



NCSBN

National Council of State Boards of Nursing

## ***Scientific Presentation: Simulation Study - Video Transcript***

©2014 National Council of State Boards of Nursing, Inc.

### **Event**

2014 NCSBN Annual Meeting

More info: [ncsbn.org/5644.htm](http://ncsbn.org/5644.htm)

### **Presenter**

Maryann Alexander, PhD, RN

Chief Officer, Nursing Regulation, NCSBN

- It is my pleasure this afternoon to bring you the results of the National Simulation Study. And my one regret is the fact that I'm doing this today and not Jennifer Hayden, who was the principal investigator for this study and really was the person that helped make this all possible. She had to leave today because she was not feeling well. Well let me tell you a little bit about how we embarked upon this study. It was a response to questions that came from boards of nursing. Let me take you back to the year 2010 when we began the study. Simulation centers were increasing, clinical sites were decreasing, and educators and regulators wondering the same questions about the role of simulation. Could it be substituted for clinical? If so, how much and which courses? At the same time, N.C.S.B.N. was growing its research department. We realized, if we were gonna give you data to the very important policy questions you were asking, our research needed to be large scale, high quality, and rigorous. We begin by bringing in two experts, I think they were the best that could have ever been found, Dr. Pam Jeffries, she literally wrote the book on Simulation in Nursing, and Dr. Suzie Kardong-Edgren, she is the editor-in-chief of Clinical Simulation in Nursing. Through their expertise and that of staff, we developed the largest, most comprehensive study to date on simulation in pre-licensure nursing education. And now, the long-awaited results. Well, we began the study with a review of the literature. And what we found, although there were studies out there that were looking at simulation in nursing as a substitute for traditional clinical experiences, we found that they were really small sample sizes, many of the studies had no control group, there was no randomization of the students, there was a lot of variability in study designs, and there was no longitudinal studies that really looked at the impact of simulation long term and on clinical practice. So our aim was to fill the gaps in the literature and to give you the information you need to answer these very important questions. So what were they? Our first question was, "Does substituting clinical hours with 25% and 50% simulation impact educational outcomes, namely knowledge, clinical

competency, critical thinking, and readiness for practice assessed at the end of the undergraduate nursing program?" Our second question in part one was, "Are there course by course differences in nursing knowledge, clinical competency, and perception of learning needs being met among undergraduate students when traditional clinical hours were substituted with 25% and 50% simulation?" And the third question in part one was, "Are there differences in first-time NCLEX pass rates between students that were randomized into a control group, 25% and 50% of traditional clinical substituted with simulation?" Our research questions for part two, this was a two-part study, we followed students into their first six months of practice after they completed their two-year curriculum. And so the questions for part two, and I will repeat these when we get to that section, but they were, "Are there differences in clinical competency, critical thinking, and readiness for practice among the new graduate nurses from the three-study groups?" and "Are there differences among new graduates from the three study groups in acclimation to the role of the professional nurse?" This was a comparison study among three groups. The students were randomized, it was a very controlled study, it was large scale, it was multi-site, it was a longitudinal study, and there was a follow-up component. We felt these elements were extremely important so that results could be generalizable and we wanted to eliminate as much variants in the study as possible. Students from all the study sites that I'm gonna tell you about in a minute, we randomized into one of three groups. The first group was the control group. This consists of students having traditional clinical experiences as was routine for the school and they were able to receive up to 10% simulation. The most of the sites did 10% or less. The second group was the 25% group and 25% of their clinical time was substituted with simulation and 75% was spent in traditional clinical experience. And then the third group was the 50% group. 50% of the clinical time of the students was spent in simulation and 50% of their time was spent in traditional clinical practice. In 2010, a call went out to nursing programs across the country and they were invited to apply for the study. Ten sites geographically diverse were selected. Let me tell you about the criteria that we used for their selection. Inclusion criteria was they had to be a Board of Nursing-approved program, they could be A. D. N. or B. S. N. , but we wanted five of each, they had to have national accreditation, their NCLEX pass rates had to be at or above the national pass rate, and they had to use no more than a maximum of 10% simulation in their clinical courses. They also...there were some additional criteria. They have to have a simulation lab already being used in the program, they had to be willing to have their students randomized into three study groups, they had to have a large incoming class or upper division of B. S. N. students that could be randomized into these three groups, they had to be willing to commit that the incoming class of students would be committed to the study for two years. The schools also had to have a committed team of faculty and staff that would be committed to running the study for the two-year duration and these individuals needed to attend three training meetings prior to the beginning of the study. Students to be enrolled were to be

