

## EXPERIENCE EXCHANGE

# Virtual clinical activities: Lessons learned with first semester nursing students

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**Received:** October 9, 2020

**Accepted:** November 15, 2020

**Online Published:** November 19, 2020

**DOI:** 10.5430/jnep.v11n3p41

**URL:** <https://doi.org/10.5430/jnep.v11n3p41>

## ABSTRACT

**Background and purpose:** As COVID 19 impacted schools of nursing, the impact of clinical training was immediate. Students were removed from clinical sites but clinical training was necessary to continue the education of nursing students at all levels. Select virtual clinical experiences were substituted for in person clinical experience to reinforce foundational nursing skills.

**Results:** Implementing virtual clinical activities proved to be a challenge for schools of nursing. Finding, structuring and managing activities that foster key foundational concepts for novice student nurses is imperative.

**Conclusions:** Management of virtual clinical activities, via a SIM Center, is key in providing foundational experiences via simulation for the novice nursing student. Substituting structured virtual clinical days, with expert clinical debriefing, can provide an adequate clinical experience.

**Key Words:** Novice, Nursing student, First semester, Virtual clinical, Simulation

## 1. INTRODUCTION

For decades, scientists have said that a disease is only one plane flight away. This is certainly true with the COVID 19 pandemic. COVID-19 is a contagious disease that is caused by the novel coronavirus and was first reported in Wuhan City, China in December 2019.<sup>[1]</sup> No one could have predicted the sudden impact of COVID-19 on the education of nursing students. Traditionally, lecture, partnered with practical clinical experience, deputizes the nursing students of the future. Thanks to the pandemic and shortage of personal protective equipment (PPE),<sup>[2,3]</sup> nursing students were abruptly removed from nursing units and given virtual clinical activities in their stead. This article discusses the lessons learned from the abrupt stoppage of in-person clinical and the substitution of virtual clinical experiences for a first semester clinical nursing course.

## 2. BACKGROUND

Course faculty plan clinical experiences to provide a well-rounded practical experience for the novice nursing student. The needs of a first semester nursing student, as a novice provider, is unique.<sup>[4]</sup> It is critical to utilize supportive clinical units that offer a variety of patients. In our academic setting, first semester students have not acquired knowledge pertaining to basic nursing care, so enhancing foundational nursing knowledge is a priority. Foundational knowledge is recognized as formulating assessment skills, technical skills, organization, communication and clinical judgement. As outlined by Giddens,<sup>[5]</sup> 30 basic assessment skills are used in the clinical setting. Technical nursing skills, like wound care techniques, are also foundational. Organization of care or time management of nursing workflow is another skill obtained in a first semester nursing students.<sup>[6,7]</sup> Communication techniques, like SBAR (Situation-Background-

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Assessment-Recommendation), is another skill that is imperative to providing patient safety<sup>[8]</sup> and improved patient outcomes.<sup>[9]</sup> Culmination and analysis of learned skills and content leads to the application of clinical judgement of the novice nurse. As per Tanner's model of clinical judgement (2006), pertinent clinical data must be noticed, interpreted (or prioritized). The student nurse must respond (intervene) and reflect on that clinical judgement.<sup>[10]</sup>

It is the expectation that all clinical nursing student activities are guided by the clinical instructor and coordinated by course faculty. This foundation is essential for understanding the nursing process and pertinent to the success of a nursing student.

### 2.1 Background of prelicensure simulation for first semester students

As a partner to supervised clinical experiences, simulation experiences provide an experiential, structured means of meeting teaching/learning objectives. Specific learning activities are utilized coincident with the didactic and clinical content. Hayden et al.<sup>[11]</sup> demonstrated that simulation is an effective teaching tool and could be substituted for clinical to meet student learning needs. Further studies<sup>[12,13]</sup> demonstrated that simulation improved clinical knowledge and performance. Schools of Nursing have adopted simulation as a teaching strategy in a variety of ways, substituting up to 50% of clinical hours based on state regulations. This substitution of clinical to simulation ratio ranges from 1:1 to 2:1 ratio. A direct observational study of student experiences in the clinical and simulation environment applying Miller's Pyramid of Learning found simulation to be a much more intense and efficient leaning environment as compared to clinical beginning to provide evidence for the 2:1 clinical to simulation ratio.<sup>[14]</sup>

