Role Modeling SBAR Communication

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Abstract

Background: Communication is a critical healthcare skill; communication errors in healthcare settings have produced sentinel events and caused patient deaths. Situation, Background, Assessment, Recommendation (SBAR), a standardized clinical communication format, is being introduced in nursing education to support early development of successful inter-professional communication. Role modeling has been shown to be an effective way to teach students complex communication skills.

Method: Pre-licensure nursing students participated in a high fidelity simulation experience. One group of students viewed a video role modeling SBAR before beginning the simulation (N=20). Student communication using SBAR was evaluated after the simulation experience for both groups. The second group of students did not view the video role modeling SBAR until after completing the simulation (N=20).

Results: Viewing a role modeling video on SBAR before participating in a simulation had no effect on the students SBAR performance after the simulation. The students' evaluation of the video reported the video provided a clear, helpful demonstration of the SBAR communication method.

Conclusion: Role modeling can be used to improve students' ability to apply SBAR, however more research needs to be done to determine the most effective way to role model the behavior.

Role Modeling SBAR Communication

Chapter 1 Introduction

New graduate nurses are expected to be competent communicators in order to maintain patient safety. The healthcare system is becoming more patient centered and interdisciplinary, increasing the importance of effective communication using a standardized method. Nursing educators need to teach an evidence-based communication tool that students can easily learn and understand to increase inter-professional communication and patient safety.

Problem Statement

Background and Significance

Effective communication has a significant effect on patient safety, job satisfaction, and quality working environments (Institute for Healthcare Communication, 2011), The Joint Commission has reported that the root causes of 60-70% of sentinel events in healthcare over the last 10 years are related to communication problems (Narayan, 2013). A single sentinel event can cost an organization $200,000 (The Joint Commission, 2013). In 2014 there were 764 such self-reported sentinel events (The Joint Commission, 2014).

Nurses need to effectively communicate with members of a healthcare team; including physicians, nurses and other providers in a healthcare setting. New graduate nurses are expected to have effective communication skills (Gore, et. al, 2015). "Opportunities to process, practice, and perfect communication with patients and other healthcare providers using common language are a crucial component of the curriculum for all nursing students" (Wang, et.al, 2015, p. 881).

SBAR format (situation, background, assessment, recommendation), developed to streamline communication of important information, encourages assessment of the patient and anticipation of the information needed by other healthcare providers (Whittingham & Oldroyd,

2013). "SBAR communication has demonstrated that it enhances efficient communication that promotes effective collaboration, improves patient outcomes, and increases patient satisfaction with care" (Narayan, 2013, p. 507).

Internal Evidence

As a clinical nursing instructor, I have observed that communication skills are difficult for nursing students to learn. Students struggle when they need to communicate problems in the clinical setting and during educational simulation experiences. Student nurses often realize that they need to collaborate with a physician, however most pre-licensure students are unable to distinctly communicate the patient problem. Faculty at Arizona State University have been teaching students to use SBAR format as an effective communication tool, but the students continue to have challenges in demonstrating competency in focused inter-professional communication.

PICO Question

How does a video role modeling SBAR affect student application of the SBAR format (compared to no video role modeling video) in second semester pre-licensure undergraduate nursing students?

Search Strategy

Databases Searched

The need to develop innovative ways to teach SBAR led to an exhaustive search. Databases searched included Academic Search Premier, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Library, Education Resources Information Center (ERIC), Google Scholar, ProQuest Dissertations and Theses Global, Publisher MEDLINE (PubMed), and Psychology Information (Psych Info). Hand ancestry searching was performed

on the current references and resulted in duplicate references or articles published before 2009. A search of grey literature did not produce any relevant evidence.

Inclusion and Exclusion Criteria

The search terms used were SBAR, nursing students, role modeling, role modeling video, communication, and a combination of those words (Appendix A). The filters used included articles in the English language, full-text articles, and articles written within the last five years. Additional exclusion criteria were articles not focusing on SBAR, articles not focusing on role modeling, and non-research articles. Articles from inside or outside the US, focused on SBAR or role modeling, and published within the last five years were included in the literature review.

After the search was completed, 14 studies were chosen for inclusion in the literature review. Initially over 100 studies were reviewed using rapid critical appraisal, but several were discarded due to missing details or lack of relevance to the topic. Each of the 14 chosen articles were reviewed and the information obtained was placed into an evaluation table for comparison and examination (Appendix B).

Critical Appraisal and Synthesis of Evidence

Studies were reviewed and synthesized in two topic areas: teaching by role modeling and communicating using SBAR. The studies retained on role modeling or SBAR were Level V or VI on the Evidence-based Practice Scale (Melnyk & Fineout-Overholt, 2011).

Six studies were retained on learning through role modeling. All six studies involved pre-licensure undergraduate nursing students, although the studies focused on several different outcomes. In three studies, participants' critical thinking/clinical judgment increased when role modeling was used in the lesson (Johnson, et al., 2012; Lasater, et al., 2014; & Weaver, 2015). Two studies demonstrated increase in knowledge retention of the participants' after observing a

role model (Kardong-Edgren, et al., 2015 & Lasater, et al., 2014). In two studies, participants' reported an increase in confidence after watching a role model (Lasater, et al., 2014 & Weaver, 2015). Aronson, et al., (2013) reported an increase in student attention, retention, motor reproduction, and motivational processes after the students viewed a role modeling video. Authors reported an increase in student motivation (Jochemesen-van der Leeuw, et al., 2012) and a decrease in student anxiety (Johnson, et al, 2012) after observing a role model. In summary, these studies demonstrated the effectiveness of using role modeling to improve critical thinking/clinical judgment, knowledge retention, performance, confidence, and motivation.

Eight studies were retained on SBAR. Authors reported positive findings after the implementation of a SBAR communication tool for physicians, nurses, and nursing students. Five studies demonstrated a perceived increase in inter-professional communication after implementation of SBAR (DeMeester, et al., 2013; Fay-Hillier, et al., 2012; Kersen, 2011; Sears, et al, 2014; & Randmaa, et al., 2013). Three studies reported an increase in perceived patient safety when staff used SBAR (Fay-Hillier, et al, 2012; Sears, et al, 2014; & Randmaa, et al., 2013). Two studies displayed an increase in communication knowledge after implementation of SBAR (Kesten, 2011 & Wang, et al., 2015). Two studies reported an increase in inter-professional collaboration when SBAR was used (DeMeester, et al., 2013 & Guhde, 2014). Randmaa, et al. (2013) found a decrease in the number of incident reports due to communication errors after implementing SBAR. Guhde (2014) found an increase in clinical decision making while Foronda, et al (2014) found an improvement in communication performance using SBAR. These studies reinforce the use of SBAR to improve inter-professional communication, patient safety, communication knowledge, inter-professional collaboration, clinical decision making, and communication performance.