pre-licensure RN students beginning in the fall of 2011 and a participating site with a graduation in May of 2013. Exclusion criteria were accelerated BSN students, degree completion students, any student that had an L. P. N. or prior nursing license. The study ran across all core courses in the pre-licensure nursing curriculum. And this included the fundamentals of nursing, medical-surgical nursing, advanced medical-surgical nursing, maternal-newborn nursing, pediatrics, mental health nursing, and community health nursing. I'll tell you a little bit about the instruments we used to gather data. Nursing knowledge was assessed after each course and at the end of the program, the entire program using the A. T. I. Content Mastery Series, and many of the schools were already using this testing program to assess students. Clinical competency was measured with the Creighton Competency Evaluation Instrument that was modified and adopted from the Creighton Simulation Evaluation Instrument. New Graduate Nurse Performance Survey by the Nursing Executive Center was used along with the National Council Licensure Exam, which really was nursing knowledge. And then the global assessment of clinical competency and readiness for practice, and that was actually one question and it was a one to 10 scale. We evaluated how well students felt their learning needs were met with the Clinical Learning Evaluation Comparison Survey, also known as the CLECS tool by Kim Landon, Critical thinking was assessed with the Clinical Thinking Diagnostic, also by the Nursing Executive Center. And acclimation to the role of the R. N. was a tool that has been developed and used prior by N. C. B. S. N. , and it consisted of questions such as, "When did you leave your first nursing position, your patient care loads, charge nurse responsibilities, and workplace stress?" All the instruments were tested and found to be psychometrically sound through prior studies. And also any instruments that was developed by N. C. S. B. N. or that we modified was tested and we wanted to be assured that the validity and reliability of those instruments were sound. And if you have any questions about those instruments, you will find it contained within the supplement. There are many ways you can do simulation. We chose the NLN-Jeffries Simulation Framework. And let me tell you about the intervention, which was simulation. For the purposes of the study, it included scenario-based simulation with high fidelity and medium fidelity manikins, standardized patients, some role playing, computer-based critical thinking simulations and skills stations. So our methodologies were diverse. For groups that had simulation, that meant an entire day was spent in the simulation lab with the clinical instructor. Students were assigned to various roles. Two students were assigned to the role of a nurse in each scenario and those students were evaluated using the Creighton Competency Evaluation Instrument. It was very important that there was a standardized curriculum for all 10 schools that participated. So we can tell you a little bit about how this was developed. We used the Delphi method to determine the curriculum. We just didn't want to send out a survey to those schools and say, "Tell us what you're doing. " Because surveys would tell us what is, but we wanted what should be for that. We want the best and most ideal curriculum that those schools could have. So what we

initially did was a Delphi study that consisted of three rounds. The first round was an electronic survey that was distributed to two nursing groups. One was I. N. A. C. S. L. , the International Nursing Association for Simulation Competency and Learning, experts in simulation and curriculum and using it in nursing education, and then two NLN cert. And what we did was had the survey linked live for four weeks from October to November 2010 and we asked them to identify their specialty area and list up to 12 topics in 12 key concepts that were important in teaching in the nursing pre-licensure curriculum. And we received 255 responses, 952 key concepts were identified with 1,039 health topics. And needless to say, we had to trim this down. So we went on to refine the list of topics in round two of the Delphi study. And this time, we used our study teams. So study teams had three training sessions they had to attend. And at the first training meeting, a portion of that time was dedicated to refining this list. Team members were groups by specialty were given their list and were told to narrow them down. We wanted about 40 health topics and 10 key concepts. We ended up with 225 health topics and 72 key concepts to be included in the standardized curriculum. And then round three, we sent the list back to the schools and course faculty were asked to rate each of the items either as most important, important, or good content to cover if there's time. And we felt that this was really an important part of this because we wanted the schools to number one, we wanted their buy-in, we wanted them to feel a part of this, and we wanted them to feel like they had input into the curriculum that they were gonna be using and teaching for the next two years. This is a picture of Dr. Pam Jeffries, who was one of... who was very helpful and instrumental in our training sessions. Helping the study teams learn what was very important and so that all the simulation scenarios were carried on in a standardized fashion. And let me tell you after we had the curriculum developed, simulation scenarios depicting the patient's conditions and key concepts were obtained for each of the schools from publishers and distributed to the programs. I. N. A. C. S. L. also supplied some of the scenarios and all simulations were reviewed by an expert to ensure they were consistent with the framework, the simulation framework we were being used. Faculty at the schools were allowed to choose from the simulations that we were offering from the curriculum to match their course content. And also to ensure uniformity, we provided manikin programming files and consumable supplies, including medications. I have to tell you, Jennifer Hayden was just meticulous about putting together all these supplies for the program. And her office looked like a pharmacy. And one day Kathy Apple came and said, "Why does Jennifer's office look like a pharmacy with all those medications?" And of course, none of them were real. They were all simulation and but she was very conscientious ensuring that all the schools had all the supplies that they needed. So at the training sessions, everybody, all the study teams were taught that NLN-Jeffries Simulation Framework for creating high fidelity learning environments, facilitating simulation and it was very important, debriefing is a very important part of simulation. And all of them needed to learn the proper technique for

