scores stayed the same between the second and third simulations, but decreased after the fourth simulation. Mean decreased from 9.33 to 8.80 out of 10 from the third simulation to the fourth. Although this decrease was not expected from the third to the fourth simulation, self-efficacy was increasing at the same time (Table 3, & Table 7). During the Skype debriefing sessions after each simulation, the medical residents encouraged the students to convey information they were unsure of, for the safety of the patient because it may be important. The students were having longer conversations with the residents the more comfortable they became.

The ISBAR data from the Interprofessional Critical Event Report Evaluation Tool showed an increase in extraneous information being given to the residents which decreased some of the students' scores and impacted the overall mean during the final simulation. Incorporating Interprofessional simulation using FaceTime phone calls and Skype for debriefing improved students' self-confidence and performance regarding interprofessional communication.

Not every student was scored by the residents with each simulation using the Interprofessional Critical Event Report Evaluation Tool. For this reason, hypothesis tests were not done on the data from the Interprofessional Critical Event Report Evaluation Tool, and only Summary Statistics were performed to compare the overall mean scores over time. For future studies it is recommended to use methods to add consistency with this tool, which would allow better comparisons to be made with the data.

IPEC Competency Self-Assessment Tool Version 3 Results

Prior to the first simulation, the nursing students completed the pre- simulation IPEC Competency Self-Assessment Tool for a baseline comparison. This self-assessed tool was then completed after each of the four IPE simulations and compared for change over time. Student surveys were tallied and an aggregate score obtained from each simulation for analysis.

Descriptive statistics were run separately on the results of the IPEC Competency Self-Assessment Tool Version 3, for both the Interprofessional Interactions Domain and the Interprofessional Values Domain. Both the Q-Q scatterplot for normality and the residuals scatterplot testing for homoscedasticity were done. These showed qualities of normal distribution of the data and no outliers detected in the models for either of the domains.

Mauchly's test was used to test for the assumption of Sphericity. The results show that the variances of difference scores between repeated measurements were significantly different

from one another with a ($p=.012$) for the interactions domain and ($p=.010$) for the values domain, indicating the sphericity assumptions was violated. Hypothesis testing was done using repeated measures analysis of variance (ANOVA) showing statistical significance for both the Interprofessional Interactions Domain ($p< .001$). and the Interprofessional Values Domain ($p< .001$). The Greenhouse-Geisser correction was used to adjust for the violation of the sphericity assumption. A Fredman's Rank sum was run as a non-parametric alternative to the ANOVA

Repeat measures ANOVA Results for the Interactions Domain

Table 2

ANOVA Output for Interprofessional Interactions domain

Source	Df	SS	MS	F	p	η_p^2
Within.factor	2.55	30.11	11.82	50.46	< .001	0.75
Residuals	43.28	10.14	0.23			

Note. Greenhouse-Geisser correction applied to degrees of freedom: Significant at the $p\leq 0.05$ level

Results. A repeat measures ANOVA was calculated for the mean scores from the Interprofessional Interactions domain using the Greenhouse-Geisser correction to adjust for the violation of the sphericity assumption. According to Greenhouse and Geisser (1959), this is the appropriate way to adjust for violations of the sphericity assumption. The results of the ANOVA (Table 2) were significant, $F(2.55, 43.28) = 50.46, p < .001$, indicating there were significant differences among the values of Interactions baseline, Sim 1 Interactions, Sim 2 Interactions, Sim 3 Interactions and Sim 4 Interactions. Table 3 list the mean values of the baseline measurement for the Interprofessional Interactions Domain and those after each simulation depicting significant differences in all measures with a continuous improvement in the mean score over time.

Table 3

Means Table for Interprofessional Interactions Domain Baseline and After Each Simulation

Variable	<i>M</i>	<i>SD</i>
Baseline	3.09	0.51
Sim 1 Interactions	3.53	0.59
Sim 2 Interactions	4.12	0.59
Sim 3 Interactions	4.45	0.43
Sim 4 Interactions	4.64	0.38

Note. $n = 18$.

Post-hoc. Since the overall test was significant, pairwise comparisons were examined between each variable level. Table 4 shows the actual *p* values for these posts hoc comparisons. The results of the multiple comparisons are listed and displayed in this table and indicate significant differences between all variable pairs except for between the third and fourth simulations for the Interprofessional Interactions Domain.

Table 4

Mean Comparisons for Interprofessional Interactions domain Baseline, Sim 1, Sim 2, Sim 3, Sim 4

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Baseline- Sim 1	-0.44	0.53	-3.50	.028
Baseline- Sim 2	-1.03	0.72	-6.08	< .001
Baseline- Sim 3	-1.36	0.61	-9.48	< .001
Baseline- Sim 4	-1.55	0.58	-11.23	< .001
Sim 1- Sim 2	-0.60	0.55	-4.62	.002
Sim 1- Sim 3	-0.92	0.57	-6.87	< .001
Sim 1- Sim 4	-1.11	0.64	-7.41	< .001
Sim 2- Sim 3	-0.33	0.39	-3.56	.024
Sim 2- Sim 4	-0.51	0.43	-5.11	< .001
Sim 3- Sim 4	-0.19	0.32	-2.47	.242

Note. '-' denotes the sample size is too small to calculate statistic. *M* and *SD* are calculated on the differences between variables in each comparison. The Bonferroni correction was used to calculate *p*-values. Significant at the $p < 0.05$ level

A Bonferroni p -value correction was used to adjust for multiple testing. Bonferroni corrections are a conservative way to analyze the means of pairwise comparisons according to Rafter, Abell, and Brasolton (2002). Figure 1 shows consistent improvements after each of the four simulations. The only comparison which did not show statistical significance was between the third and fourth simulations. By the fourth simulation, the level of improvement had plateaued. Improvements continued to be made but they were not enough to be considered statistically significant. The baseline score was a perception of their abilities without a proven assessment of their interprofessional skills. Going into the simulations the students felt confident in their interprofessional skills, but after the first and second simulations they realized they are not as confident in their interprofessional skills as they once thought. By the third and fourth simulations they were growing in their knowledge and skills which may explain the lack of significant improvements in the ratings.