Conclusion from Evidence

SBAR is an evidence-based tool to help improve communication. Using SBAR has been shown to improve job satisfaction, patient safety, and inter-professional communication while decreasing sentinel events. Role modeling provides the students with an expert example to observe while the students are learning the correct SBAR format. Observation of a role model appears to allow the student to form a mental image of the intended behavior. Role modeling an evidence-based communication method such as SBAR is a reasonable intervention to implement on a trial basis.

Purpose and Rationale

The purpose of this project is to implement role modeling of an evidence-based method, SBAR (situation, background, assessment, recommendation), to improve inter-professional communication in undergraduate pre-licensure nursing students. SBAR is an evidence-based communication tool used in hospitals to help decrease sentinel events related to miscommunication. Role modeling has been successful in improving learning outcomes for many types of professional competencies. The proposed project involved planning, designing, implementing and evaluating a role-modeling video for improving pre-licensure students' clinical communication skills using SBAR.

Chapter 2 Applied Clinical Project: Methods and Results

Introduction

The Stetler Model and Bandura's Social Learning provide a framework for the SBAR evidence-based practice project. The project methods, including ethics, setting, participants, intervention, and analysis are provided. A description of the project results are provided to

determine if the use a role modeling video had a significant effect on the participants ability to apply and use SBAR.

EBP Model to Guide Implementation of Evidence

The Stetler Model was used to guide implementation based on the evidence. The model was chosen because it takes into account the internal (staff and organizational practice) and external (policies) forces influencing implementation. The Stetler Model has been used to redesign programs to improve patient satisfaction by individuals/teams and emphasizes evaluation of the evidence and critical thinking to develop a practice change (Sears, et.al, 2014).

The Stetler Model consists of five phases. The first phase is an exploratory phase where observations and questions were asked about SBAR and role modeling. This led to the creation of a PICOT question to improve SBAR Performance using role modeling. The second phase or evidence validation phase included an extensive search of all relevant data bases to perform a literature review and evidence search. The third phase involved the synthesis and critique of relevant evidence. The fourth phase involved the implementation of the proposed change, including approval by the Simulation Steering Committee and the Associate Dean of Academic Affairs, encouraging staff/faculty buy-in, and the development of the SBAR role-modeling video. The final phase of the Stetler Model, evaluation of the intervention, was completed using the Inter-Professional Critical Incident Report Evaluation Tool by J. Guhde (2010) and a survey to determine the effectiveness of the video.

Bandura's Social Learning Theory provided a conceptual framework for the project. The Social Learning Theory introduced by Bandura purports that new knowledge and behavior can be learned watching an expert perform the behavior. The observation of an expert is known as

role modeling. Observation helps students create images in their minds to aid in remembering the appropriate behavior or action at a future time (Jochemsen-van der Leeuw, et al, 2013).

Project Methods

Ethics

Institutional Review Board (IRB) approval was received for the project (Appendix E). The simulation experience where the project took place was part of the curriculum experience for all second semester undergraduate pre-licensure nursing students. Participants in the project were those students who agreed to have their data included and provided written consent before the simulation scenario began. Course faculty members were not aware of which students agreed to participate. Completed and blank consent forms were collected by a faculty member who did not teach in the course; these forms were not delivered to the course faculty until after the course was completed and course grades were posted. .

Setting and Organizational Culture

The project took place in a baccalaureate nursing department of a large 4-year university in the Southwest region of the United States. The evidence-based practice project took place in the college's simulation laboratory.

Participants

The participants were second semester baccalaureate nursing students in the adult health rotation during Fall 2015. Student assignment to specific lab days was made by administrators through the university registration system prior to planning this project. The students scheduled in lab on Wednesday were assigned to the video before simulation group and the students in lab

on Friday were assigned to the video after simulation group. The cultural environment of the organization includes a shared value that all students involved in research or curriculum evaluation projects have access to similar learning support and resources. In order to provide a comparison group while also providing resources to all students, students in the Friday group viewed the video after they completed the SBAR evaluation.

Procedure (Intervention)

A 2 minute role modeling video demonstrating a scripted SBAR communication was recorded on a password-protected server and downloaded for viewing before or after the simulation. Half of the students viewed the video prior to participating in the simulation. After the simulation, those students read a case study and electronically completed a SBAR template (based on the case study) (Appendix F). After the simulation, the other half of the students read a case study and electronically completed out a SBAR template electronically (based on the case study) before viewing the video (Appendix G).

Outcome Measures

The student SBARs were scored to determine if the essential elements of SBAR were present, using the Inter-professional Critical Incident Report Evaluation Tool developed by J. Guhde (2010) (Appendix H). Each item on the tool requires a yes or no answer. The tool was used for this project because of the instructional alignment with SBAR. The tool was objective, simple to use, and was pilot tested previously, making it a good fit with the project. The tool item "Read Back" was omitted for this project, as the participants were responding to a written prompt and would not receive verbal orders to read back.

Content Validity

Content validity of the Inter-professional Critical Incident Report Evaluation Tool was established by review of the literature and by an expert panel of three registered nurses, who were faculty members (Guhde, 2010). Two of the three registered nurses practiced and used SBAR on a daily basis, allowing the tool to be evaluated from a clinical perspective. Each person listened and scored 20 SBAR reports, the scoring guidelines were made more specific and an orderly sequence section was added to establish content validity.

Interrater Reliability

To determine inter-rater reliability for this project, a faculty member and the project coordinator independently scored fourteen previous student SBAR reports using the Inter-Professional Critical Incident Report (Guhde, 2010). Scores of the two raters matched for 139/140 or 99% of responses. The same two raters scored 25% of the project data to ensure continued interrater reliability. The results demonstrated 100/100 or 100% agreement of those responses.

