Innovative Pre-Simulation Activities to Prepare Nursing Students for a High-Fidelity Simulation Experience

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Introduction

- Simulation-based education has become an important component in pre-licensure nursing education to:
  - enhance experiential learning in safe settings
  - enable students apply theoretical knowledge in the care of care for patients with varied and complex health needs

Introduction

- The International Nursing Association for Clinical Simulation & Learning (INACSL) Standards Committee (2016) specifies that providing activities for participants to prepare for simulation is one of the criteria to meet the INACSL Standards of Best Practice: Simulation[SM] Facilitation standard

Introduction

- Although less frequently researched, pre-simulation activities have been shown to reduce anxiety, improve self-confidence, increase satisfaction and enhance learning in students (Chamberlain, J. 2017, Kim et al., 2017, Cato 2013, Husebo et al., 2012, Brewer 2011, Elfrink et al., 2009).
- Recommendations regarding the type and extent of preparation to ensure successful outcomes in simulation have not been established to date (Leigh & Steuben, 2018, McDermott, 2016, Chamberlain, 2015, Page-Cutrara, 2014, Waxman, 2010).

Theoretical Framework

Tanner's Model of Clinical Judgement (2006)

- The process includes 4 steps beginning with the concept of "Noticing"
  - Nurses' expectations affects the initial grasp of a situation
  - Expectations are influenced by what nurses bring to a situation
    - context, background and relationship

Background

- Increase in the number of students enrolled in the nursing program
- Decrease in available and appropriate clinical sites
- Increase use of simulation-based education in the nursing program
- Simulation resources were strained to meet the demand which made it imperative to maximize student learning in each simulation experience.

Background

- Clinical for the half-semester Maternity Nursing course was changed from two days to one 12 hour day per week
- Due to demand, time in the Simulation lab was limited to one 4 hour session

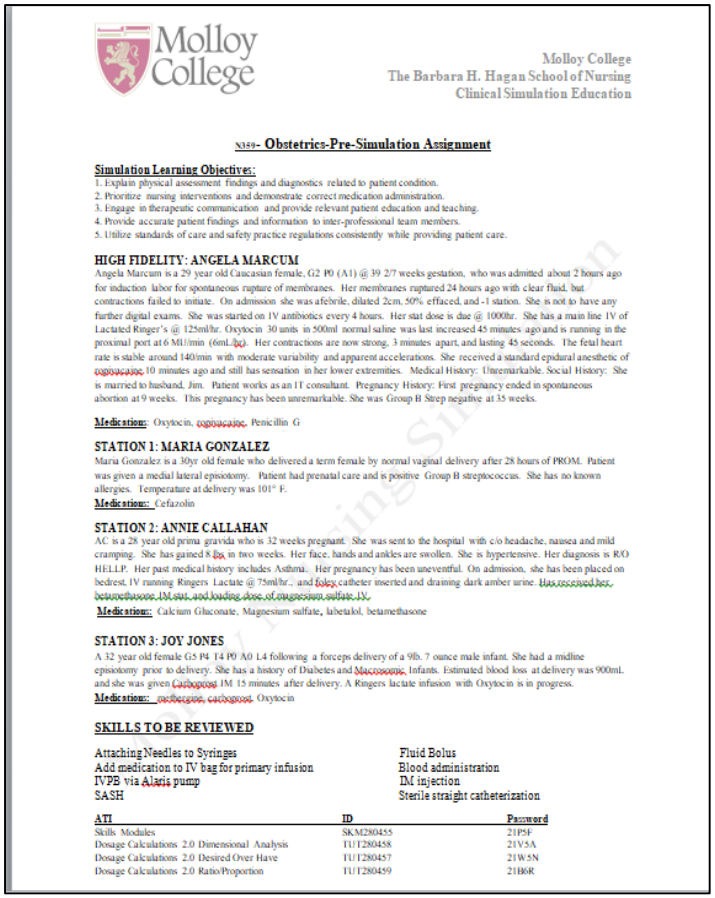
Background

- Dividing the day between the clinical site and the campus simulation lab negatively impacted the experience in both locations
- Needed to provide meaningful activities for students for the remaining clinical hours