Emphasis of the first semester student is based on gaining foundational skills. Simulation is a key component in applying new knowledge, combining and refining the lecture material into practical techniques like SBAR. Simulation can also provide self-confidence<sup>[15]</sup> in providing practice of real life scenarios. All simulation exercises and scenarios highlight the medical material learned in class (e.g. asthma, pre and post op care, vital signs, interviewing, etc.). The challenge with first semester student is in making the experience "real" and reinforcing the material learned in class. Simulation facilitators and clinical instructors are key components to the simulation experience.

### 2.2 COVID pandemic

In Spring of 2020, the COVID 19 pandemic halted all in-person clinical experiences in the hospital setting based on

the nature of the infectious disease and the need to conserve PPE for healthcare providers. This created an unprecedented shift in the delivery of quality clinical experiences while promoting foundational knowledge. Course coordinators and faculty scrambled to find appropriate material to substitute for the clinical experiences.

## 3. VIRTUAL CLINICAL ACTIVITY AND LESSONS LEARNED

### 3.1 Simulation team and oversight

There were many lessons learned in this uncharted situation. Primarily, the first lesson was the need for an organizing body. The Simulation (SIM) Center, and its SIM Team, quickly realized that a central group was vital to coordinate and standardize the "virtual clinical" experiences for students in clinical courses. As a part of the organizing process, the SIM Team set the standards for determining how many clinical hours were "earned" in the virtual clinical experiences offered across courses. Citing the evidence from the observational study by Sullivan et al.<sup>[14]</sup> described above; virtual experiences that provided the same components of an in-person simulation experience were assigned a 2:1 clinical to simulation ratio. The components included student pre-work, a synchronized pre-brief, viewing a simulated scenario asynchronously and a synchronized debrief of the experience. This established an evidenced based manner of guiding the implementation of virtual clinical activity. To support student clinical development, each clinical day was replaced with a virtual clinical activity. Oversight by the SIM Team ensured that experiences were built upon each other from semester to semester and there was no duplication of experiences. This oversight was positively received by all clinical coordinators. This coordination and oversight required a team of simulation experts that could identify virtual simulation resources and help clinical faculty swiftly adapt.

### 3.2 Virtual simulation experiences

The SIM Team offered a variety of virtual simulation experiences-as gathered from a variety of places (see Table 1). First, it was necessary to maximize resources already available. For instance, using vSIM and ATI for use as a virtual clinical activity was explored. Since these packages were already purchased, exploring them as clinical replacement activity and framing them with guided instructions was key. The SIM Center also quickly amassed a large database of free material. This provided much relief to course faculty. A central database was created to track activities (used by each course) by the SIM Center.

### 3.3 Virtual clinical activity format

In lieu of in-person clinical experiences, the faculty quickly coined the alternative clinical activity as “virtual clinical activity.” In our facility, virtual clinical activities were formulated in synchronous, asynchronous formulations, or a hybrid format. Synchronous virtual activities occurred when the group, virtually, experienced a simulation (together) and used the standard pre-brief, simulation and debrief format. This was done and scheduled with a SIM Team facilitator and clinical faculty member over a synchronous medium (eg like Zoom). Asynchronous activity format occurred when each student nurse experienced the activity independently. The students read the pre-brief, the student attempted the virtual simulation, and are debriefed in asynchronous manner by the

clinical instructor. This debrief could be done in an asynchronous medium, like Blackboard, via the discussion board, created for the clinical group. A hybrid format is a variation of the above types. In our facility, the hybrid option included a written prebrief, asynchronous student virtual simulation activity and synchronous clinical group debriefing with the clinical instructor. This hybrid asynchronous/synchronous approach, allowed for synthesis of the important foundational concepts necessary to maintain patient safety. Each activity, as seen in Table 2, highlighted portions of the foundational knowledge necessary for the novice nursing student. The clinical activity was asynchronous for student self-paced learning and the synchronous debrief provided student support and critical discussion about the clinical activity.