debriefing with students after simulation. And we also wanted them to be familiar with our data collection forms because their accuracy in assessing the students was very important. And just to let to know how important we felt this was that after the study teams were taught how to do these things, they were then tested. And one of the...they were tested on their competency and debriefing, and we actually brought in volunteer students that they could work with and that they could go through the debriefings with. And just a word about... I'll tell you a lot about simulation, about the clinical experience, traditional clinical experience for all these students. What the school would routinely do, whatever placements they gave out, however they would assign patient care assignments, pre-imposed conferences, preparation was all left up to the school. Clinical instructors rated just as they did for students in simulation. They rated students at the end of their clinical day. And just a word about the recruitment of students, they were recruited in the very same way at each of the schools, they were shown a video that explained the study. Jennifer Hayden assigned student sub and was there to answer questions. Each of the students signed an informed consent. And I might add that we received IRB approval approval from the Western IRB and as well as at each school, and their own IRB. Another important factor in this study was we had set up a data safety monitoring board. This group consisted of an associate dean, a dean, both from nursing programs in Illinois, a statistician, and N. C. S. B. N.staff. And this group met quarterly to review all the outcome data to ensure that no one study group was being affected by the study and it might jeopardize their education. Let me tell you a little bit about the students. 847 students consented to participate in the study, 666 completed it. As you can see here, we had comparable numbers. 218 completed it in the control group, 25% group have 236 students, and the 50% group had 212. And they looked pretty much like a typical undergraduate nursing program class of students. 86% were female, 84% were white. Average age was 26.3 years and the age range was from 18 to 60 years of age. And about 16% of them had experience as a nursing assistant. Let me tell you a little bit about attrition from the program. There was pretty much equal amount of attrition from all three groups. There was actual relation say that there was no statistically significant difference, but there was a greater attrition from the 50% group. The... let me see. As you can see, the rate of completion was 78.6% overall, with 81.3% in the control group, 80.5% percent in the 25% group, and then 74.1% in the 50% group. So they had a little bit more attrition. Look very carefully at the number of students who failed a course during the study. That was a reason for them to be taken out of the study because every student had to graduate in May of 2013. You could see there were 66 students that failed the course, 25 in the control group, 22 in the 25% group, and only 19 in the 50% group. The number of students who withdrew or withdrawn from the study for any reason is 115, 25 being in the control group, 25% group had 35, and 55 being in the 50% group. That was the only thing that was statistically significant was the rate of withdrawal from the 50% group. And now for the results. And after all that, let me remind you what our

