Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Pandemic Crisis: Simulation Contingency Plans

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ABSTRACT

Background: The COVID-19 pandemic has disrupted the typical delivery of nursing education. Multifactorial issues related to the pandemic and clinical placements have forced nurse educators to employ innovative strategies for content delivery.
Methods: This article is an accounting of a simulation team response to the move to all remote or virtual simulated learning experiences over a two-week period and lessons learned on how to move forward with simulated learning contingency plans.
Results: Learning outcomes were achieved via the delivery of online commercial and faculty made experiences to simulate clinical practice. Simple and easy to use guides assisted both students and faculty for a positive experience.
Conclusion: Creating a detailed formal contingency plan for emergencies is essential for nursing programs. Additionally, the pandemic highlighted the importance of continuing faculty development and education in online, virtual, and simulation pedagogy. Finally, it is recommended that schools of nursing implement formal policies for replacement of clinical hours with simulation.

On March 11, 2020, the World Health Organization declared Coronavirus Disease 2019 (COVID-19) a global pandemic. Nursing schools across the nation and internationally are still dealing with the effects of the coronavirus pandemic. Academic nursing programs quickly moved to online formats, and clinical experiences dwindled as students were forced to return to their homes and practice social distancing. The Accreditation Commission for Education in Nursing (ACEN) and the American Association for Colleges of Nursing (AACN) issued statements to academic nursing programs to develop contingency plans for restricted clinical placements. According to AACN (2020), "these plans may include the expanded use of simulation, telehealth, and virtual reality in keeping with best practices and guidelines from state boards of nursing and other regulatory bodies; the use of online resources for teaching clinical care; and online group chat features" (p. 3). In addition, the National League for Nursing (NLN) and the National Council of State Boards of Nursing (NCSBN) call on "nursing schools and programs to offer the greatest possible flexibility to students nearing graduation during this time of the COVID-19 crisis" (NLN, para. 1). While simulation has been widely used in nursing education and recognized as a partial substitute for clinical hours, educators lacked the ability to perform usual face to face manikin and standardized patient simulation during the pandemic.

In a jointly issued position statement, both the Society for Simulation in Healthcare (SSH) and the International Nursing Association for Clinical Simulation and Learning (INACSL) endorsed the utilization of online simulation modalities " as a replacement for clinical hours for students currently enrolled in health sciences professions... during the current public health crisis caused by COVID-19" (INACSL, 2020, para. 1). Nursing faculty, simulation educators, and clinical instructors were faced with the daunting task of developing or converting face to face direct patient care clinical and simulation to online experiences. In addition, an overwhelming response by multiple commercial virtual simulation platforms and learning systems presented an unfamiliar way of teaching and learning for educators and students. For many educators, a struggle ensued between the usual student expectations for direct patient care and the need to adapt to a more flexible approach to meeting learning objectives. This article is an accounting of a simulation team response to the move to all remote or virtual simulated learning experiences over a 2-week period and lessons learned on how to move forward with simulated learning contingency plans.

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Background

Typical pre-licensure nursing clinical education at our university consists of 8-10 students with a clinical instructor in a hospital or community setting. Nursing simulation experiences at our university consisted of face-to-face mannequin simulation, role play, skills stations, and health assessment labs. These experiences are used to supplement clinical hours as there is no current policy for replacement of clinical hours with simulation. Our simulation team consists of an associate dean for simulation programs, faculty and nurse specialists trained in simulation pedagogy and facilitation, and simulation technologists who manage the simulation equipment and technology.

As area hospitals began to prepare for the swell of COVID-19 patients, most prohibited students from being on the floors for a variety of reasons. These reasons ranged from patient and provider safety to conservation of essential personal protective equipment. Because pre-licensure nursing students could not attend clinical rotations "as usual", an immediate need arose for the development of learning activities to meet clinical course objectives, allowing senior students to graduate and enter the workforce to assist with the outbreak. The simulation team mobilized to assist faculty and administration with planning and implementing several learning methodologies. However, there were novel challenges presented by the COVID-19 outbreak that the nursing program had not faced before: (1) Could we convert existing simulation scenarios to an online format? (2) How would we provide students with an valuable/engaging online experience that would approximate a typical simulation experience and meet learning outcomes? (3) How much simulation could be used as a replacement for clinical rotations?