Data Collection

Data collection was performed in September 2015. The data was not viewed until after students consented and course grades were posted.

Proposed Budget

The budget for this project was small. The cost of staff time and equipment for developing the video was supported by the Simulation and Learning Resource Center as an instructional material. The cost of printing was covered by the primary investigator, totaling less

than $100. Statistical support mentorship to guide the principal investigator was provided by the university.

Project Results

Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences 23.0 (SPSS 23.0). Power analysis predicted a needed sample of 30; the actual sample size was 40, with 20 in each group. Differences were analyzed using an independent t-test to compare mean group scores between the video after case study group and video before case study group.

Demographics

A total of 60 students with lab scheduled on Wednesday/ or Friday were invited to participate in the project. Forty students chose to participate in the project by completing the assigned tasks and providing permission for use of their data. The demographics provided by the university are for the entire second semester pre-licensure nursing class. of 121 students. The mean age for the entire class was 23.94 (SD = 6.20) and 98 (81%) were female. The class includes students reported as 78 (64.47%) White, 2 (1.7%) African American, 14 (11.36%) Asian, 22 (18.2%) Hispanic, 4 (3.3%) identifying as two or more races, and 1 (0.01%) did not respond. No specific demographics were obtained of the study participants.

Results

The maximum possible score on the tool was 10. In the video before simulation group, scores ranged from 4 to 10, with a mean of 7.10 (*SD* = 1.37*)*. The video after simulation scores

ranged from 1 to 9, with a mean of 6.85 (*SD* = 1.69). Using an independent t-test, students who watched the role modeling video prior to the SBAR evaluation did not have a significantly higher score than students who completed the evaluation prior to watching the SBAR video. (t = 0.51, $df = 38$, p = 0.61). These results do not support the use of a role modeling video to help improve students use and understanding of SBAR. A Chi-Squared test was performed on each individual tool item: some items differed between groups (Appendix I).

Participants responded to a brief evaluation survey about the video. Overall, the students completing the video survey reported that they enjoyed the video and found it helpful. They reported that benefits of the video included hearing someone doing the SBAR report, seeing someone do the SBAR report, examples of the information provided, and a clear demonstration. The recommended improvements to the video involved making the video more natural (not reading from a script), adding more information, breaking down each section of SBAR, and slowing the pace.

Discussion

The use of the role modeling video did not have a significant effect on the students' ability to use SBAR. Several reasons could explain why the video did not show a significant effect. The students had a very long simulation before doing the case study causing the students to be tired. The students were almost completed with the clinical rotation where SBAR was used in the clinical setting, so both groups were familiar with SBAR before the intervention. The students had different faculty members, who may have put a different level of emphasis on using SBAR. The sample size (N =40; 20/20) was small. The video may have been too short or

otherwise ineffective in demonstrating SBAR. Some students may not have paid attention during the video.

Limitations

Limitations of the project include the small sample size (N = 40). Future projects should consider scheduling the intervention at the beginning of the semester to eliminate prior influence on performance and encouraging all students to complete the entire SBAR.

Chapter 3

Introduction

Measured and Potential Impact of the Project (patient, provider, & system)

The potential impact of the project is improvement of the students' use of SBAR to effectively communicate. Students need to be able to use an evidence-based communication tool to provide safe and effective patient care. All healthcare providers need to be able to communicate and understand the needs of each profession. The ability to use a communication tool everyone understands could have a significant impact of patient safety. The measured impact on the students' ability was low, but could be due to several reasons already discussed. Implementing the innovation in a different way in the future may produce better outcomes.

Financial Implications of the Project (cost/benefit analysis)

The financial implications of the project were minimal. The video was made and improved in the simulation and learning resource center with the equipment already available. The one major cost was the time spent by the project director.

The potential benefit of the project included helping students improve communication skills needed for safe practice after graduation. The use of role modeling videos would offer an additional learning modality to students learning difficult concepts.

Impact of current policy to sustain/hinder project in the future

The results of the pilot project did not demonstrate an improvement in the students' ability to use SBAR. Of concern, students already report being overloaded with information, and adding more could worsen the information overload. However, both students and course faculty requested that the video now be available as a resource for future students. The project will be sustained by placing the video into the adult health curriculum for future students to use. The video will be adjusted and revised based on student feedback for continued use in the future.

Role as a leader and innovator that led to the successful development and implementation of project

The successful development and implementation of this project depended on several factors. Developing relationships with the simulation and learning resource staff was a significant factor in getting the project approved. These relationships provided a strong foundation when discussing the project and allowed for easier exchange of information. A successful presentation to the Simulation Steering Committee led to their approval of the project. The project was approved by the associate dean of the college to ensure the college was supportive of the evidence-based practice project.

The process of coordinating the project among many course clinical faculty members and recruiting student participants required developing relationships. It was important to make sure

that the students and faculty understood no additional work would be required of them and that volunteering meant providing access to the existing data that they had produced in the course.

Sustainability plan for project

The project will be sustained by changing the video based on student suggestions and incorporating the revised video into the curriculum. The role modeling video will be added to the adult health curriculum for use by future students. The video can be easily revised in years to come using the video equipment available in the simulation and learning resource center.

Implications for further application/ implications for further study or research

The video may help future students learn about SBAR. Developing students' communication skills is an important aspect of nursing education. Additional methods of using role modeling for communication could be evaluated in an effort to find the most useful options. The video concept also can be evaluated for use in providing students with an alternative way to learn other difficult concepts.

Describe gaps identified during project (gaps in literature, practice, and organization/policy)

The main gap identified during this project was in literature. Literature supports the use of role modeling as a general strategy, however, minimal literature was available on the specific format of role modeling videos to support learning. The gap demonstrates a need for more research to be done to determine the best way to help students learn difficult concepts through role modeling.

Conclusion

The use of a role modeling video to help students learn and apply SBAR did not have a significant effect as implemented in this project. Additional research and evaluation is needed to determine the best learning modalities to teach difficult concepts to students.