**Table 1.** Free virtual simulation clinical activities

Source	Website
Quality and Safety Institute	<a href="https://qsen.org/teaching-strategies/">https://qsen.org/teaching-strategies/</a>
NLN: Advanced Care Excellence Series	<a href="http://www.nln.org/professional-development-programs/advancing-care-excellence-series">http://www.nln.org/professional-development-programs/advancing-care-excellence-series</a>
The Sim Tech	<a href="http://www.thesimtech.org/scenarios">http://www.thesimtech.org/scenarios</a>
Health Education England: Clinical Simulation Scenarios	<a href="http://www.oxforddeanery.nhs.uk/">http://www.oxforddeanery.nhs.uk/</a>
WHO Free COVID Course	<a href="https://openwho.org/courses/introduction-to-ncov">https://openwho.org/courses/introduction-to-ncov</a>
Johns Hopkins Case Studies	<a href="https://www.hopkinsmedicine.org/gec/studies/">https://www.hopkinsmedicine.org/gec/studies/</a>
CDC Training	<a href="https://tceols.cdc.gov/">https://tceols.cdc.gov/</a>
EM SIM Cases	<a href="https://emsimcases.com/2020/02/18/suspected-covid-19/">https://emsimcases.com/2020/02/18/suspected-covid-19/</a>
Ryerson University: Virtual Healthcare Experience	<a href="https://de.ryerson.ca/games/nursing/hospital/index.html">https://de.ryerson.ca/games/nursing/hospital/index.html</a>
Kansas: Simulation Scenario Library	<a href="https://ksbn.kansas.gov/administrator-resources/simulation-scenarios/">https://ksbn.kansas.gov/administrator-resources/simulation-scenarios/</a>
Montgomery College Simulation Library	<a href="https://www.montgomerycollege.edu/academics/departments/nursing">https://www.montgomerycollege.edu/academics/departments/nursing</a>
University of North Carolina Gero Sim	<a href="http://geroclinsim.org/">http://geroclinsim.org/</a>
Simulation Canada	<a href="https://www.sim-one.ca/content/virtual-simulations">https://www.sim-one.ca/content/virtual-simulations</a>

### 3.4 Clinical day

Although banned from the clinical environment, clinical faculty remained virtually present (and available) for their virtual clinical day. For the novice clinical students, course faculty chose to open up the “virtual clinical assignment” the night before –similar to obtaining a patient assignment the night prior. This hybrid format would allow students to work on their virtual clinical activity/ assignment (see Table 2) and then hand in the assignment at the end of the clinical day into their learning management system. Just like the end of a clinical day, students held post conference synchronously.

### 3.5 Virtual clinical activity

The virtual clinical activity replaced the normal clinical assignment and reflected content learned in class while rein-

forcing foundational nursing knowledge (see Table 2). All activities required extensive editing by course faculty and or the SIM Center to reflect the needs of novice students-fostering the practice of focus on assessment, communication, time management and prioritization (clinical judgement). Specific attention was provided to use a variety of different virtual clinical activities (with differing fidelity) to prevent students from becoming bored or uninterested. Students performed the virtual clinical activity asynchronously without clinical instructor oversight or guidance. Weekly activities were challenging and required instructors to learn and debrief a new activity each week. Some activities, like vSim, had technical challenges for instructors. In general, however, student and clinical instructor feedback was positive.

**Table 2.** Virtual clinical activities for novice students utilized

Activity	Academic Benefit	Debrief
Comprehensive Case Study	Provide opportunity to connect didactic material to real community resources Provide patient teaching concerning case	Identify the complexity of patient care, assessment of patient Identify the local resources (eg pharmacies, etc)
vSIM	Provide student the opportunity to practice appropriate clinical assessment in a stepwise manner	Identify crucial clinical assessments Prioritization of care Time management Communication to client/provider
WHO COVID-19 Modules	Provide current information on COVID	Identify personal plan for social distancing and safe COVID behavior/responsibility Self assessment of risk
Review Pre taped NLN Simulation Scenarios	View student performance of NLN simulation scenario Show SBAR Reinforce clinical priorities	Communication (SBAR), Assessments Time management Prioritization of care
Interprofessional Education Scenarios	Provide virtual example of interprofessional interaction	Allow for critique and application of interprofessional interaction and communication