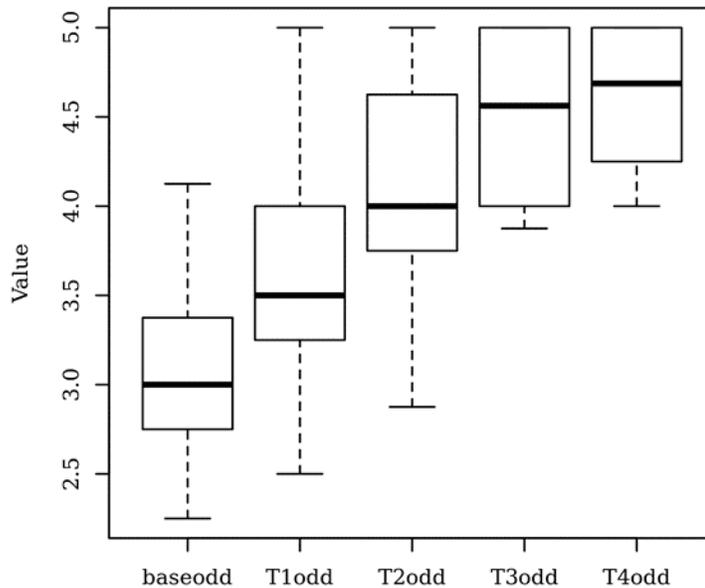


Figure 1. Boxplots for mean aggregate scores from IPEC odd questions ie. the Interprofessional Interactions Domain

Repeat Measures ANOVA Results for the Values Domain*Table 5**ANOVA Output for Interprofessional Values domain*

Source	Df	SS	MS	F	p	η_p^2
Within.factor	2.48	8.25	3.33	19.59	< .001	0.54
Residuals	42.12	7.16	0.17			

Note. Greenhouse-Geisser correction applied to the degrees of freedom: Significant at the $p \leq 0.05$ level

Results. The repeat measures ANOVA was calculated using the Greenhouse-Geisser correction to adjust for the violation of the sphericity assumption. According to Greenhouse and Geisser (1959), this is the appropriate way to adjust for violations of the sphericity assumption. The results of the ANOVA were significant, $F(2.48, 42.12) = 19.59, p < .001$, indicating there were significant differences among the values of the Interprofessional Values Domain baseline, Sim 1 Values, Sim 2 Values, Sim 3 Values and Sim 4 Values. Table 6 and figure 2 list the mean values of the baseline measurement for the Interprofessional Values Domain and those after each simulation depicting significant differences in all measures with a continuous improvement in the mean score over time.

*Table 6**Means Table for Interprofessional Values Domain Baseline and After Each Simulation*

Variable	<i>M</i>	<i>SD</i>
Baseline Values	3.97	0.40
Sim1Values	4.12	0.41
Sim2Values	4.40	0.48
Sim3Values	4.61	0.42
Sim4Values	4.78	0.33

Note. $n = 18$.

Post-hoc. Since the overall test was significant, pairwise comparisons were examined between each variable level. Table 7 shows the actual p values for these posts-hoc comparisons. The results of the multiple comparisons are listed and displayed in table 7.

Table 7

Mean Comparisons for Interprofessional Values domain Baseline, Sim 1, Sim 2, Sim 3, Sim 4

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Baseline- Sim 1	-0.15	0.43	-1.49	1.000
Baseline- Sim 2	-0.44	0.66	-2.83	.116
Baseline- Sim 3	-0.65	0.49	-5.62	< .001
Baseline- Sim 4	-0.82	0.42	-8.22	< .001
Sim 1- Sim 2	-0.28	0.50	-2.41	.276
Sim 1- Sim 3	-0.49	0.52	-4.06	.008
Sim 1- Sim 4	-0.67	0.42	-6.66	< .001
Sim 2- Sim 3	-0.21	0.38	-2.32	.331
Sim 2- Sim 4	-0.38	0.38	-4.27	.005
Sim 3- Sim 4	-0.17	0.29	-2.56	.204

Note. '-' denotes the sample size is too small to calculate statistic. *M* and *SD* are calculated on the differences between variables in each comparison. The Bonferroni correction was used to calculate p-values. Significant at the $p < 0.05$ level

To further examine the differences among the variables, *t*-tests were calculated between each pair of measurements (Table 7). A Bonferroni *p*-value correction was used to adjust for multiple testing. Bonferroni corrections are a conservative way to analyze the means of pairwise comparisons according to Rafter, Abell, and Brasolton (2002). Table 7 shows significant improvements after the baseline and sim 3 and 4. Sim 1 was significantly different from 3 and 4 and imulation 2 was significantly different from simulation 4. Figure 2 demonstrates a consistent increase in median score after each simulation. There is a high risk for a type two error which may explain the non-significant findings between the other post-hoc comparisons. Improvements continued to be made but they were not enough to be considered statistically significant. The baseline score was a perception of their abilities without a proven assessment of their

interprofessional skills. Going into the simulations the students felt confident in their interprofessional skills, but after the first and second simulations they realized they are not as confident in their interprofessional skills as they once thought. By the third and fourth simulations they were growing in their knowledge and skills with statistically significant improvements in the ratings on the tool to show their increase in self-efficacy. The nursing students rated themselves higher in the values domain ($M=3.97$) when compared to the Interactions domain ($M=3.09$). This was consistent with the results from the study of the tool by Bow et. al (2015).