first research question was, "Does substituting clinical hours with 25% and 50% simulation impact educational outcomes, which we looked at knowledge, clinical competency, critical thinking, and readiness for practice assessed at the end of the undergraduate nursing program?" And the results. So here, looking at the A. T. I. Comprehensive Predictor at the end of the program, you will see that all three groups did almost identically well. So the control group 69.1%, with the 25% group having 69.5% total score, and the 50% group having 70.1% total score. And there were no statistical significant differences between the three groups. Clinical competency as rated by the preceptor at the end of the program. So this was either in the clinical capstone course or at the final clinical, if the school did not have that clinical capstone. And as you can see, they were rated in six different categories on a scale of one being the lowest and six being the highest. And then areas of clinical knowledge, technical skills, critical thinking, communication, professionalism, management of responsibility, 462 students were rated by their preceptor or clinical instructor. And as you can see, there were no statistically significant differences between any of the groups. Critical thinking and the program preceptor ratings and five categories of problem recognition, clinical decision making, prioritization, clinical implementation, and reflection, one being the lowest rating, six being the highest. And they all did exactly, almost identically. There was no statistically significant differences. One thing I like to point out to you, I don't know if you've been noticing the scores. But every one of the groups scored five or higher on a six-point scale. And then the overall clinical competency, end of program rating by preceptor, by their preceptors or clinical instructors, and this was the global assessment of clinical competency and readiness for practice, it was a one to 10 scale. And we asked them, we told them overall, "How did students do compared to all students that you've had? How well-prepared and how competent for clinical practice were the students?" And as you can see, they were all rated equally and they were all rated well. Everyone of them were rated 8.2 or higher and no differences between the three groups. Research question number two, "Are there course by course differences in nursing knowledge, clinical competency, and perception of learning needs being met among undergraduate students when traditional clinical hours were substituted with 25% and 50% simulation?" So now we looked them course by course. So first was the fundamentals of nursing knowledge as assessed with the A. T. I. Assessment. And as you can see, their total scores were pretty comparable, 68.1% versus 67.3% versus 68.6%. There was no statistical difference between the three groups. Clinical instructors rated the students on a weekly basis in terms of their clinical competency. And as you can see, the three lines, three colors marked the different groups. Red is the 50% group, blue is the 25% group, green is the control group. And as you can see, there was a little bit of variation when they began, but they ended all identically with no difference between the groups. Medical-surgical nursing, clinical ratings throughout the weeks of clinical. In this, again, no difference. Advanced medical-surgical nursing, ATI Assessment. There is really only one ATI

Assessment for medical-surgical nursing. So programs that had an advanced med-surg nursing, they took the ATI at the end of that course. And again, you can see, there are no differences between these groups. There was...actually there was a difference, with the 50% group higher, but this is really a minimal difference between if you compare it with the control group, their total score was 62.7%, the 50% group was 65.5% with the 25% group in the middle. So this was statistically significant, but it was in favor of the 50% group. And advanced medical-surgical nursing clinical competency, no difference in their clinical ratings. Maternal-newborn nursing knowledge, again, there was some difference between the control group and the 50% group, with the 50% group being higher. But again, these scores are really close and probably some differences due to the sample size. But you can see here, the control group scored a 68.4%, the 25% group was a 69.2%, and the 50% group coming out a little bit higher with 71%, scores. And the clinical competency in maternal-newborn nursing, again, these groups are pretty comparable. There's a little bit of variability in this one, but in the end, no statistical significant difference. Pediatric nursing knowledge, on the ATI, again our 50% group did a little bit better compared to the control group and 25% group. But again, these scores are very, very comparable. In the clinical setting, no difference. Their scores were exactly the same. They started out the same, there was a little variability towards the end, and they ended up right back in the same place. And again, if you look at this, you know, these scores, these students are all, all three groups are being rated extremely high by their instructors. Mental health nursing, again, nursing knowledge, 50% group does a little bit better, but their scores are extremely comparable. Mental health nursing clinical competency, again, very little difference. You're starting to think you're seeing the same graphs from time to time, but they're all different and they were all different instructors. Community health nursing, there was no statistical difference between the scores on the ATI exam. Very little difference in their clinical competency scores. Now let's look at how they're learning, the student's learning needs were met at the end of the program, which we assessed with the Clinical Environmental Comparison Survey, otherwise known as CLECS. Students were asked to rate whether their learning needs were met or learning needs were not met. One was the learning needs were not met and a four highest meant that their learning needs were well-met. And here, you will see statistically significant differences between and among groups. So if you take a look at this, students that were in the control group said their learning needs were best met in the traditional clinical setting. If you look at the 50% group, they said their learning needs were best met in simulation. And if you look at the 25% group, they're kind of in between. They kind of like both of them. So what this tells us was the students adapted very well to the method in which they were taught. Research question number three, "Are there differences in first-time NCLEX pass rates between students that were randomized into a control group, 25% and 50% of traditional clinical substituted with simulation?" And here's the results. And what you...that line, the blue line that goes across the graph was the national pass