The use of simulation in pre-licensure nursing is not new and has been used pedagogically since the 1960s. However, *virtual* simulation has only been in use in nursing education since 2010. While much of the evidence suggests that virtual simulation can improve learning outcomes (Foronda, Fernandez-Burgos, Nadeau, Kelly & Henry, 2020), there is also a learning curve associated with learning new technologies for both educators and learners alike. Although faculty and students at our institution were accustomed to traditional face to face simulation before the COVID-19 outbreak using mannequins, role play or standardized patients, most did not have a background in the use of virtual simulation software.

Step 1: Select Virtual Simulation Products

To assist administration and faculty, the simulation team began previewing several commercial virtual simulation products and made recommendations to administration regarding which products to purchase. Once the products had been licensed to our school, the simulation team immediately went to task familiarizing themselves with the products in order to serve as software platform resources to assist faculty in navigating the program. Each simulation nurse specialist was then assigned to a course faculty member who would be using the virtual simulation software. The specialists met with faculty to both get input on their course objectives and share their feedback on the software with them. Working with the faculty, the simulation team selected scenarios that best served course learning objectives. The nurse specialists were available as virtual platform experts as well as points of contact for any software related issues in each clinical course. Due to the large number of students in each course, clinical instructors were also used to assist in the debriefing of virtual simulation products. A guide for virtual prebriefing and debriefing was developed for use with all virtual or remote learning activities and sent to course coordinators and clinical instructors.

Step 2: Convert Existing Simulations to Online Experiences

In addition to previewing and training in commercial virtual simulation products, a proactive approach was taken to convert some of our existing simulation experiences into online/virtual or remote simulation. The simulation team constructed a curricular map to compare already achieved skills and learning outcomes with those that were still needed for the semester. Once that was completed, we began filming aspects of our existing scenarios with "pause for debriefing" sections. In this manner, students could engage as active participants, and instructors could pause the video to debrief salient points with students. To promote engagement and successful completion of simulation objectives, each scenario included a requirement for students to complete a pre-test. A patient report was then provided as starting point for the learners. In addition, clinical progression of the scenario was driven by a simulation scenario guide with versions for both the participants and the clinical instructor or faculty debriefer. As participants watched the simulation, verbal cues (i.e., patient began complaining of substernal chest pain, patient stated shortness of breath) and visual cues (i.e., changes in vital signs) were provided to show clinical progression. A "pause for debrief" was inserted in the video and participants were instructed to identify the next critical actions to achieve scenario objectives. Debriefers used the simulation scenario guide to facilitate feedback to students and ensure learning objectives were met.

Step 3: Creating Supportive Teaching Documents for Instructors

Another challenge was assisting clinical instructors and faculty who were novices to simulation, online/remote learning, or both. The simulation team decided to develop supportive documents for the online simulations. Specifically, we wanted to design materials to be an engaging, thought provoking and user-friendly experience for both students and clinical instructors. The solution was to create (1) a prebriefing document; (2) a student simulation guide; and (3) a clinical instructor debriefing guide. Students were required to complete and submit the prebriefing document to their clinical instructor before participating in the online simulation. The prebriefing document asked students to look up disease processes, medications, lab values, and other information pertinent to the upcoming virtual simulation experience. The simulation student guide was designed for the students to answer as they watched the simulation. This guide was divided into sections that were clearly marked as to when to pause the video and answer the relevant section before continuing with the simulation video. Questions in this guide were planned to promote student engagement and critical thinking regarding prioritization of care, medication administration, anticipating patient needs, and health assessment. The clinical instructor debriefing guide was designed to facilitate debriefing for instructors who may have had limited experience in leading a simulation debriefing in the past. This document included an overview of the simulation, simulation learning objectives, and questions to promote discussion and critical thinking during virtual meetings. Together these documents helped promote student engagement in the new online simulation format and aided clinical instructors in leading a meaningful debriefing session focused on learning objectives.