**3.6 Post conference**

The synchronous post conference was vital to maintain contact with students and debrief their experiences. This post conference time was standardized across all first semester clinical groups. The benefits of this activity were numerous. First, this synchronous post conference was a time to debrief the activity of the day. All instructors were given comprehensive debriefing guide for each specific virtual clinical activity. Second, course faculty and coordinators could attend the post conference of the clinical instructor and clinical group – providing support and information to clinical groups. It also allowed for a bridge from didactic material to clinical experience. This “virtual check in” with clinical groups also provided “quality review” of the virtual post conference and debriefing. Last, it was an important space for students to discuss the pandemic. Many times, post conference circled back to dealing with concerns about COVID or other practical challenges. This peer to peer support was invaluable.

This synchronous post conference was not without challenges. Since the majority of clinical faculty are part time, Zoom accounts were created for the clinical faculty. Standards of Zoom participation or etiquette were created requiring all participants, both student and faculty to be present on camera and microphone. Establishing rules for post conference was unexpected. Some students were driving during post conference or attending to other duties. Wifi availability and consistency became an issue. Additionally, some students relied on school computer labs and computer loaners. These students had to gain new access to technology to support their new virtual clinical activity.

**3.7 Debriefing**

During the virtual clinical activity period, debriefing the virtual clinical activity was paramount. As mentioned prior, all clinical instructors were given comprehensive guides to the clinical activity with a list of points to discuss and debrief. Debriefing a virtual clinical activity proved to be difficult. Primarily, virtual clinical activities varied from week to week. This required the clinical instructor, as the debriefer, to participate in the virtual clinical activity. For instance, if the activity was a case study, the clinical instructor had to complete the case study and review the answers. Subsequently, we learned that not all debriefing by clinical instructors is similar. Even with detailed student instruction and detailed faculty pre-briefing and debriefing instructions, experiences varied. We discovered, that much of discussion was devoted to communication about COVID related issues. Although this was pertinent, devotion to the virtual clinical experience (and related foundational content) was also crucial. The use of debriefing, in part, is to provide reflection on the clinical activity and is imperative in simulation.<sup>[16,17]</sup> Novice nursing students prefer in-class lecture<sup>[18]</sup> and likewise, synchronous debriefing is critical. Novice learners lack the ability to reflect and evaluate self -performance which is key in clinical judgement.<sup>[4]</sup> In general, we felt that poor debriefing was due to lack of experience (of clinical instructors). This was noticed across other clinical courses and solidified the need for a trained simulation facilitator during the virtual clinical activity. Additionally, there should be more attention in providing expert pre-briefing. Studies have indicated that by “setting the stage” and offering expert role modeling in pre-briefing, this can improve the clinical judgement of novice students.<sup>[19,20]</sup> The virtual activities chosen reflected key

foundational concepts and didactic material, and had differing levels of fidelity. Students found that simulations that provided repetition were useful (e.g. vSIM). This repetition improved time management in assessing, communicating and providing clinical judgement of their virtual patient. Last, the virtual clinical activity was asynchronous. Some students identified that virtual clinical activities would be best served to be performed synchronously with a simulation facilitator. Offering virtual clinical activities via virtual immersive environments, like Second Life, or Oxford Medical Virtual Simulation, can provide a manner to evaluate decision making<sup>[21]</sup> or clinical judgement via instructor oversight and feedback in real time.

#### 4. SUMMARY

In summary, the COVID pandemic forced nursing educators to rethink clinical and turn to alternate clinical experiences.

Simulation has long proven to be an effective tool in providing a learning environment that helps students to practice foundational knowledge<sup>[12,22]</sup> For years, institutions have been exploring alternate experiences in lieu to the shortage of clinical sites, or clinical instructors. In absence of a traditional clinical experience, our facility had to quickly adjust. Providing a hybrid simulation format with varying virtual clinical activities was utilized. Principally, all virtual clinical activities must focus on providing the foundational assessment, time management, communication and clinical judgement pieces necessary to progress as a novice nursing student. The lack of expert debriefing by a simulation facilitator was problematic. More studies evaluating and comparing the effectiveness of simulation, virtual simulation and alternate clinical activities must be explored.

#### CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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