Simulation-Related Activity Development

Initial Activities

- We developed a pre-simulation assignment for students to review on their own which was distributed to the students at the beginning of the course
- The assignment was based on the content of the simulation scenario and included:
  - scenario objectives
  - pertinent patient information
  - Medications
  - related psychomotor skills



Molloy College
The Barbara H. Hagan School of Nursing
Clinical Simulation Education

N359- Obstetrics-Pre-Simulation Assignment

Simulation Learning Objectives:
1. Explain physical assessment findings and diagnostics related to patient condition.
2. Prioritize nursing interventions and demonstrate correct medication administration.
3. Engage in therapeutic communication and provide relevant patient education and teaching.
4. Provide accurate patient findings and information to inter-professional team members.
5. Utilize standards of care and safety practice regulations consistently while providing patient care.

HIGH FIDELITY: ANGELA MARCUM
Angela Marcum is a 29 year old Caucasian female, G2 P0 (A1) @ 39 2/7 weeks gestation, who was admitted about 2 hours ago for induction labor for spontaneous rupture of membranes. Her membranes ruptured 24 hours ago with clear fluid, but contractions failed to initiate. On admission she was afebrile, dilated 2cm, 50% effaced, and -1 station. She is not to have any further digital exams. She was started on IV antibiotics every 4 hours. Her stat dose is due @ 1000hr. She has a main line IV of Lactated Ringer's @ 125ml/hr. Oxytocin 30 units in 500ml normal saline was last increased 45 minutes ago and is running in the proximal port at 6 MU/min (6mL/hr). Her contractions are now strong, 3 minutes apart, and lasting 45 seconds. The fetal heart rate is stable around 140/min with moderate variability and apparent accelerations. She received a standard epidural anesthetic of ropivacaine 10 minutes ago and still has sensation in her lower extremities. Medical History: Unremarkable. Social History: She is married to husband, Jim. Patient works as an IT consultant. Pregnancy History: First pregnancy ended in spontaneous abortion at 9 weeks. This pregnancy has been unremarkable. She was Group B Strep negative at 35 weeks.

Medications: Oxytocin, ropivacaine, Penicillin G

STATION 1: MARIA GONZALEZ
Maria Gonzalez is a 30yr old female who delivered a term female by normal vaginal delivery after 28 hours of PROM. Patient was given a medial lateral episiotomy. Patient had prenatal care and is positive Group B streptococcus. She has no known allergies. Temperature at delivery was 101° F.
Medications: Cefazolin

STATION 2: ANNIE CALLAHAN
AC is a 28 year old prima gravida who is 32 weeks pregnant. She was sent to the hospital with c/o headache, nausea and mild cramping. She has gained 8 lbs in two weeks. Her face, hands and ankles are swollen. She is hypertensive. Her diagnosis is R/O HELLP. Her past medical history includes Asthma. Her pregnancy has been uneventful. On admission, she has been placed on bedrest, IV running Ringers Lactate @ 75ml/hr., and foley catheter inserted and draining dark amber urine. Has received her betamethasone IM set, and loading dose of magnesium sulfate, IV.
Medications: Calcium Gluconate, Magnesium sulfate, labetalol, betamethasone

STATION 3: JOY JONES
A 32 year old female G5 P4 T4 P0 A0 L4 following a forceps delivery of a 9lb. 7 ounce male infant. She had a midline episiotomy prior to delivery. She has a history of Diabetes and Macrosomic Infants. Estimated blood loss at delivery was 900mL and she was given Carboprost IM 15 minutes after delivery. A Ringers lactate infusion with Oxytocin is in progress.
Medications: methergine, carboprost, Oxytocin

SKILLS TO BE REVIEWED

Attaching Needles to Syringes	Fluid Bolus
Add medication to IV bag for primary infusion	Blood administration
IVPB via Alaris pump	IM injection
SASH	Sterile straight catheterization

ATI	ID	Password
Skills Modules	SKM280455	21P5F
Dosage Calculations 2.0 Dimensional Analysis	TUT280458	21V5A
Dosage Calculations 2.0 Desired Over Have	TUT280457	21W5N
Dosage Calculations 2.0 Ratio/Proportion	TUT280459	21B6R

