

Background

- The NCSBN National Simulation Study¹ supported that simulation can be substituted for clinical hours in pre-licensure nursing education.
- Our needs assessment identified gaps related to increased cohort size from 48 to nearly 80 students, limited pediatric clinical sites, inconsistent clinical opportunities, and stakeholder perceptions of students not being prepared for clinical decision-making.

Purpose

- To bridge these gaps, we developed and implemented a 4-day, 24-clock hour pediatric simulation-based clinical series (Sim Series) within our pre-licensure graduate nursing program's complex health alterations across the lifespan clinical course.

Methods

Design

- Our faculty team includes 2 Certified Healthcare Simulation Educators.
- We designed the Sim Series to align with clinical course objectives, activity learning objectives, didactic course content, and INACSL Standards of Best Practice: Simulation^{SM2-3}.

Setting

- Accredited simulation center within an urban academic medical center and university in the Midwest.

Participants

- Students are in their 5th term of a 6-term pre-licensure graduate (MSN) nursing program. Total cohort size 72-80 student per term.

Procedures

- Faculty facilitators received formal internal and external simulation training.
- Clinical groups are assigned a two week (4-day) block during the term for the Sim Series.
- In addition to the 24-clock hour Sim Series, 5th term students complete 140-clock hours traditional inpatient clinical in both adult and pediatric acute and critical-care settings, and a 4-clock hour emergency management simulation at the end of the term.
- Trained clinical faculty facilitate clinical groups of 8 students.
- All simulation activities include pre-briefing and debriefing using PEARLS or Modified Plus-Delta.

ACKNOWLEDGEMENTS: Emily Salans MSN RN, Christie Lawrence DNP APRN, and the staff of the Rush Center for Clinical Skills and Simulation

Methods

Day 1:

- Vascular access devices and complications review (group discussion)
- Peripheral intravenous catheter insertion (task trainers)
- Safe medication administration (unfolding case study)
 - Key topic: clinical decisions about medication safety beyond the "five rights"

Day 2:

- Tracheostomy review and practice (group discussion and task trainers)
- Respiratory/Shock Scenarios using high-fidelity mannequin
 - Gaumard® Pediatric HAL® One-Year-Old
 - A 2-student team completes one 10-15 minute independent case as registered nurses (RNs) while remaining 6 students watch from debriefing room via audio/video feed. All students participate in 20-30 minute facilitated debriefing after each case.
- Four toddler cases set in emergency department: hypovolemic shock, reactive airway, cardiogenic shock, septic shock
- Key topics: toddler growth and development, pediatric assessment triangle, problem identification, ISBAR phone communication with providers, verbal/telephone orders, medication administration, evaluation

Day 3:

- Chest tube review and practice (group discussion and task trainers)
- Patient-controlled analgesia (PCA; group discussion and task trainers)
- Chest Tube Scenarios using high-fidelity mannequin
 - Gaumard® Pediatric HAL® Five-Year-Old
 - A 2-student team completes one 10-15 minute linked case as RNs while remaining 6 students watch from debriefing room via audio/video feed. All students participate in 20-30 minute facilitated debriefing after each case.
- Four school-age cases set in inpatient pediatric unit: recovering from cardiac surgery with chest tube and PCA
- Key topics: school-age growth and development, nursing assessment and management of chest tubes and PCA, recognizing chest tube complications and intervening appropriately, ISBAR, evaluation and next steps

Day 4:

- Virtual Clinical Day using high-fidelity mannequin and standardized patient (SP)
 - Laerdal SimMan® or CAE Lucina® and SP (faculty member in role of parent)
 - Students plan care as a group ("one nurse-mind") in debriefing room. When encounter with patient, parent, and/or provider is indicated, 1 student is "randomly" chosen to enter simulation room as RN. Remaining 7 students watch from debriefing room via audio/video feed. Faculty facilitate intermittent debriefing as needed.
- One continuous 6-hour adolescent unfolding case (8 planned scenes) in real-time set in inpatient pediatric unit: status asthmaticus and concurrent Type 1 diabetes
- Key topics: adolescent growth and development, planning care using asthma pathway and diabetic protocol, management of acute asthma exacerbation and hypoglycemia, ISBAR provider communication and handoff, medication administration, patient/family discharge teaching, time management, prioritization, independent clinical decision-making, evaluation and next steps

Methods

Analysis

- Students and faculty complete the same weekly clinical performance evaluations used in traditional inpatient clinical.
- Students evaluate the Sim Series using the standard simulation center evaluation tool (M-DASH®) and the university end-of-term course evaluation.

Results

Outcomes

- From January 2017-April 2020, 480 students completed the Sim Series.
- Formal and anecdotal student and faculty feedback has been positive.
 - Nearly all students rated the activities, learning experience, and instructors as "Extremely effective/Outstanding" or "Consistently effective/Very good".
 - "Helped me feel prepared to encounter situations in clinical;" "Made me think about managing multiple outcomes for a patient and how to plan for unexpected outcomes;" "Practicing in real time and calling providers/families;" "Learning about the details of care pathways/protocols".
 - "I was able to synthesize course concepts and gain helpful feedback and recommendations that we often don't experience in clinical;" "Really impressed with the way that Sim Series was set up;" "Offer more [simulation-based learning experiences] and more opportunities earlier in the program".
- The Sim Series provides faculty the venue to closely evaluate individual student clinical performance and to recommend student-specific development plans toward meeting course objectives; these can be implemented in subsequent inpatient clinical rotations. Conversely, inpatient clinical faculty are able to provide insight regarding student clinical behaviors for simulation faculty to evaluate.
- The Sim Series has provided 3 Pediatric/Neonatal Clinical Nurse Specialist students supervised practicum hours focused on facilitating clinical education and simulation-based learning.

Cost

- Cost for the Sim Series per learner is approximately \$132, the fee paid to the simulation center for use of facilities, equipment/supplies, and staff.

Conclusion and Implications for Practice

- Our simulation-based pediatric clinical series provides pre-licensure graduate nursing students significant opportunities to safely apply knowledge, demonstrate skills, make clinical decisions, recognize complications and intervene, provide patient/family teaching, and integrate developmentally-appropriate care.
- Simulation-based learning provides a valuable strategy for faculty to ensure consistent clinical experiences for students; faculty can also more closely address specific student learning needs and recommend clinical performance development goals.
- Next steps include integrating summative student evaluation, increasing the simulation to clinical hour ratio, and adding robust pre-work.

References

1. Hayden, J. K., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). The NCSBN National Simulation Study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation*, 5(2 Suppl), S3-S40.
2. INACSL Standards Committee. (2016). INACSL standards of best practice: SimulationSM Facilitation. *Clinical Simulation in Nursing*, 12(S), S16-S20.
3. INACSL Standards Committee. (2016). INACSL standards of best practice: SimulationSM Simulation design. *Clinical Simulation in Nursing*, 12(S), S5-S12.