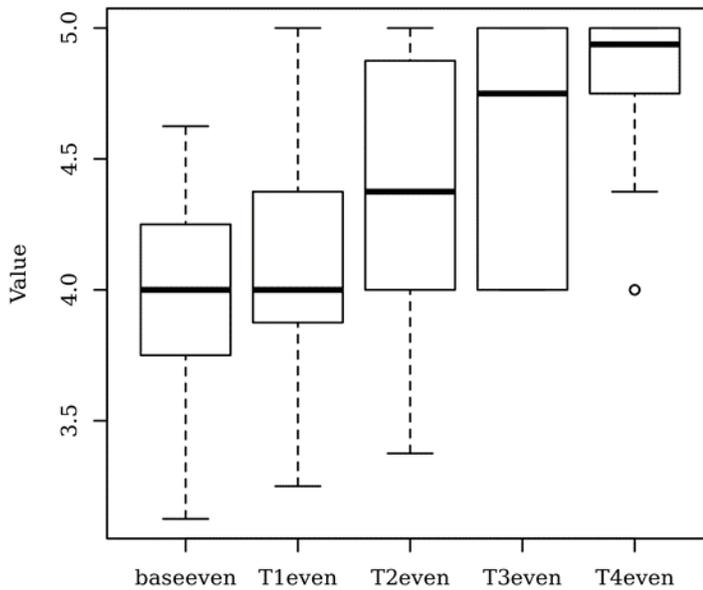


Figure 2. Boxplots for mean aggregate scores from IPEC even questions ie. the Interprofessional Values Domain baseeven=baseline, T1even=Sim1, T2even=Sim2, T3even=Sim3, T4even=Sim4 showing continual improvement over time.

Limitations of the Project

The medical residents did not attend a session to help with consistency in scoring the Interprofessional Critical Event Report Evaluation Tool. It was felt the tool was self-explanatory and did not require any explanation. Because some of the form may have more subjectivity to it, not having any guidelines on scoring the students may have had an impact on the residents use of the tool. The residents were not consistent from simulation to simulation.

Due to a limitation of the class time, only a portion of the students were able to talk to the residents each simulation day. These groups were unequal, and this format did not allow for hypothesis testing. For each of the 4 simulation days all students participated in a simulation (SIM) as a nurse, but only some of these students played the role of the primary nurse by calling the resident on Facetime to give a report; SIM 1 (n=7), SIM 2 (n=6), SIM 3 (n=9), SIM 4 (n=10). For future use of this project both students can call a separate resident and allow for even groups and hypothesis testing.

The results of the project were only measured from the perspective of the nursing students. Having the results evaluated from only one profession's view was a limitation of the project. Due to the inability to make decisions regarding the resident's schedule, and the challenges of coordinating with another institution, no data was collected from the medical residents. Being able to collect data from the residents would have been a valuable benefit for insights for improvements of the project. Reciprocating with evaluations from the nursing students could have been a benefit to the medical residents as well.

Connectivity was an issue with using Skype, and personal computers and phones were needed due to the inability to download software programs onto the hospital and college computers. The technology issues were somewhat imitating for this reason. FaceTime was the more useful technology of the two.

Project Objective Outcomes:

This QI project was developed to improve communication hand-offs using ISBAR between health professionals to better prepare nursing students to be practice ready, and increase safety in practice through IPE. The purpose of this project included preparing nursing students to organize and deliver clinical reports to the physician in a concise and organized manner, and impact student confidence with interprofessional collaboration. The use of FaceTime and Skype provides an alternative method to facilitate interprofessional simulation for a rural BSN nursing program when other professions such as medical residents are not readily available.

Implementation of interprofessional (IPE) simulations for senior level pre-licensure BSN nursing students was successful using FaceTime phone calls to medical residents and Skype for debriefing. One simulation was completed per month as part of a Medical Surgical III nursing course. These simulations were very well received by the nursing students, and gave them confidence communicating to providers and nurses alike. Students reported that it also prepared them for the most challenging part of their capstone clinical, that of calling the physician on the phone. Eighteen of the nineteen students in the Medical Surgical III nursing course participated in the data analysis portion of the project. The data from the self-assessed IPEC competencies tool showed continual improvement from both the interprofessional interactions domain and the interprofessional values domain after each of the four simulations.

For the performance of the students using the ISBAR format to report to the residents, the mean score increased from 8.43 to 9.3 out of a possible 10 points from the first simulation to the second. Student performance also improved for the third simulation when compared to the first simulation. Mean scores decreased from 9.33 to 8.80 out of 10 from the third simulation to the fourth. Although this decrease was not expected from the third to the fourth simulation, self-

efficacy was increasing at the same time. During the debriefing Skype sessions after each simulation the medical residents were encouraging the students to convey information they were unsure of for the safety of the patient because it might be important. The students were having longer conversations with the residents the more comfortable they became. The ISBAR data from the Interprofessional Critical Event Report Evaluation Tool showed an increase in extraneous information being given to the residence which decreased some of the students' scores and impacted the overall mean during the final simulation. Incorporating Interprofessional simulation using FaceTime phone calls and Skype for debriefing improved students' self-confidence and performance regarding interprofessional communication.

Anecdotal Information

The nursing students who participated in this quality improvement project are now in their final semester of nursing school. These students were recently surveyed to determine if they feel the simulations have had an impact on their interprofessional communication during their capstone clinical. They were asked two questions in a google survey and given the opportunity to comment anecdotally; the first, did they feel this QI project has had a positive impact on their confidence level talking to physicians, and second, did they feel this QI project has had a positive impact on their ability to talk with the physicians and effectively report concerns. 100% of the 10 respondents agreed to both of the above questions. The following are comments some of the respondents left as part of the survey.

- “This simulation was helpful”.
- “It helped prepare me for giving report to a physician and knowing what information is pertinent”. “The extra work we did produced positive results”.

- “It was equally important in giving report and communicating with other nursing clinicians during senior practice clinical.”
- “It improved my skills in communicating with providers and other RNs”.
- “It was a great project.”
- “I feel more confident about talking to physicians now which is one of the most intimidating parts of this final clinical”.
- “It helped me feel confident contacting the doctor.”

