Innovations in Simulation

Creating an Asynchronous Telehealth Simulation for Advance Nursing Practice Students

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Abstract The ongoing use of telehealth services following the COVID-19 pandemic demonstrates its sustainability and how our health care system is transforming. To increase student learning, an asynchronous telehealth simulation as a learning strategy in an online advanced pharmacology course was developed. This innovative strategy allowed students to practice clinical decision-making and collaboration skills electronically to prepare them for the increased use of telehealth medicine. Integrating a prerecorded simulation-based experience using a web-based teleconference tool and embedding it within the Learning Management System is a simple, sustainable model for nursing faculty and students with various levels of technology proficiency.

Background and Significance

The COVID-19 pandemic lockdowns affected both the delivery method for health care and higher education. These lockdowns facilitated the adoption and utilization of telehealth following the initial surge of the novel coronavirus for health care. Privately insured telehealth medical claims nationally increased over 8,000% and nearly half of Medicare primary care visits were provided via telehealth by April 2020 (Assistant Secretary for Planning and Evaluation, 2020; FAIR Health, 2020). Telehealth is the use of telecommunication technologies, such as video conferencing, to provide "long-distance clinical health care, patient and professional health-related education, public and health administration" (Health Resources and Services Administration, 2019, para. 1). The current popularity of telehealth services following the initial pandemic surge demonstrates its sustainability and how our health care system is transforming (ASPE, 2020).

At the same time, institutes of higher education shifted from face-to-face to remote learning experiences. With the loss of access to clinical sites and simulation labs that could be used as an alternate to clinical experiences, virtual

simulation emerged as a new form of simulation pedagogy. While the American Association of Colleges of Nursing recommends the use of simulation to supplement clinical experiences, the use of virtual simulations in advanced

Key Points
- The Learning Management System supports the use of sustainable and usable asynchronous virtual simulation-based experiences.
- Utilization of asynchronous telehealth simulation addresses current gaps in clinical training for advanced nursing practice students.
- The recording feature of a web-based conference tool is a simple way to implement asynchronous simulation-based experiences for a didactic course.

practice programs has not been well documented in literature nor has the implementation of telehealth scenarios (AACN, 2015; Merritt, Brauch, Bender, & Kochuk, 2018). Furthermore, the lack of telehealth in nursing curricula presents as a potential gap in preparing students for evolving changes in health care delivery (Rutledge et al., 2017). To address this gap, a nursing program developed an asynchronous telehealth simulation as a learning strategy in an online pharmacology course for advanced nursing practice students. A faculty with expertise in simulation pedagogy guided the development of the simulation design ensuring the *International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice: Simulation^SM Simulation Design* (INACSL Standards Committee, 2016 a) were followed. The purpose of this paper is to describe this innovative asynchronous simulation-based experience (SBE) for graduate level postlicensure nursing students.

Asynchronous Telehealth Simulation

Scenario Development

This innovative simulation was developed after faculty assessed a need for integrating a telehealth SBE in a fully online advanced pharmacology course. This course is required for all postlicensure graduate level nursing students including nursing education, nursing administration, and advanced practice nurse (APN) specialty tracks. The SBE objectives were written prior to designing the simulation scenario (INACSL Standards Committee, 2016a). Simulation learning objectives were developed to help address general course goals, provide a framework for scenario development, guide development for competency activities, and supply evaluation criteria. Objectives for this simulation followed the recommendation in *INACSL Standards of Best Practice: Simulation^SM Outcomes and Objectives* (INACSL Standards Committee, 2016b). The objectives of the SBE were written using the SMART (simple, measureable, assignable, realistic, and task related) acronym and can be seen in the Table.

Scenario Design

The creation of this simulation occurred within the Learning Management System (LMS). Faculty collaborated with the instructional designers to create a unique asynchronous active learning SBE for online learners. The team developed a design that specifically addressed scalability, usability, and cost effectiveness. This was chosen for a number of reasons. First, it fit the needs of students enrolled in a completely asynchronous graduate nursing program. Second, it was important this activity be self-sustaining and easy to use for faculty and students of all levels of technology proficiency. Third, this design satisfied institutional priorities of integrating technology in learning and ensuring the model can scale to future developments. Finally, the team utilized existing resources available to faculty and therefore incurred no additional costs to the program or students. To build this simulation with the above design considerations as a focus, we made use of the following LMS tools: (a) release conditions, (b) discussion boards, and (c) embedded video and supplemental documentation. Workflow between the instructional design team and the coordinating faculty members included (a) writing a SBE script demonstrating best clinical telehealth practices for a patient who presents with respiratory symptoms, (b) establishing a timeline for production and video recording, (c) creating and integrating pedagogically relevant materials, and (d) establishing a process that allows faculty to reproduce this simulation in a self-sufficient and scalable manner.