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Appendix A

Table 1

Number of articles for each database and subject searched

	SBAR	SBAR and nursing students	SBAR and role modeling	Role modeling	Role modeling and nursing students	Role modeling and communication	Role modeling video	Number of articles retained
Academic Search Premier	93	5	0	1886	21	176	7	5
CINAHL	118	0	0	463	4	1	0	1
Cochrane Library	8	1	0	128	1	4	0	0
ERIC	0	0	0	3737	22	471	152	
Google Scholar	18800	2180	3860	2890000	156000	2800000	1050000	0
ProQuest (dissertations and thesis)	1245	276	587	578678	73251	389827	142551	0
Psych Info	16	3	0	12748	77	1211	167	3
PubMed	159	8	0	16371	98	89	99	4

Appendix B

Table 2
Evaluation Table

Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
Aronson, B. (2013) Effectiveness of role-modeling intervention on student nurse simulation competency Country: United States Funding: None reported	SLT by Bandura KELT	Design: quasi-experimental, one group, pretest-posttest design Purpose: to assess the preliminary effectiveness of a theory-based role modeling intervention on student nurse competency	n = 24 FG = 83% W= 91% AA=7% NP = 2% No heath care experience = 30% m age = 24 Inclusion criteria: senior level students in their 4th year of a BSN program; enrolled in their senior year adult health course and capstone course Exclusion criteria: not meeting above AR = 0 Setting: Northeast United States	IV: role modeling DV: student performance in simulation	HFSCET Content validity established by extensive literature review and content expert recommendations Interrater reliability = 0.84 after extensive revision and testing Correlations: r = 0.98	SPSS 11 for TMS, paired t test, df Power analysis: (ES = 0.92, α = 0.50, power = 0.99)	m = 59.08 PT m = 87.08 p=0.000 ES = -0.36 (negative) t=4.535 df = 23	Level: VI (SDS) Strengths: student participation was voluntary, cost effective and easy to reproduce, addressed interrater reliability Weaknesses: low level of evidence, tested in one academic setting, SSS, need randomized trials, unsure if learning transferred from simulation to practice setting Conclusion: students improved 74% after exposure to role modeling intervention Feasibility: very feasible to use (inexpensive & not very time consuming) and inexpensive if video capabilities are present
De Meester, K. (2013) SBAR improves nurse-physician communication and reduces unexpected death: A pre and post intervention study	SLT by Bandura	Design: quasi-experimental, one group, pretest-posttest design Purpose: to determine the effect of standard SBAR	n = 425 MG = 10.6% m age = 40 (21-64)	IV: SBAR DV: perception of effective communication	CCCT Face validity: verified by one staff nurse, one director of nursing, and two physicians	Descriptive analysis, independent t-test, Pearson's chi-square, Fisher's exact	Pre-intervention m = 58.6 Post-intervention m = 63.9	Level: VI (SDS) Strengths: large sample size, significant amount of time and research (2 years)

Country: Belgium Funding: None reported		communication in deteriorating patients on the perception of effective communication and collaboration between nurses and physicians and the on the incidence of serious adverse events in adult hospital wards	Inclusion criteria: nurse working in Antwerp University Hospital, Exclusion criteria: not meeting above AR: 65 (high) Setting: Antwerp University Hospital			test, and Cronbach alfa	Cronbach's alpha = 0.871	Weaknesses: large AR, no historical controls, single center (not generalizable) Conclusion: significant reduction in deaths using SBAR, improvement in Inter-professional communication and collaboration. Decrease in unplanned ICU transfers and unexpected deaths Feasibility: difficult to obtain large sample size and took a long time to do the study (over 2 years), could be done with hospital agreement and significant amount of time
Fay-Hillier (2012) Communication and patient safety in simulation for mental health nursing education Country: United States Funding: None reported	JSF	Design: mini systematic review Purpose: to determine if literature is available on the effectiveness of SBAR as a communication technique	n= 5 1 systematic review, 2 Likert questionnaires, 1 pretest/posttest design, and one scenario analysis Inclusion criteria: article on simulation in medical and surgical settings between 2006-2010 Exclusion criteria; not meeting above	IV: SBAR DV1: Communication DV2: patient safety	Jeffries' nursing education simulation framework used in 2	No analysis done	No statistics reported	Level: V (mini systematic review) Strengths: involved 5 studies. Weaknesses: SSS, no controlled trials, minimal theoretical framework, no reliability or validity in testing instruments, no statistics reported Conclusions: simulation can promote patient-centered care and inter-disciplinary communication Feasibility: easy to do with only 5 studies (would prefer to have more studies with statistics results reported)
Foronda, C. (2014) Use of virtual simulation to improve communication skills of baccalaureate nursing students: A pilot	JSF SLT by Bandura	Design: within group, time-series design Purpose: to evaluate the educational innovation of	n = 8 Inclusion criteria:	IV: SBAR DV: communication	CliniSpace ISBAR rating sheet Inter-rater reliability, r = 0.84, p <0.001	SPSS 19	Performance one m = 14.5 Performance two m = 13	Level: VI Strengths: Pilot study, cost effective and cost effective

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

study Country; United States Funding; Sigma Theta Tau International, Beta Tau Chapter Bias: towards Innovation in Learning (developer of CliniSpace)		using virtual clinical simulation to improve communication skills of BSN students	baccalaureate nursing students enrolled in online Career Pathways course in the third semester Exclusion criteria: not meeting above AR: not reported Setting:				Highest m = 19	Weaknesses: SSS, no comparison group, no reliability and validity on instrument Conclusion: SBAR performances improved from session one to session two; students comfort with SBAR improved with simulation Feasibility: could be repeated, cost effective,
Guhde, J. (2014) An evaluation tool to measure interdisciplinary critical incident verbal reports Country: United States Funding: None reported	SLT by Bandura	Design: scenario evaluation Purpose: to develop a tool that educators can use to evaluate whether student interdisciplinary critical incident reports are effective	n=47 Inclusion criteria: baccalaureate junior-level students in a medical-surgical nursing course Exclusion criteria: not meeting above AR: 11 Setting: University of Miami	IV: SBAR DV: effectiveness of communication	Inter-Professional Critical Incident Report Evaluation Tool Interrater reliability: 94.8% across all items Content validity; literature review and expert panel of three registered nurses Correlation coefficient = 0.919	Paired t-test $T = 9.72$, df = 35, $p < 0.000$)	Pretest m = 6.25 (SD 1.81) Posttest m = 10.86 (SD 2.53)	Level: VI (SDS) Strengths: voluntary participation, Generalizable, can be used to Identify weaknesses in student Report, good reliability and Validity of measurement tool Weaknesses: verbal reports need to be taped, Inter-rater reliability important Conclusions: Students showed significant improvement in their verbal reports, could be used for inter-disciplinary education Feasibility: Easy to use tool, easy to replicate, Cost effective
Jochemsen-van der Leeuw, H.G.A. R. (2012) The attributes of the clinical trainer as a role	SLT by Bandura	Design: Systematic Review Purpose: to identify the	n= 17 Inclusion criteria: full text only,	IV: Role Models DV: characteristics of good role model	None reported	None reported	None reported	Level: III Systematic Review Strengths: extensive review of Literature, generalizable