Recommendations for Future Practice

Future practice recommendations include developing an ongoing working relationship with the educators of the medical residency program at the hosting medical facility. This ongoing relationship would allow for keeping IPE events ongoing for both groups of students by incorporating it into their programs long-term, and for reciprocity by allowing the nursing student to play roles in simulations at the hosting hospital for the residents’ simulations. Creating ongoing dialogue to maintain collaboration with the medical residents will allow for improvements to occur in a way that also program. Investigating alternative designs to improve the future events which include suggestions from the residents for the flow of the IPE, would help to maintain continuation of the IPE program and strengthen relationships.

Suggestions for future simulation projects based upon the results of this project, would include decreasing the number of iterations from 4 to 3 simulations, to allow for the most efficient use of time and student involvement. A second modification would be to allow each pair of students to give their own ISBAR report by having the students page a separate resident. This would facilitate more ISBAR reports and allow for data collection for all across groups, and permit

hypothesis testing using parametric statistical analysis. The results of this simulation can be used to develop IPE for nursing programs which struggle to find other health professionals with which to collaborate.

Possible alternatives to the original simulation design could be used which would incorporate student suggestions. Having the simulations matched up with an alternate activity other than a course exam might be less stressful for the students. Some of the nursing students were frustrated having to alternate between the simulation and testing which caused some unforeseen anxiety. An alternate format may be beneficial for the students by matching it with a less high stakes assignment such as a self-paced educational project supporting the content of the simulation. Some suggestions from students were to have had such opportunities in earlier courses. Recording voice calls of students' ISBAR reports after simulations could be used at all levels of nursing courses. Having faculty replay at a later time would help students gain confidence in their ISBAR reports and receive specific feedback from instructors for improvement.

Another alternative use of this project when medical residents are not available include using students from other health professions to create an interprofessional experience. Respiratory therapy students, social work students, pharmacy students are just a few possibilities. An additional possibility might be using an alternate patient care provider (PCP) to take the FaceTime calls, and give feedback to the students. This would be a substitute possibility to provide a similar experience to strengthen students' interprofessional communication skills and self-efficacy.

What is the plan for sustaining this worthy intervention in this setting with this population going forward?

Implications for Practice

The results of the project show significant improvements in the means of the student's self-assessed IPEC competencies scores after participating in this interprofessional simulation. IPE can be cost prohibitive for some nursing programs, and others do not have options for IPE because of a lack of disciplines with which to collaborate. Nursing programs which do not have other professions with which to collaborate may find the use of Facetime and Skype beneficial to conduct interprofessional simulation. Other uses for Facetime and Skype may be investigated for forms of simulation such as standardized patients, and with programs such as the Respiratory Therapy, Occupational Therapy among other healthcare related fields. The outcomes of this project have shown beneficial for the improvement of nurse physician communication and improved self-efficacy for interprofessional practice.

Plans for Dissemination of Results

The results of this quality improvement project will be of interest to other nursing programs and healthcare institutions, especially those in rural areas who do not have other medical programs with which to collaborate for interprofessional education. For this reason, the results of this project will be presented at the Trends conference in the fall of 2018, and it will be of high priority to publish the results of this project in a Nursing Education journal where other nursing programs can benefit from its findings. The evidence from this study supports the use of telecommunication technologies such as Skype and Facetime in providing IPE opportunities such as these simulations.

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Appendix A

Dear Resident,

My name is Sara Wilk, I am a Doctorate of Nursing Practice (DNP) candidate through Jacksonville University in Florida. First and foremost, I would like to thank you for being a part of my DNP scholarly quality improvement project titled **Interprofessional Education through SKYPED communication**. The purpose of this project is to determine if using SKYPE telecommunication during interprofessional simulation will help senior level BSN nursing students develop interprofessional communication skills. Improving interprofessional communication has a positive impact on quality, safety and patient outcomes in healthcare. **It is important you know that no data will be collected on you or your performance during this project.** I would also like you to understand your participation in this project is part of your didactic coursework, but you will not be receiving a grade for your performance in the project.

Nursing student data:

This project is set up as part of the nursing student's course work for their Medical Surgical critical care nursing course through Baker College of Cadillac, and all students will be participating in the simulations. Informed consent will be obtained from students participating in the data analysis phase of the project which is voluntary, and students may withdraw their consent at any time. Consenting to participate in the data analysis phase of the project does not increase the nursing student's course work or impact their grade in any way. You as the resident will not know which nursing students have consented and which ones have opted out. All data collected will be kept confidential and submitted as an aggregate.

For questions regarding the project please contact me, Sara Wilk at swilk01@baker.edu or by calling me at 231-883-7225. Additional questions may be directed to my project chairperson, Professor, Leigh Hart, PhD, ARNP-BC, lhart@ju.edu or by phone at 904-256-7600 or to the Jacksonville University IRB chair, Dr. Michael Justiss who can be reached at mjustis1@ju.edu or 904-256-8917. I am grateful for your participation,

Sara Wilk MSN/ED, RN, CCRN

Appendix B

Inter-Professional Critical Incident Report Evaluation Tool

	YES	NO
I Identifies self		
I Identifies patient		
S Patient problem		
B Background		
A Assessment		
R Recommendations		
R Read back		
Patient problem identified early		
Report follows orderly sequence		
Pertinent information only		
Extraneous information (list)		
Total score		

Note. Copyright © 2010 by Jacqueline Guhde. “Inter-Professional Critical Incident Report EvaluationTool” may be used and/or reprinted without the express permission of the author, provided written credit is given to the author. Guhde. (2010)
 One point is given for each item done correctly. 0 points for a No.