Initial Activities

- Students were also required to attend a face-to-face 2-3 hour prenatal class or postpartum support group session on their own.
- We suggested that students contact institutions that provide maternity services about attending sessions on one of the following topics:
  - Prepared childbirth class
  - Breastfeeding class/support group
  - Infant care class
  - Prenatal exercise class

Pre-simulation Assignment Evaluation

- A research study conducted in 2017
- 148 students in the maternity nursing course consented to participate
- 142 baccalaureate students completed the demographic form and the test before simulation and the Simulation Effectiveness Tool-Modified (SET-M) after debriefing
- Forms were coded to maintain anonymity

Pre-simulation Assignment Evaluation

- The findings demonstrated a positive correlation between the amount of time students spent on the pre-simulation assignment and their perceived benefit to learning scores (r=.169, *n*=136, *p*=.049)
- The Pearson Correlation also revealed a statistically significant positive correlation between the perceived confidence and perceived benefit to learning scores (r=.765, *n*=141, *p*=.000).

Cornell, Kuerban & Paraszczuk – manuscript under review

Class Attendance Evaluation

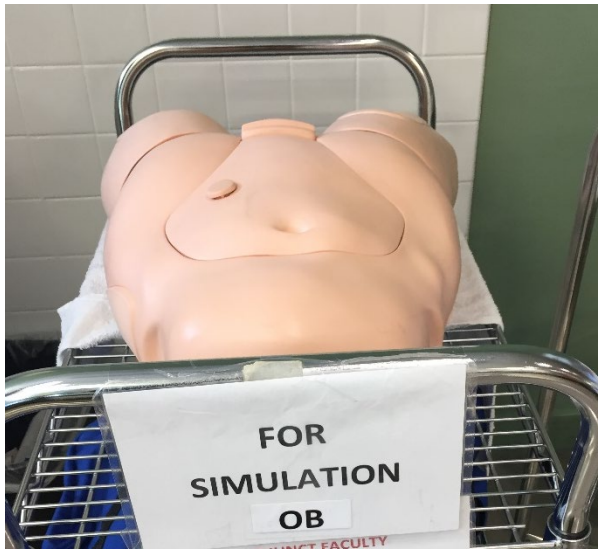
- Students encountered increasing difficulty with completing this requirement:
  - Arranging class attendance within the half semester was a challenge
  - Healthcare institutions placed limits on the number of students that could attend a session and which sessions they could attend
  - A few organizations wanted to charge students a fee
  - Numerous inquires ensued of what to do when students could not complete this requirement.

Added Pre-Simulation Activities

- Maintained the requirement for students to complete the pre—simulation assignment
- Replaced the class attendance requirement with a 4 hour skills workshop that students in the clinical group attended with their instructor in the morning before the simulation session
- Scheduled all of the maternity simulation sessions to start at 1 PM

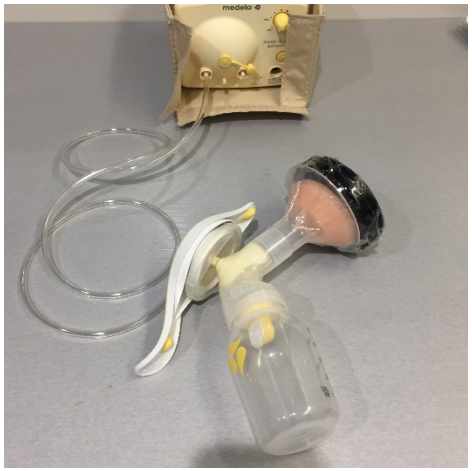
PRE-SIMULATION ACTIVITIES

- Reserved a room for the workshop from 8am to 12 noon on each of the scheduled simulations days
- All equipment/supplies needed were placed on carts in advance