rate. So as you can see, all our groups were at or above the national pass rate and there was no statistically significant difference among those three groups. They all did extremely well. So, now those students have completed their program, they have graduated, and now, we wanted to know, but how are they gonna to do in clinical practice is that where the differences are going to be seen? So we did a part two, a follow-up study. I'm going to tell you a little bit about...students were explained that we wanted to continue to follow them through their first six months of practice. And so they were gonna be sent evaluation tools at six weeks, three months, and six months that was going to evaluate their clinical competency, their critical thinking, their overall competency and ready for practice. A lot in the same tools they were already evaluated on. And we wanted their own ratings on their preparation for practice. And we told them what we were going to ask them to do was rate themselves and ask their manager that give the survey to their manager and ask them to rate them. 575 students agreed to be contacted for follow-up surveys, which was 86.3% of the study completers. And out of that group, 65.9% of those actually did follow-up and 355 students completed at least one follow-up survey. So research question for part two, "Are there differences in clinical competency, critical thinking and readiness for practice among the new graduate nurses from the three study groups?" And so...and how we did this, let me just give you a little bit of background is students notified the study team at N. C. S. B. N. when they found their first physician as an RN and they gave them the start date and then after six weeks, three months, and six months after the start team. They were sent the evaluation surveys and then asked to give the evaluation survey also to their preceptor or usually their manager. So clinical competency, six-month manager ratings. Now, I mentioned that we did this at three months and six weeks, three months, and then six months. We're only going to give you the six-month results because there's three-month, six-week and three months are very redundant of this that all three groups came out exactly alike. So let me just review what we felt were most important, the end of the study results. So as you can see here, the six-month manager ratings, everyone, all three groups everyone that was in the three groups did exactly the same and they were rated exactly the same by their managers. And this was a one to six rating scale, with six being the highest. They were all rated very high from, I think the lowest done here is about 5.13 all the way up to almost a six. These students were working at different facilities on different types of units all across the country. And these ratings were very comparable to the end of program ratings by their preceptors and clinical instructors. Critical thinking, six-month rating by their managers, exactly comparable, all doing extremely well. Overall clinical competency ratings, six months, at the six-month point by their managers, their overall rating using the global assessment tool from one to 10, with 10 being the highest. You could see they're all rated very high from 8.36 is the lowest up to an 8.6 in the control group, the 50% group had 8.55, and there are no statistically significant differences between these groups. The second question in part two was, "Are there differences among new graduates from the

three study groups in the acclimation to the role of the professional nurse?" First, we asked the students to rate their preparation for practice and we put down the six-week survey because we wanted to show you that at six weeks, the 50% group rated themselves better prepared than the other, than the 25% group and the control group did. But at six months, there is no difference between the three groups. We looked at who might have left their first nursing position because we thought that could be somewhat indicative of preparation, educational preparation. And as you can see here, there was no difference between the groups. We asked them about their patient care assignment. Were they not challenging enough? Were they just right? Or were they too challenging? And they all...the majority of them seemed to feel as though their patient care assignments were just right and there was no statistically significant difference between the groups. We looked at workplace stress. Green is if they agreed with the question, "I am experiencing stress at work. " And we're looking out six week, three months, and six months. And understandably, they were all experiencing some stress at work, and notably no difference between the groups. We asked them, "In the last week, I felt expectations of me were unrealistic. " And we asked and the blue is indicative of the answer, "Almost never. " So they answered either blue, "Almost never, " red was, "Sometimes, " green was, "Often", and the purple was, "Almost always. " And so you can see, they're all comparable and they all almost answered, "In the next week...in the last week, I felt expectations of me were unrealistic, " and they said almost, "Never". And this is kind of kudos to their managers and who were giving out the assignments too because it looks like they were not doing anything, had any unreal expectations of students beyond what the limits of what they could do. So who completes the results, I do want to tell you what some of the limitations of the study are. Number one, the participating schools were not randomly selected. We were not able to do that, we had to take schools that volunteer and met the criteria. We only used one method of conducting simulations, the NLN-Jeffries Model. There are other methods for doing that. And the clinical experiences were not structured. And I'm not sure if that's a real limitation or not. Some people have questioned this and said they felt it was a limitation. I'm not sure I agree with it. They've said that the...because the preceptors and nurse managers were not blinded as to which study group the students were in, there may be some bias. However, they all came out the same. So if there was bias, it was probably distributed equally among the three groups. This is probably a potential limitation of the study and that is the distribution of the end-of-program and nurse manager surveys relied on the study participant giving it to the nurse manager. And so, you know, there's a possibility that a student that was doing or a new graduate that was doing poorly when they got to practice did not have their manger fill it out. However, our response rates were pretty equal across the three groups. Our conclusions, up to 50% simulation can be effectively substituted for traditional clinical experience in all core courses across the pre-licensure nursing curriculum. 50% simulation can be effectively used in various program types, in different geographic areas