Appendix C

IPEC Competency Self-Assessment Tool VERSION 3 (July 2015)

INSTRUCTIONS: Based on your education or experience in the health care environment, select/circle the number that corresponds with your level of agreement or disagreement on each item.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I am able to choose communication tools and techniques that facilitate effective team interactions.	1	2	3	4	5
2. I am able to place the interests of patients at the center of interprofessional health care delivery.	1	2	3	4	5
3. I am able to engage other health professionals in shared problem-solving appropriate to the specific care situation.	1	2	3	4	5
4. I am able to respect the privacy of patients while maintaining confidentiality in the delivery of team-based care.	1	2	3	4	5
5. I am able to inform care decisions by integrating the knowledge and experience of other professions appropriate to the clinical situation.	1	2	3	4	5
6. I am able to embrace the diversity that characterizes the health care team.	1	2	3	4	5
7. I am able to apply leadership practices that support effective collaborative practice.	1	2	3	4	5
8. I am able to respect the cultures and values of other health professions.	1	2	3	4	5
9. I am able to engage other health professionals to constructively manage disagreements about patient care.	1	2	3	4	5
10. I am able to develop a trusting relationship with other team members.	1	2	3	4	5
11. I am able to use strategies that improve the effectiveness of interprofessional teamwork and team-based care.	1	2	3	4	5
12. I am able to demonstrate high standards of ethical conduct in my contributions to team-based care.	1	2	3	4	5
13. I am able to use available evidence to inform effective teamwork and team-based practices.	1	2	3	4	5
14. I am able to act with honesty and integrity in relationships with other team members.	1	2	3	4	5
15. I am able to understand the responsibilities and expertise of other health professions.	1	2	3	4	5
16. I am able to maintain competence in my own profession appropriate to my level of training.	1	2	3	4	5

For more information, contact Kelly Lockeman, PhD, Virginia Commonwealth University (kslockeman@vcu.edu).

Appendix D

EMAIL Permission for use of the IPEC instrument**Sara Wilk <sara.wilk@baker.edu>**

Jun 19

to kslockeman

Kelly Lockeman,

I am thinking of using the IPEC Competency Self-Assessment Tool Version 3 (July 2015) for my DNP project. I am inquiring if there is special permission needed to use this tool. I will be using SKYPE and Facetime to converse with the physician during simulation and debriefing hoping to see improvements in the self-Assessed scores. Let me know if you feel this would be an appropriate use of the tool and if there is anything else I will need to do to use the tool

My Best,

Sara Wilk

**Kelly Lockeman <kelly.lockeman@vcuhealth.org>**

Jun 20

to Sara

Hi Sara,

You are welcome to use the IPEC Competency Self-Assessment tool. No other permission is needed. The only caution I would suggest considering is that this tool was developed as a research measure, so results will be highly dependent on your sample size. If you are using this with only a small group of individuals, you may not see improvements that are statistically significant, but you may be able to use the tool to promote self-reflection and discussion during your debrief.

Kelly--

Kelly Lockeman, PhD
Assistant Professor, School of Medicine
Director of Evaluation and Assessment
Center for Interprofessional Education and Collaborative Care
Virginia Commonwealth University

From: Sara Wilk [mailto:sara.wilk@baker.edu]**Sent:** Monday, June 19, 2017 5:10 PM**To:** kslockeman@vcu.edu**Subject:** [EXTERNAL] IPEC tool

Appendix E



INFORMED CONSENT FORM

Thank you for your interest in this scholarly project. This form spells out the details of the project.

Project name: Interprofessional Education through SKYPED communication

Project investigator: Sara E. Wilk, MSN/ED, RN, CCRN
Doctorate of Nursing Practice (DNP) candidate Jacksonville University

Purpose of this project: This is a quality improvement project. The purpose of this project is to determine if using SKYPE telecommunication during interprofessional simulation will help senior level BSN nursing students develop interprofessional communication skills.

Participation in this project: All students will participate in the simulations of this project as part of your coursework, but participation in the data analysis phase of the project is completely voluntary. Students who wish to participate in the data analysis phase of this quality improvement project should volunteer by signing this consent form, be at least 18 years of age, and enrolled in NUR 4150 Medical/Surgical Nursing III for the BSN course in the Fall 2017 semester at Baker College of Cadillac. There is no extra work for students who are in this project. Participating or opting out of the data analysis phase of the project will not affect your course grade. Students who are a part of this project will not be paid or rewarded in any way, including but not limited to money or other gifts, extra credit points, favors or preference by the instructor or college.

Benefits and risks: The benefits of participating in this project include a strengthening of interprofessional communication skills for future professional success, positively impacting the nursing program for future students, and observing a nurse as leader through this quality improvement project. A Possible risk of participating in this project is a feeling of being pressured to participate by the project investigator. This risk will be reduced by knowing that participation is completely voluntary. There is no payment or reward for participating, and being a part of this project. Choosing to participate or opting out will not affect your course grade. This information will be clearly communicated in the introduction presentation both verbally and in print as presented in this consent form.

Confidentiality: All information collected for this project will be kept private under lock and key. Those who have consented or not consented to participate in the project will not be known to the course instructor until after the course grades are due. Identification numbers will be assigned to personal information; only the project investigators will have access to the names and identification numbers. The course instructor will not have access to the identification numbers until after the course grades are due.

Voluntary participation and withdrawal from project: Participation in the data analysis phase of the project is completely voluntary. Students have the right to withdraw from the data analysis phase of the project at any time during the project. There is no penalty for withdrawing consent. Withdrawing from the data analysis phase of the project does not change the required workload or assignments of the course.

Questions regarding the project: Please ask any questions you may have of the principle investigator during this introduction presentation and the reading aloud of this consent. Afterward, you may direct your questions to Sara Wilk at swilk01@baker.edu or by calling her at 231-883-7225. Additional questions may be directed to Sara Wilk's project chairperson, Professor, Leigh Hart, PhD, ARNP-BC, lhart@ju.edu or by phone at 904-256-7600 or to the Jacksonville University IRB chair, Dr. Michael Justiss who can be reached at mjustiss1@ju.edu or 904-256-8917.

Consent to participate: I have read and I understand the terms of this consent. I have had the chance to ask questions about this project with project investigator, Sara Wilk. I understand the purpose and requirements to be a part of this project, the benefits, risks, methods to keep information private, and that being a part of this project is voluntary and I can withdraw from the project at any time without penalty or retribution. I also understand that participating or opting out will not affect the amount of assignments in the course or my course grade in any way. Signing this form does not waive any of my legal rights.