The simulation scenario was developed by two APN faculty members with recent telehealth clinical experiences. They decided to write a SBE of a patient who presented to the telehealth visit with a respiratory problem that was complicated with a comorbid disease (COVID-19) for current relevancy. The scenario was an unfolding case consisting of two separate prerecorded simulated telehealth visits. Guided by the simulation objectives, faculty wrote a standardized patient (SP)-APN provider script for the scenarios. The script intentionally excluded certain aspects of the visit, such as medication orders and patient education. Students completed the missing aspects using the discussion board. This activity gave them opportunities for decision-making and peer collaboration through their response to peer posts. Prior to recording the interaction, the faculty team practiced the scenario to ensure scenario flow and connection to learning objectives. The faculty simulation expert suggested revisions to the script during the practice session. The final simulation interaction was com-

Table Student Learning Objectives and Associated Discussion Board Topics

Simulation-Based Experience	SBE Objectives	Discussion Board Topics
Part 1 Video Initial telehealth interaction	Recognize clinical presentation of a client who has asthma that is complicated with a comorbid disease, COVID 19. Evaluate nursing care provided. Develop a clinical management plan based on the client virtual health visit.	Complete a "S.O.A.P." note detailed with assessment components, (subjective & objective) findings recognized in video presentation. Detail which assessment findings indicate a patient is appropriate to manage via telehealth versus refer to specialist for face-to-face visit or disposition to higher level of care.
	Identify correct medication dose and routes for a patient who is exhibiting signs of COVID 19.	Describe the pharmaceutical therapy (Rx and OTC) you will order, or expect to see ordered for the patient. Include brand/generic name, strength and medication administration instructions.
	Create patient education materials to submit virtually to the client.	Create a clinical management plan, based on the client's virtual health visit; detailing patient visit summary and education materials submitted virtually through the patient portal.
Part 2 Video Follow-up telehealth interaction	Differentiate between an acute asthma attack versus a secondary acute respiratory disease, COVID 19. Communicate effectively with client and collaborating provider/preceptor using written SBAR. Document the HPI, assessment, management plan, and patient education in the client's chart. Evaluate nursing care provided.	Describe your proposed plan of action for the 48-hour follow-up visit. Please provide the following details, (1) What is your plan for patient improvement and (2) What is your plan for patient condition decline? Create a "provider note" for entry into the patient's chart. Detail education provided to patient, regarding consent and explanation of their telehealth visit.

pleted using the recording feature of a teleconferencing tool.

Presimulation Activities

A week prior to the SBE, students had specific activities to complete to prepare them to meet the simulation objectives. These included reading assignments on content covering common respiratory diseases and pharmotherapeutics in primary practice, watching videos on remote health assessments, and information on uploading patient education materials to patient portals. To set the stage for the simulation, students had an asynchronous prebrief (INACSL Standards Committee, 2016a) in the LMS module that housed the links to the recorded interactions. Once students opened the module, they had to read the prebrief, which guided them to the Part 1 video link. In the prebrief, students received the initial completed patient telehealth screening which they could print. This provided the context for the

SBE. The prebrief instructed students to (a) view the telehealth interaction, (b) take on the role of the nurse provider at the end of the video, and (c) go to the discussion board topics to complete the SBE.

Implementation

The simulation was broken into two distinct, scripted, prerecorded SP-APN SBE videos. The first part was focused on the SP presenting with an asthma exacerbation and a recent COVID-19 exposure. The second part consisted of a follow-up visit with the patient, who exhibited further decompensating respiratory state and a confirmed COVID-19 lab diagnosis. The instructional designers created a module (folder) within the LMS that housed a link to the Part 1 SBE video. During this scenario, students observed the APN perform a telehealth assessment of the SP. After students watched the Part 1 SBE, they completed two separate discussion board activities, each with their own link.

Activities included writing assessments and developing a clinical management plan. Since this course had both NP and non-NP track postlicensure students, the instruction for the clinical management plan included options of either prescribing the plan or anticipating what the prescriber would do. Once students posted in both discussion board topics associated to Part 1, the link to the Part 2 SBE and the subsequent discussion board topics became available to them. The Table lists the Part 1 discussion board topics correlating with the student learning objectives. The discussion board topics demonstrated students' ability of advanced nursing assessment, diagnosis, planning, evaluating outcomes and providing disease specific education during a telehealth visit. According to Benziger, Huffman, Sweis, & Stone (2020), new reliance on telehealth requires clinicians to develop and enhance distance assessment skills, obtain detailed objective information, and proactively think about which parts of an examination can be performed remotely. Students then had to respond to at least one peer for collaboration on the treatment/education plan.