Equipment/Supplies

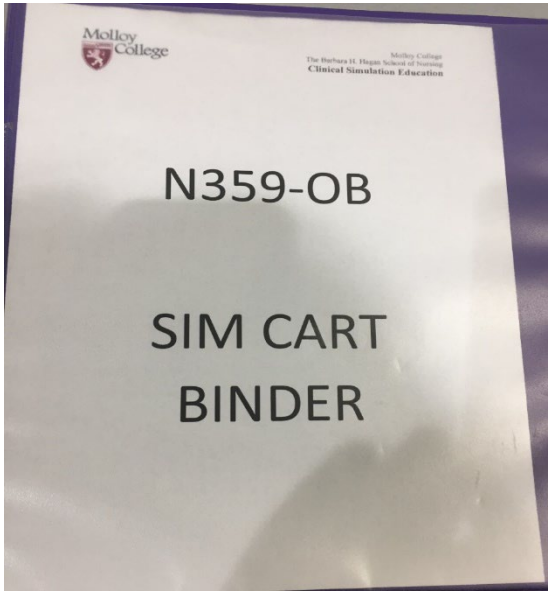
- Pelvis & Breast models
- Infant manikin
- Infant care items
- Urinary Catheterization kits
- Manual & electric breast pump
- IV pumps & medication
- Blood & transfusion sets
- Gloves, syringes needles

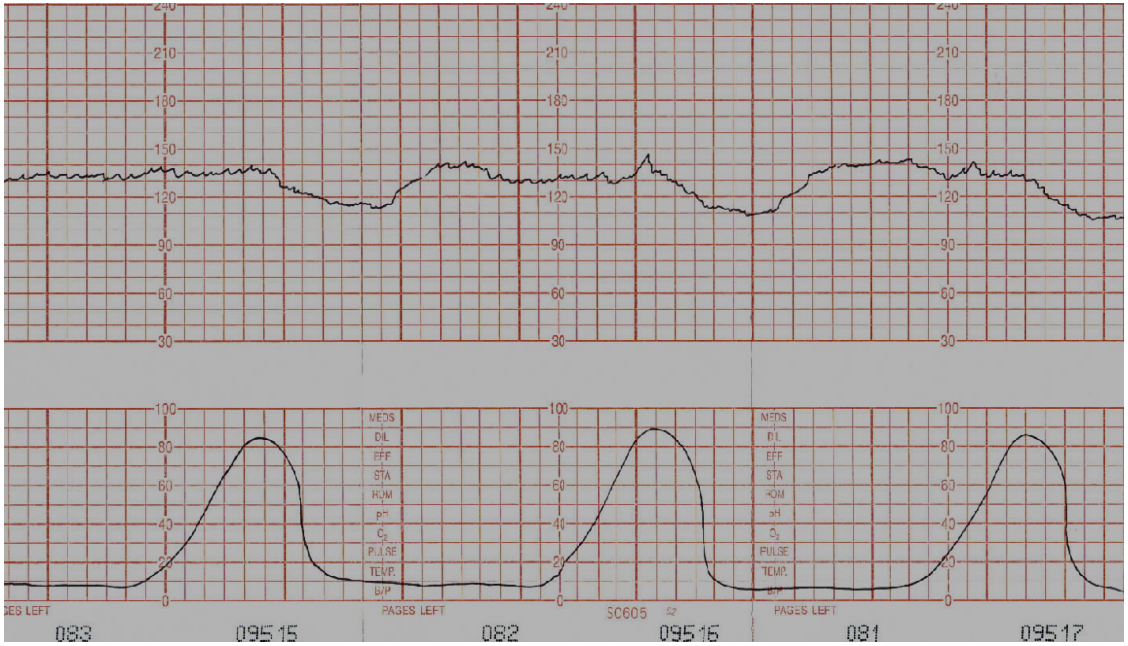


Procedures/Skills

- Assessment techniques
  - Maternal and newborn
- Postpartum and newborn care
- Medication administration
  - Titrating drug infusions
- Blood transfusion
- Urinary catheterization
- Breast pump use

Critical Thinking Activities





- Review fetal monitor tracings
- Prioritizing and delegation scenarios

Simulation Session

Student Feedback

- Students rated the pre-simulation workshop very highly
  - Valued the opportunity to practice with guidance from the clinical instructor
  - Reported a benefit to their learning having extended time to practice procedures and to use equipment
  - Report feeling more confident in the simulation session

Faculty Feedback

- Faculty were very positive about this pre-simulation workshop:
  - noted the students to be engaged during the workshop
  - noted that students were less preoccupied with the skills and more focused on the patients during the simulation session
  - reported that the students seemed more confident during the simulation session and were able to use equipment/perform procedures more efficiently

Next Steps

- We plan to conduct a study to measure the effectiveness of this strategy for nursing students at this and other levels of the program
- We recommend further research on the effect of pre-simulation activities on nursing student learning

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