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

model; A systematic review Country: Netherlands Funding: Committee for Activities to Promote the Education of General Practitioners		attributes characterizing clinical trainers as positive and negative role models for trainees	published before May 5, 2011, qualitative and quantitative studies, Exclusion criteria: duplicates, articles not reporting original studies, studies using role of clinical trainer instead as a role model AR: none reported					Weaknesses: not much research Available, several methods and Techniques used Conclusions: identified extensive lists Of attributes of positive role models And negative role models Feasibility: reproducible, will be Able to find more articles (this Article is from 2012).
Johnson, E. A. (2012) Geriatrics in simulation: Role modeling and clinical judgment effect Country: United States and United Kingdom Funding: None reported	SLT by Bandura TCJM	Design: quasi-experimental Purpose: to determine the effect of expert role modeling on nursing students' clinical judgment in the care of a simulated geriatric patient who experienced a repair of a hip fracture	n= 275 United States = 221 United Kingdom = 54 FG = 88.7% W = 88.7% Inclusion criteria: nursing students enrolled in first clinical course Exclusion criteria: not meeting above AR: 0 Setting: Nursing schools in United States and United Kingdom	IV 1: role modeling IV 2: simulation DV: clinical judgment	Lassiter clinical judgment rubric Reliability and validity ranging from r= 0.57-0.96	SPSS 17.0 Independent t-sample t-test Kruskals-Wallis $P = 0.05$	Clinical judgment: Nicotine X^2 (df = 1) 15.98, $p = 0.000$ Interpreting X^2 (df = 1) 14.50, $P = 0.000$ Responding X^2 (df = 1) 19.26, $p= 0.000$ Reflecting X^2 (df = 1) 0.060 p=0.441 Good power – power analysis required only 23 students in each group	Level: III Strengths: moderate level of evidence, Good reliability and validity of tool, Broad generalizability (using two Schools) Weaknesses: program differences Between the two countries, raters only Rated students at his/her facility Conclusions: viewing on expert role Model and watching her actions Significantly improves clinical Judgment, needs to include expert Role modeling into simulations Feasibility: easy to replicate if Simulation center has video capability
Kardong-Edgren, S. (2015)	Clark's and	Design: mixed design	n= 43	IV: modeling	SPSS 21	Mixed-effects	Self-guided	Level: V

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

Expert modeling, expert/self-modeling versus lecture: A comparison of learning, retention, and transfer of rescue skills in health professions students Country: United States Funding: None reported	Meyer's concept of learning by observing expert models	(using three modes of education) Purpose: to compare knowledge and performance measures at four times points over 6-month period	FG = 34 MG = 8 Nursing = 33 Respiratory = 7 Health professional = 2 Inclusion Criteria: health professional students at a mountain state university that completed CPR Exclusion criteria: not meeting above AR: 1 Setting: Boise, Idaho	DV: learning	Power analysis = 15 Commercialized training course used to minimize need for validation	analysis of variance Bonferroni post hoc	learning (m = 18.5, SD 1.75) Expert modeling (m= 20.06, 1.68)	Strengths: generalizable, good sample Size, students randomized into section Weaknesses: students given incentive To participate, selection bias, ability To transfer knowledge is unknown Conclusion: No differences in teaching Method, modeling helped the novice Learners build and maintain a mental schema Feasibility: could be replicated, Cost prohibited if all volunteers Receive financial incentive to participate
Kesten, K. (2011) Role-play using SBAR technique to improve observed communication skills in senior nursing students Country: United States Funding : none reported	Clark's and Meyer's concept of learning by observing expert models SLT by Bandura	Design: quasi-experimental design, pretest/posttest design Purpose: to determine whether the type of skilled communication instruction influences nursing students' knowledge of skilled communication; to determine whether the type of skilled communication performance in simulated experiences	n = 115 (115 for pretest/posttest and 109 SBAR observation) Second-degree students = 57 Traditional baccalaureate students = 58 m age = 24 (20-48) FG: 91.3% English as second language = 13%	IV: SBAR DV: role modeling	SBAR knowledge pretest/posttest instrument Content validity established by consultation with four expert faculty members teaching communication skills	Paired sample t-test analysis ES = -1.59 (negative)	SCK pretest m=62.1 (SD 14.5) SCK posttest m= 85.2 (SD 10.5) t-test (t=14.5, p<0.001)	Level: IV Strengths: large sample size Weaknesses: possible exposure to SBAR in clinical area influenced Results, generalizable, Conclusions: provides evidence that SBAR has an impact on patient Outcomes, medication errors, and Sentinel events; students receiving role Play significantly improved Communication skills Feasibility: could be replicated. Cost prohibited, potential problem recruiting student volunteers for