The Part 2 SBE was housed in the same module as the Part 1 and, as mentioned earlier, not revealed to students until they had completed all Part 1 discussion board activities using the built-in release condition in the LMS. During the Part 2 SBE, students observed the follow-up telehealth visit with the same SP-APN for an unfolding case scenario. Once students watched the Part 2 SBE, they then completed the assigned discussion board topics (Table) for this SBE. These topics focused on students' ability to acknowledge chronic illness exacerbation and execute transfer to higher level of care based on patient severity in symptoms or change in illness prognosis. Additionally, students recognized the role for advanced nursing practice educators and APNs related to provider regulations and policies surrounding telehealth medicine. This scenario presented students with the potential complications associated with limitations of physical assessments conducted virtually.

Debriefing

In keeping with the *INACSL Standard for Best Practice: Simulation^SM Simulation Design*, debriefing followed after students completed the entire asynchronous telehealth SBE. Debriefing occurred synchronously via a web-based teleconferencing tool. It was conducted by two faculty, one whom was a Certified Healthcare Simulation Educator and the other was a APN. They used the Promoting Excellence and Reflective Learning in Simulation tool (Eppich & Cheng, 2015) to guide the debriefing. Since students took on the role of the telehealth nurse through discussion board assignments, faculty integrated specific nursing actions from the discussion board posts into the debriefing. The final phase of the Promoting Excellence and Reflective Learning in Simulation tool is application/and summary in which students reflect on the "take-aways" of the simulation for their clinical practice. Comments made by

students demonstrated how they value the importance of collaboration as they learned from each other through the discussion board assignments. Additionally, students recognized strategies for remote assessments, learned about incorporating various holistic homeopathic remedies, and used current evidence-based practices for COVID management.

Conclusion

This asynchronous telehealth simulation was an innovative strategy that integrated simulation in a fully online nursing course. It allowed students to practice clinical decision-making and collaboration skills remotely. This learning activity prepared students for the current increased use of telehealth in today's health care environment. The prerecorded SBE, using a web-based teleconference tool and embedding it within the LMS, was a simple, sustainable, and cost-effective innovation for nursing faculty and students with various levels of technology proficiency. This strategy can be used for all nursing students in any program level provided the SBE outcomes align with course objectives and learner. A pilot study has been completed that examined student perspectives of the value and effectiveness of this learning experience.

References

American Association of Colleges of Nursing. (2015). White paper: Re-envisioning the clinical education of advanced practice registered nurses. Retrieved from http://www.aacnnursing.org/Portals/42/News/White-Papers/APRN-Clinical-Education.pdf.

Assistant Secretary for Planning and Evaluation – U.S. Department of Health and Human Services. (2020). Medicare beneficiary use of telehealth visits: Early data from the start of the COVID-19 pandemic. Retrieved from https://aspe.hhs.gov/pdf-report/medicare-beneficiary-use-telehealth.

Benziger, C. P., Huffman, M. D., Sweis, R. N., & Stone, N. J. (2020). The Telehealth Ten: A guide for a patient-assisted virtual physical examination. *The American Journal of Medicine*, *143*(1), 48-51 S0002-9343(20)30597-0Advance online publication. https://doi.org/10.1016/j.amjmed.2020.06.015.

Eppich, W., & Cheng, A. (2015). Promoting Excellence and Reflective Learning in Simulation (PEARLS): Development and rationale for a blended approach to health care simulation debriefing. *Simulation in Healthcare*, *10*(2), 1-10. https://doi.org/10.1097/SIH.0000000000000072.

FAIR Health (2020). Monthly Telehealth regional tracker, April 2020. Retrieved from https://www.fairhealth.org/states-by-the-numbers/telehealth.

Health Resources and Services Administration (HRSA). (2019). What is telehealth? Retrieved from https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine.

INACSL Standards Committee. (2016, December). INACSL standards of best practice: SimulationSM Simulation design. *Clinical Simulation in Nursing*, *12*(S), S5-S12. https://doi.org/10.1016/j.ecns.2016.09.005.

INACSL Standards Committee. (2016, December). INACSL standards of best practice: Simulation^SM outcomes and objectives. *Clinical Simula-*

tion in Nursing, *12*(S), S5-S12. https://doi.org/10.1016/j.ecns.2016.09.005.

Merritt, L., Brauch, A., Bender, A., & Kochuk, D. (2018). Using a web-based e-visit simulation to educate nurse practitioner students. *The Journal of Nursing Education*, *57*(5), 304-307. https://doi.org/10.3928/01484834-20180420-10.

Rutledge, C., Kott, K., Schweickert, P., Poston, R., Fowler, C., & Haney, T. (2017). Telehealth and eHealth in nurse practitioner training: Current perspectives. *Advances in Medical Education and Practice*, *8*, 399-409. https://doi.org/10.2147/amep.s116071.