Print Name of Participant _____

Signature of Participant _____

Date _____

Appendix F**Email log****Wilk, Sara**

Dr. Klee,

I had emailed you earlier in March concerning the possibility of including the MSU Residents in my DNP quality improvement project this fall. I would love to be able to collaborate with you and your students. I am very interested in hearing what you think. The aim is to improve nurse physician communication through the use of SKYPE and interprofessional simulation. Please let me know if you are interested in hearing more about my project. I would also like to know if it will not be a possibility so I can adjust the project to meet my timeline. If you respond to all I will also get your response in my Baker email which I check a little more regularly. I appreciate your assistance in any way possible.

My Best,

Sara Wilk MSN/ED, RN, CCRN

Klee, David <DKLEE2@mhc.net>

Jun 24

to Sara, sara.wilk, Joseph

Sara, we would be happy to work with you on this. Do you have a time next week you could meet with me so we can discuss the project?-David

swilk01@baker.edu

Jun 24

to David, Sara, sara.wilk, Joseph

Dr Klee,

That is wonderful! Are you free Monday? Anytime. I work nights on A3 on Monday and Tuesday, so beyond that, Wed afternoon or all day Thursday would be my next best times. I could meet in the morning after working but I am usually a little tired or come in Tuesday or Wednesday late afternoon before I work. Looking forward to discussing this with you.

Thank you,

Sara Wilk

Appendix G



Since 1911
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Ms. Renee Rossi
Director, Research and Sponsored Programs
Jacksonville University
2800 University Blvd., North
Jacksonville, FL 32211
PH: (904) 256-7458
E: rrossi@ju.edu

Dear Ms. Rossi:

The purpose of this memorandum is to confirm the Baker College School of Nursing Cadillac Campus has given Sara Wilk, DNP student at Jacksonville University, permission to recruit Baker College nursing students as study participants for a QI project at its Cadillac facility for her project titled "Interprofessional Education Through SKYPED Communication"

Sara Wilk principle investigator will recruit subjects by informing them of the project during their NUR 4150 nursing course. The students will be notified of the project and what it will entail on the first day of the course by the principle investigator, and invited into the project. Those opting out will still participate in all aspects of the project simulations as a course requirement, but not participate in the final data collection phase of the project. The students registered for the Fall 2017 NUR 4150 Medical/Surgical Nursing III for the BSN at Baker College of Cadillac will be recruited for this project. This will be a convenience sample. The principle investigator is also the faculty member teaching the NUR 4150 course. For this reason, extra precautions will be taken to avoid coercion, and to ensure the students know participation is voluntary, and opting out will not impact their grade in any way. Special efforts will be included to ensure their personal rights to opt out will be respected. If JU has any questions, feel free to contact me at the below address. Sara Wilk has agreed to provide us with the aggregate data at the completion of her project.

Lori Dewey
Nursing Director
Baker School of Nursing Cadillac Campus
Lori.dewey@baker.edu

Appendix H

Delirium Pre –Assignment

Simulation Pre-Assignment

Review the documents in the Simulation pre-assignment link found in the Week 4 Module and the Youtube videos below the link on Assessing for Delirium. Once you have done this discuss how you would safely care for a patient who you suspect is developing delirium. What would you monitor for in this patient and how? Respond to at least one of your classmates on something they may have missed in their post.

Here is a link to the Delirium Practice alert journal article read this to prepare for this week's simulation
https://ol.baker.edu/bbcswebdav/pid-19638253-dt-content-rid-60457293_2/courses/nur4150-f2017-ca-u-

[i1.001/Delirium2016PracticeAlert.pdf](#)

Familiarize yourself with the CAM assessment in the link below

https://ol.baker.edu/bbcswebdav/pid-19638253-dt-content-rid-60457685_2/courses/nur4150-f2017-ca-u-

[i1.001/CAM%20tool.pdf](#)

Here is a video demonstrating the CAM assessment with a vented patient

<https://www.youtube.com/watch?v=yEwBzKTbJEk&feature=youtu.be>

Excellent video showing the delirium assessment in an elderly patient

<https://www.youtube.com/watch?v=jCXnoLHahM&feature=youtu.be>

Pre-brief - orientation

1. During this simulation you will be assessing your patient using the CAM assessment
2. Assign the student roles and explain any additional roles
3. Orient the students to the room and the patient,
4. Explain the limitations of the simulation
5. Explain where the medications are and equipment to administer (ie. How the IV is set up)
6. Does anything not make sense to you? Are there any additional questions?
7. Explain the fiction and the reality of the simulation

Give the report

Piya Jorden
MRN: 1868054
Sex: Female
Room: 403
Age: 68

Allergies: Allergic to cephalosporins. Penicillin sensitivity. Milk intolerance--causes stomach upset.

The majority of the history report was obtained by reading the chart from the VCE patient on Elsevier.

Change of Shift (1901-0730) Report -----

Patient resting intermittently overnight. Patient's daughter at bedside. Patient confused, restless, and agitated this morning, pulling at tubes and IV. Oriented to person only. IV D5NS with 20mEq at 100 ml/hr through peripheral site. Meperidine PCA intermittent dose set as ordered with lockout set and secure. PCA turned off at 0630 due to patient confusion. Lockout dose of Meperidine noted to have been delivered since 1900. Daughter admitted pushing PCA button for her mother during the night to encourage sleep. Physician notified of above. Abdominal dressing in place with binder secure, Jackson-Pratt drain to bulb suction with moderate serosanguinous drainage noted.

Nasogastric tube in place to continuous low suction with moderate brown drainage noted. Foley catheter in place draining adequate amounts clear dark yellow urine. On telemetry monitor with atrial fibrillation noted. Continuous oximetry monitoring. On oxygen therapy of 2 liter flow via nasal cannula. Bilateral breath sounds clear, diminished aeration auscultated left lower lobe. Sequential compression device to lower extremities. 0700 vital signs: Pain level 5/10 at operative site, T 99.6, BP 110/70, P 104, RR 18, SpO2 95% on 2 liter flow oxygen. Labs drawn this a.m.