Student and Faculty Response

Due to the chaos of trying to move everything to remote and online, no formal evaluation data was collected at the initial implementation of these simulated virtual experiences. Verbal response from faculty indicated a frustration with the commercial virtual simulation products and its ability to mimic clinical decision making. The existing simulations that were developed as remote online

experiences were much better received by both faculty and students especially since they were filmed in our simulation center and gave students a sense of the familiar. The developed guides were considered a successful way to facilitate students through the scenarios and then debrief to ensure meeting of learning objectives. Clinical faculty indicated that they were easy to use and follow and provided topics for discussion during virtual clinical conferences.

Lessons Learned and Recommendations

We learned several lessons during the COVID-19 pandemic related to simulation and clinical learning. Primarily, we recognized the need to have a clear contingency plan with adequate materials developed in the case of emergency. Because our school is located in south Florida and is frequently in the path of hurricanes, we did have several alternate online activities; however, we realized quickly these were not enough to meet learning outcomes usually achieved in the clinical setting. Since we rapidly developed so many materials for students during the pandemic, we now have an extensive library of online or virtual simulations for future use if needed. We recommend developing a variety of materials for use and a yearly update to ensure they continue to meet learning outcomes and student/faculty needs.

Second, continued faculty development and training in simulation, remote, or online pedagogy remains an important consideration as educational practices are reimagined after the pandemic. Jeffries et al (2015) note the essentiality of faculty receiving training in simulation-based education beyond “the basics”. Moreover, the authors concede that while it is difficult to train faculty to be proficient in simulation standards, it is essential in achieving successful student outcomes (Jeffries et al, 2015). The art and science of debriefing is employed everyday by simulation educators, but again, managing the shift to implementing and debriefing online while managing new technological platform against the background of the pandemic was very new to our team. Continuous faculty development in areas of virtual and online learning, simulation pedagogy and best practices, and debriefing would benefit all faculty, not just simulation faculty.

A final recommendation is that it is essential to establish a formal policy on replacing clinical hours with simulation hours. The National Council of State Boards of Nursing Simulation Study indicates that clinical simulation can replace up to 50% of clinical hours when simulation best practices are followed (Hayden et al., 2014). In addition, research exists to set a ratio of simulated learning hours to clinical hours (Sullivan et al., 2019). In the United States (US), each individual state has its own regulations about clinical replacement with simulation. In Florida, nursing programs may replace up to 50% of clinical hours with simulation, however our institution has no policy and has not routinely practiced replacement of clinical hours with simulated experiences. In a meta-analysis of using simulation to replace clinical hours by Roberts et al. (2019), several studies in the US and United Kingdom demonstrated that replacement of clinical placement hours with clinical simulation showed no significant difference to student outcomes in relation to clinical skills and knowledge, and student confidence. Their findings, however, demonstrated that variations in practice hours across countries and states make it difficult to determine how best to replace or supplement clinical hours with simulation (Roberts et al., 2019). However, as the US is seemingly moving more toward a competency-based model of nursing education, perhaps equalizing the number of direct practice hours will become less of a concern.

Conclusion

The pandemic presented not only many challenges, but also, disruptive opportunities for improvement in nursing education. Using lessons learned and educational outcomes to create practice learning environments to support students should be an ongoing process in nursing education. A variety of settings can be used to facilitate the nursing knowledge, skills, and behaviors needed for safe patient care. Continued faculty development in creating innovative practice learning environments (direct patient care, simulation, online, and/or virtual) will be warranted as we continue to recover and reimagine nursing education for the future.

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