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

			Inclusion criteria: traditional and second degree senior nursing students Exclusion criteria: not meeting above AR: 0.9%					adequate sample size
Lasater, K. (2014) Role modeling clinical judgment for an unfolding older adult simulation Country: United States Funding: National League for Nursing Research in Education grant	TCJM	Design: Mixed methods Purpose: To examine the effect of an expert nurse role model on student clinical judgment in simulation and to explore whether clinical judgment skills transfer to the clinical setting	n = 275 FG = 88.7% W = 88.7% Inclusion criteria: pre-licensure nursing students Exclusion criteria: not meeting above AR; 0 Setting: four nursing schools in the United States and one in the United Kingdom	IV1: role modeling IV2: simulation DV1: clinical judgment DV2: confidence	Lasater clinical judgment model Reliability and validity assumed	No statistics reported (qualitative study)	No statistics reported (qualitative study)	Level: VI Strengths: generalizable Weaknesses: smaller post care Sample, low level of evidence Conclusion: participants exposed to Expert role model demonstrated More confidence, role models are Important in the development of Clinical judgment Feasibility: easy to replicate with Fewer subjects, low cost and Feasible if simulation center As video capabilities
Randmaa, M. (2014) SBAR improves communication and safety climate and decreases incident reports due to communication errors in an anesthetic clinic: a prospective intervention study	SLT by Bandura	Design: Prospective intervention study with comparison group using preassessment and post assessment Purpose: to study whether there was any change in	n= 139 Intervention group: Age m = 48.2 MG = 15 FG = 85	IV: SBAR DV1: perception of communication DV2: incident reports DV3:	ICU Nurse-Physician Questionnaire Safety Attitudes Questionnaire The ICU nurse-physician	Descriptive statistics, Wilcoxon Rank Test, Mann-Whitney U test, Fisher's exact test	Intervention group: communication openness: baseline = 4.3 (0.6) Follow-up = 4.3 (0.5)	Level: VI Strengths; large sample size, included Incident reports and safety culture Weaknesses: hard to generalize, Different group sizes, selection bias, Significant attrition rate

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

Country: Sweden Funding: Faculty of Health and Occupational Studies, University of Gavle, County of Gavleborg, Patient Insurance LOF, Swedish Society of Nursing		the proportion of incident reports caused by communication errors	LPN = 27 RN = 63 MD = 10 Control group: Age m = 48.6 MG = 18 FG = 43 LPN = 18 RN = 43 MD = 8 Inclusion criteria: licensed practical nurses, registered nurses, and physicians working in the operating room, intensive care units, and post anesthesia care units at participating hospitals Exclusion criteria: Not meeting above AR: 39 and 25 Setting: anesthetic clinics in Sweden	empowerment	questionnaire: Cronbach α = 0.64-0.88 Safety attitudes Questionnaire: Cronbach α = 0.70-0.85		Communication accuracy: Baseline = 0.73 Follow-up = 0.75 Competence: Baseline = 6.4 (0.7) Follow-up = 6.4 (0.6) Control group: Communication openness: Baseline = 4.4 (0.6) Follow-up = 4.4 (0.5) Communication accuracy: Baseline = 3.7 (0.8) Follow-up = 3.7 (0.9) Competence: Baseline = 6.5 (0.6) Follow-up = 6.5 (0.7)	Conclusions: SBAR showed significant Improvement in communication Accuracy, significant decrease in Incident reports Feasibility: expensive to replicate
Sears, K. (2014) The evaluation of a communication tool within	SLT by Bandura	Design: longitudinal study over 1 year in 4 phases (pre-implementation,	n= 705 Inclusion criteria:	IV: SBAR DV: communication	SBAR assessment tool SBAR assessment	Descriptive statistics	Pre-intervention: familiar with	Level: VI Strengths: large sample size,

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

an acute healthcare organization Country: Canada Funding: None reported		education sessions, post implementation, and final evaluation) Purpose: To evaluate the use and effectiveness of the SBAR tool on communication within a multisite acute healthcare organization, to assess current communication prior to the introduction of the SBAR tool and re-assess after the implementation of the SBAR tool	Exclusion criteria: AR: 0 Setting: Lake ridge Health		survey Evaluation survey No reliability and validity reported		SBAR = 57.1% Post-intervention: familiar with SBAR = 53.6%	Generalizable, plan for yearly assessments Weaknesses: short time frame, self-Reported data, each hospital in the System has own culture Conclusions: SBAR produced a Change in communication, SBAR Improves patient safety, Feasibility: could replicate with Significant buy-in, very expensive
Weaver, A. (2015) The effect of a model demonstration during debriefing on students' clinical judgment, self-confidence, and satisfaction during a simulated learning experience Country; United States Funding: National League for Nursing/Jonas Center for Nursing and Veterans Healthcare Scholar Program	National Education Simulation Framework KELT	Design: quasi-experimental with blind random assignment Purpose: to examine the effect of a model demonstration of a simulated learning experience on a students' clinical judgment, satisfaction, and self-confidence in learning	n = 96 no information provided on demographics Inclusion criteria: sophomore nursing students enrolled in a baccalaureate nursing program Exclusion criteria: freshman, junior, and senior nursing students AR: 0 Setting: Youngstown State University, Youngstown Ohio	IV: simulation DV1: clinical judgment DV2: self-confidence DV3: student satisfaction	National League of Nursing Student Satisfaction Self-Confidence in Learning instrument Reliability: Cronbach's α = 0.94 (satisfaction) and 0.87 (self-confidence) Content validity confirmed by four faculty members before the study Interrater reliability: index of agreement across items was 91% (little variability)	SPSS 20 MANOVA α set at 0.05 ES = 0.30 Power of 0.8 (needed 90, had 96) Cronbach's α 0.94 (satisfaction) and 0.87 (self-confidence)	Cronbach's α ranged from 0.690-0.845 (calculated at 0.812) Clinical judgment: F(1,94) = 60.051, p<= 0.001 Satisfaction: F(1,94)=0.144, p = 0.705 Self-confidence: F(1,94) = 3.601, p = 0.601	Level: III (Quasi) Strengths: moderate level of evidence, Had appropriate sample size, Generalizable, good reliability of Measurement tool and validity, good Interrater reliability Weaknesses: students evaluated one Week after model (more time between Evaluation may affect results), clinical Judgment was rated by watching a Video Conclusion: model demonstration can Be used to increase nursing students' Self-confidence, provides evidence For use of a model during debriefing Feasibility: provides good Information on topic, could be Replicated with improvements

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

AR = attrition rate; AA = African American; df = degrees of freedom; DV = dependent variable; FG = female gender; ES = effect size; HFSCET = heart failure simulation competency evaluation tool; ICU = intensive care unit; IV: independent variable; JSF = Jeffries Simulation Framework; KELT = Kolb Experiential Learning Theory; LPN = licensed practical nurse; m = mean; MD = medical doctor; MG= male gender; NP = not provided; PT = posttest; RN = registered nurse; SBAR = situation, background, assessment, recommendation; SCK = SBAR communication knowledge; SD = standard deviation; SDS = single descriptive study; SLT = social learning theory; SSS = small sample size; TCJM = Tanner clinical judgment model; W= white