Potassium level 3.4. Hct 24, Hgb 8.3.

Delirium De-brief

The debrief was left open for the medical residents and the nursing student to ask each other any questions they had about their specific career path, education, and what was left before the completion of their professional training.

Some of the questions the students had for the residents were, what type of information do you need from us when giving you a report on our patient.

There was a wonderful sharing of information on their thoughts and feelings after the simulation.

Respiratory Failure Pre-Assignment

Below is a ABG document for learning ABG interpretation, please complete this activity for the simulation this week.

https://ol.baker.edu/bbcswebdav/pid-19740452-dt-content-rid-60973037_2/courses/nur4150-f2017-ca-u-i1.001/ABGebook%281%29.pdf

The Discussion Board posts this week will be your response to the simulation and the use of SBAR. Please describe what you have learned from this experience and how it might help you in the future when communicating to the physician during an acute change in your patient's condition. Both of your posts will be due Saturday by midnight.

Pre-brief - orientation

1. During this simulation you will be assessing your patient's ABG results
2. Assign the student roles and explain any additional roles
3. Orient the students to the room and the patient,
4. Explain the limitations of the simulation
5. Explain where the medications are and equipment to administer (ie. How the IV is set up)
6. Does anything not make sense to you? Are there any additional questions?
7. Explain the fiction and the reality of the simulation

Give the report

The majority of the report was obtained by reading the chart for Jacqueline from the VCE patient on Elsevier.

Change of Shift (1901-0730) Report -----

Jacqueline Catanazaro

MRN: 1868048

Sex: Female

Room: 402

Age: 45

NKA

Change of Shift (1901-0730) Report -----

Jacqueline intermittently restless and agitated throughout the night. Patient removed nasal cannula, expressing worry that poison is in oxygen tubing. Patient resumed use of nasal cannula at 0630 after complaints of some breathing discomfort and with reassurance from RN of safety of oxygen use. Vital signs including SpO2 stable until 0645 when patient became very agitated. SpO2 decreased to 85% per oximetry. Labored breathing with bilateral wheezes and crackles in right lower lobe. Productive cough of frothy white sputum. Vital signs at 0730: T 98.6F BP 148/94 P 152 RR 32 SpO2 85% on 2 liters per minute oxygen by nasal cannula. PEFR 200. STAT ABG results: ph 7.35, PaO2 80, PaCo2 50, HCO3 24. STAT Albuterol nebulizer with no improvement in respiratory status.

Initial Observation at 0730

Jacqueline sitting up in bed with call light within reach. Agitated and anxious. Alert and oriented to person, place, time, and situation. Labored breathing with audible wheezing and substernal retractions. Skin color flushed. SpO₂ 85% per oximetry on 2 liters flow oxygen by nasal cannula

Respiratory Failure De-brief

The debrief was left open for the medical residents and the nursing student to ask each other any questions they had about their specific career path, education, and what was left before the completion of their professional training.

Some of the questions the students had for the residents were, what type of information do you need from us when giving you a report on our patient.

There was a wonderful sharing of information on their thoughts and feelings after the simulation.

Sepsis Pre-Assignment

Simulation Pre Assignment- Review the Documents posted in the Pre Simulation folder. What do you expect to be the first few actions you will take when you suspect your patient may becoming septic? How has having a sepsis protocol in place helped to decrease the number of deaths as a result of sepsis? First Post at least 200 words, and due before simulation begins. Second post should be a response to the simulation experience and phone call to the Medical Resident. due by MN on Saturday. Your second post can be your own initial response or in response to another students post.

Below is the link to the surviving sepsis campaign guidelines

https://ol.baker.edu/bbcswebdav/pid-19765791-dt-content-rid-61685024_2/courses/nur4150-f2017-ca-u-i1.001/Surviving%20Sepsis%20Guidelines.pdf

Below is the link to the sepsis guidelines

https://ol.baker.edu/bbcswebdav/pid-19765792-dt-content-rid-61685028_2/courses/nur4150-f2017-ca-u-i1.001/Protocols-Adult-Treat-Before-Transfer-Sepsis-Screening-Tool-Wesley-Children-Hospital.pdf

Below is the link to the severe septic shock guidelines

https://ol.baker.edu/bbcswebdav/pid-19765793-dt-content-rid-61685037_2/courses/nur4150-f2017-ca-u-i1.001/Protocols-Sepsis-Clinical-Pathway-Cookeville-Regional-Medical-Center.pdf

Give the report

The majority of the report was obtained by reading the chart for Harry George from the VCE patient on Elsevier. Change of Shift (1901-0730) Report -----

Harry George
MRN: 1868054
Sex: Male
Room: 401
Age: 54

Allergies: Urinary anti-infective causes rash, no other allergies.

Harry George agitated and tremulous intermittently throughout the night. Resting at intervals after Chlordiazepoxide given at 0200. Mild confusion, restlessness, and occasional combativeness upon awakening from sleep. Complaining of severe pain 10/10 in left foot. Hydromorphone given at 0715. Left foot red and swollen with

decreased sensation and movement. Left foot elevated on 2 pillows. Occlusive dressing in place over ankle, small amount of serous drainage. Peripheral IV infusing Normal saline at 125 ml/hr. Foley catheter in place to gravity drainage, adequate amounts of clear amber urine. 0720 vital signs: T 100.6, BP 138/88, P 99, RR 20. Blood glucose continues to be elevated. Sitter in attendance at bedside.

Sepsis De-brief

The debrief was left open for the medical residents and the nursing student to ask each other any questions they had about their specific career path, education, and what was left before the completion of their professional training.

Some of the questions the students had for the residents were, what type of information do you need from us when giving you a report on our patient.

There was a wonderful sharing of information on their thoughts and feelings after the simulation.

Alcohol Withdrawal Pre –Assignment

This week's blackboard post will include a case study in which the student will score a patient using the CIWA protocol and determine the correct Ativan dose to administer. For your second post chose another student to respond to a post which has determined a different score and discuss the differences in their scoring.

