

Simulation and Manikins



Introduction

- History and current use
- Impact on healthcare and nursing
- Advantages and disadvantages
- Controversy and issues
- Challenges and regulatory implications

“Simulation is a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion” (Aebersold & Tschannen, 2013)

Findings That Would Prompt Simulation Development

- 1999 Institute of Medicine Report - 98,000 people die annually due to medical errors
- Many errors were found to be made due to lack of technical skills
- Quality of care and safety regulation enforcement



History and Current Use of Technology

- 1960 “Resusci-Anne”
CPR Manikin



- 1968 “Harvey” First
Interactive Manikin



21st Century Promoted of a Plethora of Simulators and Manikins



- Screen Based Simulators
- Complete Simulated Learning Environments
- Complex Computer Driven Interactive Manikins
- Interactive EMR Demonstration Portals
- Partial Task Trainers

3 Goals of Simulators and Manikin Use

- Training Medical Professionals which allows for :
 - Exposure – Prepares the student/ medical professional for rare occurrences and proper treatment techniques
 - Feedback Opportunities – Allows for preceptor instruction and guidance without jeopardizing patient health
 - Repetition – Allows for repeated practice of medical professional techniques



Impact on Professional Nursing Practice

- Nurses are able to utilize critical thinking and problem solving skills more effectively through reinforcement.
- Identify their strengths and weaknesses.
- Recognize and correct mistake they may have made while in simulation during the debriefing period.
- Allows them to practice and master skills as well as improve clinical outcomes.
 - Able to gain confidence in their skills in order to care for actual patient (Blevins, 2014).
 - Skills learned in simulation are easily passed on to the clinical setting.

Impact on Professional Nursing Practice Continued

- Nurses are able to handle and manage stress more effectively.
- Care for acutely ill patients are better managed
 - Provides a learning model to complement traditional learning in medicine (Lateef, 2010).
- Communication skills are improved.
 - Nurse to nurse handoffs
 - Interdisciplinary teams

Impact on Patient Safety



- Prevention of medical/medication errors
- Ability to gain experience without putting actual patients at risk
- Nurses acquire skills that promote patient safety.
- Nurses get the opportunity to experience scenarios.
- Performance of procedures has been shown that the volume of experience decreases patient complication rates (Lateef, 2010)
- Supports teamwork amongst healthcare professionals when providing patient care (Durham & Alden, 2008)

Impact on Patient Safety Continued

In a study of medical students from five different schools, a group was exposed to 2 weeks of practice using a simulator, followed by 2 weeks of traditional clinical work. The other group just went through traditional clinical rotations. The study showed that the students who went through simulation performed twice as well than the other group (Lateef, 2010).

Impact on Patient Care Delivery & Quality of Care

- The use of simulation in nursing has shown increasing improvements in the communication between interdisciplinary teams and patients
- Nurses are able to recognize and respond to medical emergencies
- Nurses are able to have confidence in their assessment abilities and are able to effectively manage the care of their patients

Risk Management

- Experienced nurses are able to anticipate any risks based on their knowledge or experience.
- Prevention or reduction of nosocomial infections, falls, and decubitus ulcers
- Safety checklist to reduce medication/medical errors.



Legal and Ethical Considerations



- Assist in delivering difficult information to patient and/or families
- Assist healthcare providers deal with End-of-Life controversies
 - Simulation-based medical education can be a platform which provides a valuable tool in learning to mitigate ethical tensions and resolve practical dilemmas (Lateef, 2010)

Legal and Ethical Considerations Continued

- Reduced the cost of malpractice claims for healthcare providers who have participated in simulation (Durham & Alden, 2008).
- Assist in preparing for an emergency disaster
- Integrate components such as cultural issues, alternative medicine/supplements, and language barriers

Infrastructure/Operational Consequences

- In order for a simulation lab to be operational, it must:
 - Be In a convenient location
 - Have adequate space
 - Have provisions for video recording equipment
- Medical simulation technology training that can be considered for the center would include:
 - Human patient simulators
 - Simulated clinical environment
 - Virtual procedure stations
 - Electronic medical records (Lateef, 2010)

Infrastructure/Operational Consequence Continued

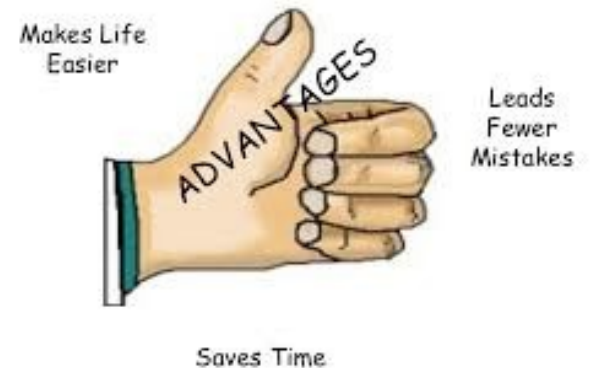
- The cost of simulation manikin range from \$95,000-\$250,000 each, depending on the type and technological advancement (Suarez, 2010).
- In addition to the manikin, there are cost to house the equipment as well as additional supplies.
 - Maintenance
 - Long-term technical support from other vendors (Lateef, 2010).
 - Training of the faculty and other personnel

Impact on a Population

- Simulators have left a great impact on students, educators, and professionals in the healthcare field.
- It has become integrated in almost every educational program to provide hands on supplemental experiences
- Hospitals and other healthcare agencies use simulation for training and/or continuing education.

Advantages of Simulators

- Offers opportunities to make and learn from mistakes.
- Can be customized for individual learning.
- Safe environment with no risk for patient, trainee, or organization.
- No direct risk to patient.



Disadvantages of Simulator Use

- High cost
- Stimulators cannot communicate ,or demonstrate feedback or show emotions.
- Cannot copy actual signs and symptoms.
- Does not simulate all scenarios



Advantages of New Nurses in Organizations



- Bridge the gap on knowledge already gained.
- Nurses feel more engaged and more committed.
- Team work

Health Care Organization Vantage Point

- Hiring competent and experienced recent graduate nurses at a lower rate than a nurse with tenure
- Reduced risk of litigation due to malpractice
- Reduction in cost related to repeat procedures due to errors



Controversial Issues

- Negative learning
- Poor design of simulation or simulator can result in learner feeling frustrated, upset, and angry.
- Development of unsafe habits
- Unintended messages sent to the learner



Controversial Issues Continued



- Risk Sensitization
 - High fidelity simulation can result in learners assuming that every patient require emergency hands on care
 - Gap between crisis events and gradual anticipation of events
 - Lack development in skills needed to observe, communicate and respond to patient changes

Challenges

- Lack of time
- Fear of technology
- Limited space and equipment
- Lack of trained staff
- Lack of financial support
- Additional workload
- Manikin maintenance



Regulatory Implications

- Use of simulation as clinical time
- 5 states and Puerto Rico have modified regulations to allow simulation time in collaboration with clinical hours
- 16 other states allow schools to incorporate simulations as clinical experience without change in regulations
- One state allow up to 10% of clinical time to be replaced with a simulation while other states go on a case by case basis

Summary

- Expand over the past few decades.
- Allowed for new opportunity in education.
- Viewed as standard of training.
- Employs a larger community.



Blue Team Project Evaluation

- How did the team function?
- What problems did the team have with interacting as a team?
- What specific actions would you recommend to future teams to help them interact, function, and collaborate successfully



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