Appendix C

Table 3
SBAR Synthesis Table

Author/Year	1	2	3	4	5	6	7	8
Design	P/PT	SR	SS	Verbal reports	P/PT	LS	PIS	P/PT
Level of Evidence	VI	V	VI	VI	VI	VI	VI	VI
Number of Subjects	425	5	10	36	109	209	169	18
Demographics								
%female	89.4						84.5	94.7
%male	10.6						15.5	5.3
Variables								
Independent								
SBAR	x	x	x	x	x	x	x	x
Simulation		x	x	x				x
Role modeling/playing				x	x			x
Dependent								
Inter-professional communication	x		X`	x		x	x	
Inter-professional collaboration	x							
Patient safety		x				x	x	
Patient centered care		x						
Communication performance			x					
Clinical decision making				x				
Communication knowledge				x				x
Incident reports due to communication errors							x	
Tools								
CCCT Tool	x							
P/PT		x						x
scenarios		x						
CIRS			x					
ICIRET				x				

Key: 1-DeMeester, et al, (2013); 2- Fay-Hillier, et al, (2012); 3-Foronda, et al, (2014); 4- Guhde (2014); 5- Kesten (2011); 6- Sears, et al, (2014); 7-Randmaa, et al, (2013), 8- Wang, et al, (2015)

CCCT tool = communication, collaboration, and critical thinking quality patient outcomes survey tool; CIRS = Clinispace ISBAR rating sheet; ICIRET = inter-professional critical incident report evaluation tool; ICU N-PQ = ICU nurse-physician questionnaire; LS = longitudinal study; PIS = prospective intervention study; P/PT = pretest/posttest; SBAR = situation, background, assessment, recommendation; SBAR AT = SBAR assessment tool; SBAR KP-PI = SABR knowledge pretest-posttest instrument; SS= simulation scenario

SBAR KP-PI					x			
SBAR AT						x		
ICU N-PQ							x	
Conclusions/Outcomes								
Inter-professional communication	↑	↑			↑	↑	↑	
Inter-professional collaboration	↑			↑				
Patient safety		↑				↑	↑	
Patient centered care		↑						
Communication performance			↑					
Clinical decision making				↑				
Communication knowledge					↑			↑
Incident reports due to communication errors							↓	

Key: 1-DeMeester, et al, (2013); 2- Fay-Hillier, et al, (2012); 3-Foronda, et al, (2014); 4- Guhde (2014); 5- Kesten (2011); 6- Sears, et al, (2014); 7-Randmaa, et al, (2013), 8- Wang, et al, (2015)

CCCT tool = communication, collaboration, and critical thinking quality patient outcomes survey tool; CIRS = Clinispace ISBAR rating sheet; ICIRET = inter-professional critical incident report evaluation tool; ICU N-PQ = ICU nurse-physician questionnaire; LS = longitudinal study; PIS = prospective intervention study; P/PT = pretest/posttest; SBAR = situation, background, assessment, recommendation; SBAR AT = SBAR assessment tool; SBAR KP-PI = SABR knowledge pretest-posttest instrument; SS= simulation scenario

Appendix D

Table 4

Role-modeling Synthesis Table

Author/Year	1	2	3	4	5	6
Design	P/PT (Quasi)	Quasi	MM	SR	MM	P/PT (Quasi)
Level of Evidence	VI	VI	VI	V	VI	VI
Number of subjects	24	275	42	17	275	96
Demographics						
% female	83	88.7	80.95		88.7	
%male	17	11.3	19.05		11.3	
White	91%	88.7%			88.7%	
African American	7%					
Other	2%					
Variables:						
Independent						
Role Modeling	x	x	x	x	x	x
Simulation		x	x		x	x
Dependent						
Performance	x					
Critical thinking/clinical judgment		x			x	x
anxiety		x				
confidence					x	x
satisfaction						x
Knowledge retention			x			
motivation						
Tools						
Simulation scenario	x	x			x	x
HFSCET	x					
LCJR		x			x	
SSCLI						x
CPR Quiz			x			
MERSQI				x		
Conclusions/Outcomes						
Performance	↑					
Critical thinking/clinical judgment		↑			↑	↑
anxiety		↓				
confidence					↑	↑
satisfaction						NC
Knowledge retention			↑		↑	
motivation				↑		

Key: 1- Aronson, et al,(2013); 2-Johnson,et al (2012); 3-Kardong-Edgren,et al, (2015);4-Jochemsen-van der Leeuw, et al, (2012); 5-Lasater, et al, (2014); 6-Weaver (2015)

DS = descriptive study; HFSCET = heart failure simulation competency evaluation tool; LCJR = Lasater clinical judgment model; MERSQI = medical education research study quality instrument; MM = mixed methods; NC = no change; P/PT = pretest/posttest; SSCLI= student satisfaction and self-confidence in learning instrument; SR= systematic review

Appendix E

Institutional Review Board Approval Letter

ASU Knowledge Enterprise Development

EXEMPTION GRANTED

Debra Hagler
CHS - Evaluation and Education Excellence
602/496-0802
DEBRA.HAGLER@asu.edu

Dear Debra Hagler:

On 8/3/2015 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Video Role Modeling of SBAR format
Investigator:	Debra Hagler
IRB ID:	STUDY00002972
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• data recruitment script, Category: Recruitment Materials; • consent form for video evaluation, Category: Consent Form; • ASU CONHI approval form, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • video recruitment script, Category: Recruitment Materials; • Video evaluation form, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • consent form for data usage, Category: Consent Form; • Day Kim IRB proposal 072815.docx, Category: IRB Protocol; • SBAR assignment form , Category: Participant materials (specific directions for them); • Simulation Learning Resource Center Approval letter, Category: Off-site authorizations (school