in urban and rural settings with good education outcomes. NCLEX pass rates were unaffected by the substitution of simulation throughout the curriculum. All three groups were equally prepared for entry into practice as a new graduate RN And policy decisions regarding the use and amount of simulation in nursing needs to be dependent upon the utilization of best practices in simulation. And so by that, I mean, do not take the results lightly because do know that the best practices were used throughout the entire two years by all schools. So the INACSL Standards of Best Practice were incorporated, it was worth very high quality simulations, a debriefing method that was grounded in educational theory, and there was training and dedication of the simulation faculty in all 10 schools. Recommendations for boards of nursing, faculty need to be formally trained in simulation. There needs to be a use of theory-based debriefing methods using subject matter experts, an adequate number of simulation faculty are needed to support the learners, and equipment and supplies are needed. School needs to have adequate simulation lab, equipment, and supplies to create a simulation environment. So if we feel as though up to 50% can be used, but under the right conditions and the right qualifications. In summary, I like to read to you how we end the study in the journal and what we felt was the most significant finding. The most significant finding of the study is the effectiveness of two types of educational methods, traditional clinical and simulation experience. When structure and adequately prepared faculty with appropriate resources, dedication, foresight and vision are incorporated into the pre-licensure nursing program, excellent student outcomes are achieved. And thank you very much. And I would like to thank all the people that were involved in this, the students, the schools, Dr. Jeffries, Dr. Kardon-Edgeng, our board of directors who were very supportive, our CEO that we couldn't have done it without Kathy Apple, NCSBN staff who helped out in many different ways, Dr. Richard Smiley, who was our statistician, and most of all, Jennifer Hayden who was the project director and did an outstanding job. [applause] - Hi, Lisa Emrick from Ohio. Hi. First of all, thank you and National Council so very much for this study. Long awaited. Thank you. One quick question, can you tell me how were the total number of clinical hours in each course controlled in the sense of the control group versus the 50% and 25% groups. Were they... was it 25% of the same number of clinical hours per course? - It was according to whatever the school used. So if the school had two days, two eight-hour days, 25% of that eight-hour day would be, you know, whatever what the school required. So if they required, you know, nine hours or it was probably two eight-hour days, that 25% of that was for simulation or 50% of that was substituted with simulation. So if the simulation group, 50% group would have went to in a two-day required clinical course, they would have went one day to simulation and one day to clinical. - Okay. So each school defined their own total number of clinical hours? - Right. - Okay. Thank you so much. - Thank you very much for this great study. It's going to really expand the body of knowledge we have on simulation. Can you speak to some of the other forms of simulation you mentioned using the Jeffries Model. I'm assuming that's