Margaret Smith is a 47 YO female who has checked into the hospital for Detox because she has a known alcoholism with a history of seizures upon detox in the past. The patient has voiced feeling like she is going to throw up, when you feel her arm you do not feel any tremors but she picks up a cup and she is slightly shaky. Her skin is slightly sweaty, and she states she is feeling anxious. You see her rocking in her bed when not in the room, and searching through her belongings in her suitcases and purse. Occasionally you see her reaching into thin air at nothing.

1. Review the following website and video to get an understanding of how to care for a patient in Alcohol withdrawal.

<https://www.americannursetoday.com/caring-for-patients-in-alcohol-withdrawal/>

<https://www.youtube.com/watch?v=yzWVZbJi9tI>

<http://www.thecalculator.co/health/CIWA-Ar-for-Alcohol-Withdrawal-Calculator-827.html>

We will be using the same patient this week as we used for the last simulation. I will be giving you an update about what has been going on with him and give you a few resources to read and view about CIWA protocol. Feel free to look over his chart a little for now to refresh your memory about his history. I think the best way to approach this is to move forward an entire year and this is another admission with very similar (identical) scenario. There will be a new Simulation with a new and different outcome this time,

<https://www.youtube.com/watch?v=NUKigZjcGy4>

<https://www.youtube.com/watch?v=fZOgXfWf07U>

<https://www.mdcalc.com/ciwa-ar-alcohol-withdrawal>

https://umem.org/files/uploads/1104212257_CIWA-Ar.pdf

Lorazepam PRN as follows

0-7 no medication needed Re-Assess in 4 hours

8-14 Lorazepam 4 mg PO Re-assess in 4 hours

15-20 Lorazepam 2 mg IV Re-Assess in 2 hours

21 or higher Lorazepam 4mg IV Re-Assess in 1 hour

2. What is the CIWA Score for Margaret in the below case study using the CIWA protocol
3. Will Margaret need any Ativan for the symptoms she is displaying? If so how much?
4. Research Ativan and list the drug category, use, dose, side effects, and special nursing considerations for the use of Ativan such as rate of infusion when given IV, does it need to be diluted?
6. List 3 nursing interventions from the website you will use in the care of this patient.

Case study

Alcohol Withdrawal Prebrief

10 minute Pre-brief, 20 min simulation, 20 min De-brief

Objectives

1. By the end of the simulation the students will be able to correctly assess a patient using the CIWA protocol

2. By the end of the simulation the students will be able to properly medicate the patient experiencing alcohol withdrawal, using the CIWA protocol.

Pre-brief - orientation

8. During this simulation you will be assessing your patient using the CIWA-Ar assessment and Ativan protocol and administer Ativan if indicated
9. Assign the student roles and explain any additional roles (mother will describe behavior and you can trust her assessment).
10. Orient the students to the room and the patient, CIWA protocol and calculator
11. Explain the limitations of the mannequin (ie. No tremors when felt wont display the agitation in his actions, skin wont reflect his temp)
12. Explain where the medications are and equipment to administer (ie. How the IV is set up)
13. Does anything not make sense to you? Are there any additional questions?
14. Explain the fiction and the reality of the simulation

Give the report

The majority of the report was obtained by reading the chart from the VCE patient on Elsevier. Change of Shift (1901-0730) Report -----

Harry George
MRN: 1868054
Sex: Male
Room: 401
Age: 54

Harry George agitated and tremulous intermittently throughout the night. Resting at intervals after Chlordiazepoxide given at 0200. Mild confusion, restlessness, and occasional combativeness upon awakening from sleep. Complaining of severe pain 10/10 in left foot. Hydromorphone given at 0715. Left foot red and swollen with decreased sensation and movement. Left foot elevated on 2 pillows. Occlusive dressing in place over ankle, small amount of serous drainage. Peripheral IV infusing Normal saline at 125 ml/hr. Foley catheter in place to gravity drainage, adequate amounts of clear amber urine. 0720 vital signs: T 100.6, BP 138/88, P 99, RR 20. Blood glucose continues to be elevated. Sitter in attendance at bedside.

Alcohol Withdrawal Debriefing

The debrief was left open for the medical residents and the nursing student to ask each other any questions they had about their specific career path, education, and what was left before the completion of their professional training.

Some of the questions the students had for the residents were, what type of information do you need from us when giving you a report on our patient.

There was a wonderful sharing of information on their thoughts and feelings after the simulation.

Summary

Now that we have had some time to reflect on this simulation, can you share one thing that you have learned that you will take with you into your nursing practice?

Appendix I

Sample Report Form for Student Use

RM#	Name:	Age:	Dr:	IV Site:	NG JP G Tube Trach CT				
Admit Date/DX:		PMH:		@ ml/HR					
Code Status:	Allergies:	Fall Risk Y/N	DIET Reg _____ Cardiac _____ ADA _____ FI Rest _____ NPO _____	Activity	NEURO A&O _____ Conf _____				
Lungs: RESP/O2 RA _____ O2 _____ SAT _____ SOB @ rest _____ With ex _____			Cough Absent _____ C&DB: Y/N Prod _____ Non-prod _____ I/S _____ MI every: _____		GU: Cont Incont Foley: UA needed Y/N				
GI Bowel sounds Last BM Sample needed Y/N	Skin/Wounds Incision: Dressing changes		Cardio: Tele: Edema:						
Blood Sugar	Date	K+	WBC	H&H	Bun/CR	PT/PTT			Notes/Meds

Link for an SBAR worksheet for students to use.

https://ol.baker.edu/bbcswebdav/pid-19765796-dt-content-rid-61685095_2/courses/nur4150-f2017-ca-u-

[i1.001/GenericReportToPhysician%281%29.pdf](https://ol.baker.edu/bbcswebdav/pid-19765796-dt-content-rid-61685095_2/courses/nur4150-f2017-ca-u-i1.001/GenericReportToPhysician%281%29.pdf)