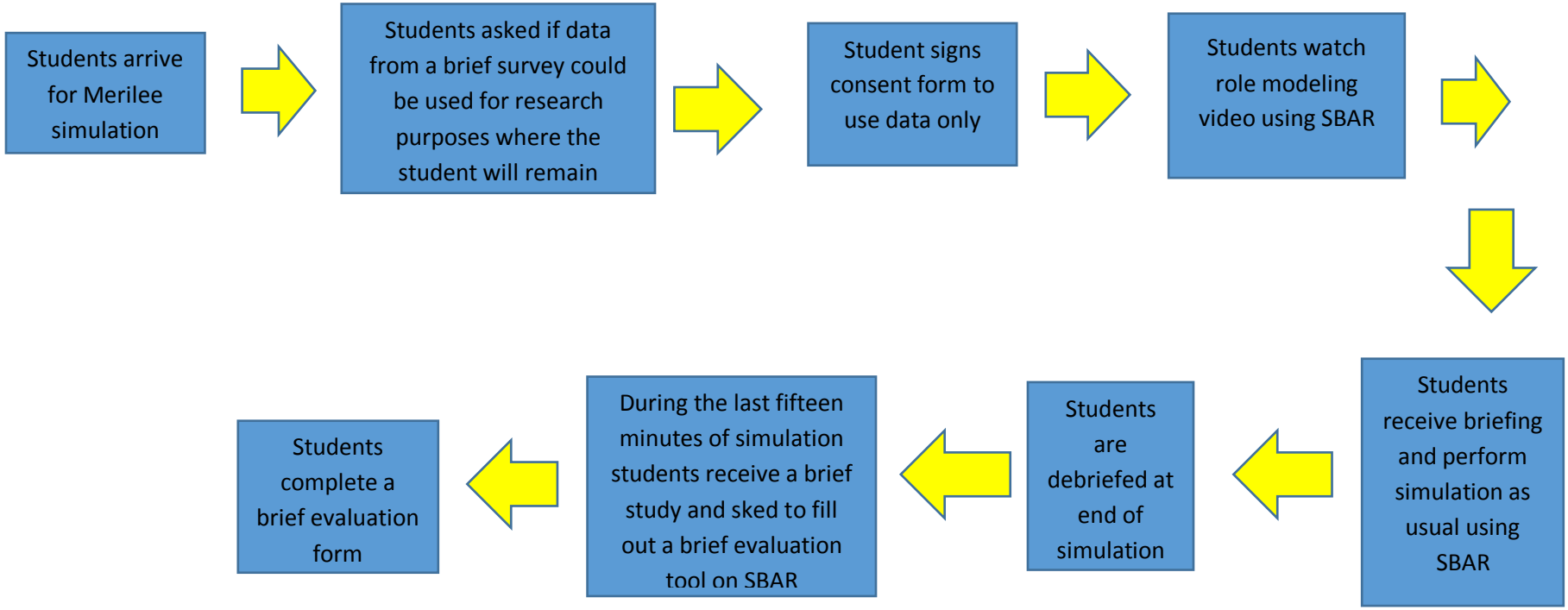
	permission, other IRB approvals, Tribal permission etc);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (1) Educational settings on 8/3/2015.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

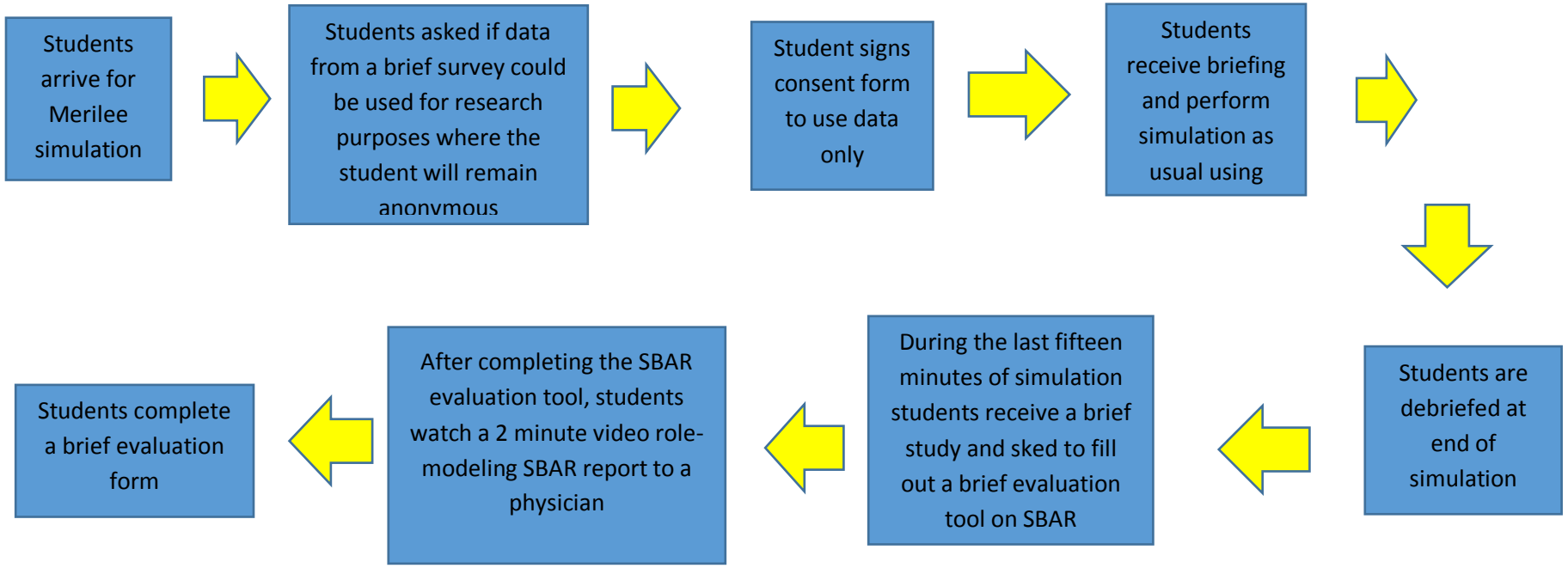
Appendix F

FLOW CHART FOR STUDENTS RECEIVING ROLE MODELING INTERVENTION PRIOR TO SIMULATION AND EVALUATION



Appendix G

FLOW CHART FOR STUDENTS NOT RECEIVING ROLE MODELING INTERVENTION PRIOR TO SIMULATIONAND EVALUATION



Appendix H

SBAR evaluation tool

Figure 1: Inter-Professional Critical Incident Report Evaluation Tool

	YES	NO
I Identifies self		
S 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 Evaluation Tool" may be used and/or reprinted without the express permission of the author, provided written credit is given to the author, J. Guhde, 2010.