in high fidelity simulation. What about some of the other modalities that were listed in the study? Can you speak to computerized online simulation standardized patient and role play? And was that tracked in any discriminate form? - They...now, and I have to tell you, I don't know if Pam or Suzy can speak to that any better than I could. But the simulation day was set up and a lot of the schools saw that some of the students, while they were doing an actual simulation scenario, were going to a little...we're doing some of the computerized simulations or there were little skills assessments set up so they could practice some on labs or standardized patients could be brought in and go through the scenarios with them. So there was a variety of methods. Now, those methods were all used in our program. But what I meant when I said there are other types, we used the NLN-Jeffries Framework. There are other types of frameworks and other types of simulation that can be used, which we did not use. So, you know, all students went to simulation. They were there for the whole day. Some schools might have where students are in clinical and then they rotate for two hours into the simulation lab. So that's what I meant by various methods of doing simulation. - Thank you. - Peggy, Peggy Walters from North Carolina Carolina. Are there students who were not successful that registered and were in the study? Did any of those students not complete their program or course due to a failure of the simulation? - Yes, I'm sure that there were. I don't know that number offhand. - Kath Shernick from Ohio. Thank you so much for the study with declining clinical sites and practice partners protecting vulnerable populations. This is an exciting study to get results of. Can you tell me about the simulation day was, you said that 25 or 50% of the time was allotted for simulation. Was this spread over the week? Was this a similar, like a clinical day that was completed in an eight-hour time frame? - Yes, and it was according to how the school did it. But, you know, so if the school had two days of clinical, then one day for the 50% group would be in clinical and one day would be in the simulation lab. - So an entire day for simulation? - For the 50% group. Right. - Thank you. - I just want to clarify. Some of them were in some day all day, eight hours. Sometimes, there were two four-hour days, sometimes two to three hour days. So I just want to clarify. So you didn't think everyday was a whole eight-hour day? Because if you've done some for a whole eight-hour day, it's exhausting, and students... but as Maryann said, it varies with the school on how they did that, their schedule. - Susan Bowers Feris, New York State. I'm hoping I can articulate my question. I'm just thinking about the issues regarding preparation of students in educational settings these days and we have both the difficulty in getting enough clinical sites, particularly in hospitals and then we have the preparation of faculty and the shortages of faculty. I guess this answers in many ways the issues regarding the number of sites that could be decreased because of simulation. But in terms of the faculty preparation, is there anything to be said about the amount of education and skill testing, etcetera, regarding the faculty qualifications and ability to do this well? - They need extensive training, and using the INACSL guidelines, and I know Dr. Jeffries and Kardong-Edgren can probably answer this better than I can.

But this does not decrease the number of faculty that a school needs or the preparation for faculty because this is carrying on good quality simulations is extremely rigorous and time consuming. So while it decreases the number of sites, clinical sites, it probably doesn't decrease the number of faculty. What do you think about that? - You were absolutely right. I think something that was not quite clear in the report is that we had dedicated simulation faculty that were there for every simulation that was done. Clinical faculty were required to come with their students to the simulation lab and then score the students. They were there as the content experts, but the simulation faculty were there as the simulation experts. The question was asked, "Where do you learn how to do this?" There are several certificate programs in the United States, one is at Bryan LGH. It's online. One is California Simulation Alliance. They'll take anybody and they are very strong program. They're online and have a resident component for a week here and there. There is Robert Morris University. There is University of Texas Arlington. Has a very strong online certificate program. There are emerging masters of medical simulation programs, which is simulation. Medical simulation, nursing simulation, it's the same thing. Those things are available and there are programs now at University of San Francisco in that. There's one at Drexel College of Medicine, which nurses are signing up for. Those have ramifications however if they... I think they want to go and get a doctorate, we all know that. So there are emerging places that you can get this education and training. Joining the INACSL Organization is a good idea. You're among people who this is what they do for a living. Using the INACSL Standards is a very wise thing to do. Also you have a very strong program if you do that. There is now certification for simulation educators, the CHSE, which comes from the Society for Simulation and Health Care. You can also strive for getting your simulation center accredited through the Society for Simulation and Health Care. - I just want to make a comment to ensure the integrity of the study. As Mary Ann said, we train the sem team, but also we assessed competency throughout. At every...all 10 sites, they had a project coordinator. So those faculty were also tested on competency on their debriefing and all that to ensure the integrity. I felt that was very important as well as the training piece was significant. - Thank you. Eight. - May Ann, thank you and congratulations on your award. What an honor for you. Our board, and I'm Sue Patule from Pennsylvania, has certainly had many program approaches regarding this issue of simulation. We've been anticipating this study to have some answers. But I'm concerned that folks might grasp onto 50% of your program can be in simulation. But I think what's so paramount about your study is the conditions that you had within your own study. Really, you're probably the criteria for approving somebody to have any simulation within their program, similar to what Pam and Suzy have just said. Do you have anything else to offer, you know, for programs approaching boards regarding incorporating 50% amount of simulation within their course of study? - Well, you know, and I think we can, you know, talk and give out some guidelines for boards to know and there are guidelines that are written in the journal. But

I think, you know they begin with having the facilities to do it. And you know, it has to be a school that can, that already has a good program. That already has, you know the expectations and competencies of students going well in a traditional clinical site to be able to then develop the skills to do competency...to do clinical, to do simulation. But we will be giving, I think, if you read the journal, you'll see some of the advice that we have given to boards for that. Anything else? All right, well thank you very much. - [applause]