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Bringing simulation to life

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Abstract As the complexity and acuity of patients are ever increasing, the faculty at Kingsborough Community College struggled to assure that their students will be qualified to safely care for their patients when they graduate from the nursing program. Because opportunities often were not available in the clinical setting, simulation was introduced into the curriculum to meet these needs. Simulation is an ideal teaching strategy for high-risk/low-volume events in a safe environment. This article describes the implementation of simulation into the nursing curriculum with emphasis on critical thinking in the clinical setting as well as debriefing and reflection at the completion of the simulation.

Initial encounters with very ill, hospitalized patients can be both an intimidating and anxiety-provoking experience for novice nursing students. In addition, recent health care trends have led to a change in the patient population, where only the sickest patients or those with comorbidities are admitted to hospitals (Bambini, Washburn, & Perkins, 2009; Hauber, Cormier, & Whyte, 2010; McGaughey, 2009).

Faculty must constantly look for new ways to assist the nursing student to transition to this higher level of care. Students have many different learning styles, and educators need to create methods that integrate theoretical, affective, and perceptual/motor skills needed to provide holistic care (Fountain & Alfred, 2009). Because ineffective communication has often been cited as the root cause for sentinel events, simulation scenarios are a method of addressing communication and other patient safety issues without putting the patient at risk (Burke 2010).

1. Our school before simulation

Before the initiation of simulation, the college laboratory experience consisted of learning psychomotor skills prior to the clinical experience. To augment student learning, the college initially purchased eight low- to medium-fidelity VitalSim (Laerdal) mannequins or human patient simulators (HPS) for the nursing laboratory. These mannequins were capable of changing vital signs and making sounds such as coughing, wheezing, and so forth. The mannequins were used to assist the students in learning adventitious breath sounds, bowel sounds, blood pressure, and heart rate. They were not capable of answering questions, receiving intravenous (IV) fluids, or using a cardiac monitor. The instructor would change the sounds emitted from the mannequins, and the students were required to identify each sound correctly. This helped prepare the students for assessment of their patients in the clinical areas.

2. The decision-making process to incorporate simulation

Because of the decreased availability of clinical sites (Commission on Education, 2007; Dugan & Amorim, 2007;

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Magnusson, O'Driscoll, & Smith, 2007), the faculty needed to evaluate available technologies to better prepare the nursing students for future practice. Nursing and other health care professions have been increasingly using HPS as a means of "augmenting learning, teaching patient safety, enhancing clinical practice, teaching resuscitation and teaching clinical judgment skills" (Parr & Sweeney, 2006, p. 188). Simulation education is an ideal teaching strategy for high-risk/low-volume events. Newly graduated registered nurses (RNs) frequently lack experience in high-risk situations (Anderson & LeFlore, 2008).

According to Waldner and Olson (2007), three types of simulations are used in nursing: task and skill trainers, computer-based simulation, and simulations that replicate the clinical environment. One methodology that has proven successful for the team of faculty who teach the medical–surgical nursing course where this transition occurs is the use of simulations. Fortunately, the college received grant monies that covered the cost of the high-fidelity HPS, which enabled the students to have a more realistic experience. A high-fidelity SimMan (HPS) that exhibits additional human responses was purchased in 2007. A second high-fidelity HPS was purchased in 2010, which enabled the faculty to run two simulations at the same time. This resulted in smaller groups of students participating in simulation simultaneously.

3. The implementation process

To begin this process, the laboratory had to be restructured to accommodate the two high-fidelity HPS. A realistic hospital-like setting had to be created so that complex simulations could be performed. It contains numerous beds, cardiac monitors, pulse oximeters, medication carts, electronic medical record (EMR) stations, cabinets with various patient-care supplies, reference books, IV carts and pumps, and appropriate documentation forms. It also has an emergency cart and a ventilator. Depending on the specific content of the simulation, various other "props" were added, such as a blood bank refrigerator. During the cirrhosis simulation, the student must call the blood bank (faculty members or laboratory personnel enact this role) and retrieve 1 U of packed red blood cells for transfusion. Every effort was made to present the patient situation as realistically as possible. For example, bloody stools and vomitus were simulated by mixing coffee grounds and pudding with simulated blood. Once everything was in place, the simulations were able to be implemented.

At Kingsborough, all three types of simulation are utilized. Task and skill trainers are employed when students are taught a new skill, such as tracheotomy care. Computer-based simulations are used weekly to compliment the bedside simulations that are performed in the nursing skills laboratory and to reinforce basic concepts. Lastly, students participate in a simulated patient care scenario that correlates with current lecture topics.

With simulation, all students gain experience from each scenario. The faculty from each course formed a simulation committee and developed and wrote scenarios that were relevant to their particular course. For the first medical–surgical nursing course, the faculty incorporated nine different scenarios into the simulation laboratories. Each simulation corresponded to a different lecture topic. Each scenario requires that two to three students, who were selected by the faculty on a rotating basis, play the role of the nurses. In the third to the ninth scenario, three students were selected instead of two; one nurse acted as the team leader, whereas the other two nurses performed required nursing skills. Throughout the simulation, critical thinking and prioritization of care were emphasized. Different students were selected each week for the various roles, and a record was kept to ensure that all students had equitable opportunities. The faculty members along with the laboratory and resource personnel assisted in running the simulation. Novice learners tend to progress with tasks without organizing information. They often miss important cues or focus on nonessential information in the scenario. They lack the mental frameworks that experts have for organizing knowledge (Schwartz, Bransford, & Sears, 2005). Faculty members guided the students through areas that were complex, if the students were unsure or unable to perform a new task, or if they were unable to answer a critical question pertaining to the scenario. It is often necessary to have progressive prompting to match the level of learner (Tuoriniemi & Schott-Baer, 2008). All of the simulation objectives, student learning outcomes, and competencies were derived from the medical–surgical curriculum for the course and were written at different levels of complexity.

4. How we incorporated simulation into learning

The faculty, guided by evidenced-based practice, decided upon the choices for the simulation scenarios. Each simulation scenario was objective driven and aimed at facilitating students achieving learning outcomes. Scenarios should be evidenced based to address predetermined learning objectives (Jeffries, 2007; Seropian, Brown, Gavilanes, & Driggers, 2004). Therefore, learning objectives drove the scenario development. Clinical situations that were selected are those clinical competencies required of new graduate RNs but are not often encountered during their student education in the clinical settings. In the simulations, students cared for patients who had chest tubes, experienced heart failure, had bleeding esophageal varices, or were in shock. All of these patients exhibited respiratory distress, and the patient who had bleeding esophageal varices was at risk for a compromised airway. During the latter simulation, the