

Simulation in Nursing Education

In The Beginning

For nurses who were educated from 1911 through the late 80's,- we remember Mrs. Chase and her descendents, who inhabited our clinical laboratories and who suffered as we practiced our beginning nursing skills on their poor, defenseless bodies. Mrs. Chase was a mannequin who was created by Mrs. Martha Chase, the wife of a physician and whose hobby was making cloth dolls for her children and neighborhood children. Her hobby became a business, with the dolls being sold nationally. Miss A. Lauder Sutherland, superintendent of nurses and the principal of the Hartford (CT) Hospital Training School, after seeing a cloth doll, requested a larger doll be made which could be used for demonstration purposes and on which student nurses could practice basic nursing skills. With the assistance of her physician husband, Mrs. Chase made a pattern for the doll that incorporated stitched joints hips, knees, elbows and shoulders. The first production mannequin, referred to as the "Chase Hospital Doll," was sent to the Hartford Hospital Training School for Nurses ¹. One of the early dolls is still on display at Hartford Hospital.



Figure 1 Hartford Hospital School of Nursing students being taught using the chase doll. 1956²

According to the web site³ of a graduate of Washington Hospital School of Nursing⁴ who shared her memories of her nursing school and Mrs. Chase:

¹ Hermann, Eleanor K., *Remembering Mrs. Chase*, Connecticut State Nurses Association Downloaded 3/24, 2011 from http://www.nsna.org/Portals/0/Skins/NSNA/pdf/Imprint_FebMar08_Feat_MrsChase.pdf

² Ibid

³ http://freepages.family.rootsweb.ancestry.com/~florian/whsn_hospital/washington_hosp_sch_nsg.htm

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"I'm not sure how old she was, but one "Mrs. Chase" was an integral part of WHSN in 1981-83 when I attended. Regardless of her age, Mrs. Chase seemed an eternal 25-30 year old. She never complained, despite her illnesses (of which she had many). Nor did she complain about inept nursing students who sometimes rolled her too far to one side of the hospital bed, or when she was treated a bit roughly by some.

Mrs. Chase was largely ignored also, staying quietly in her room, awaiting care by the next class. No one ever offered to brush her hair, or rub her back.

But, throughout student's inattentiveness, Mrs. Chase's only goal was to teach all of us good nursing skills. A few students got so attached to Mrs. Chase that they said they would invite her to our class graduation... but... Mrs. Chase never got to see any of the students walk across the stage in white uniforms as we each accepted our diplomas. At the end of the day, just as at the end of a school year, Mrs. Chase was often just left half laying across her hospital bed, or worse, stuffed in a corner like an adult-sized doll. Indeed, through the years, Mrs. Chase has been the best practice-mannequin ever to assist student nurses. Her plastic-like skin and almost-real hair, and eyes that seemed to follow us while in the room, were the only things that confirmed she was not really "human." But, for the amount of times students noticed that they felt rather fond of her, she certainly evoked human feelings from us all. Mrs. Chase, I am told, still resides on the lower floor of the School, and continues to meet students of every class."

Continuum of Simulation⁵

According to Nehring (2010), there are seven components that make up the continuum of simulation:

- Partial and complex task trainers

Mrs. Chase belongs to the group known as partial task trainers, where nursing students can practice simple nursing procedures such as turning patients in bed, putting them on bedpans, as well as more complex procedures as the mannequins became more complex

⁴ The Washington Hospital School of Nursing is a diploma school which continues, as of 2011, to function. The school is affiliated with Waynesboro University. For further information see their School Bulletin: http://freepages.family.rootsweb.ancestry.com/~florian/whsn_hospital/washington_hosp_sch_nsg.htm

⁵ Nehring, W.(2010), *History of simulation in nursing* in Nehring & Lashley, High-Fidelity Patient Simulation in Nursing Practice, Jones & Bartlett Publishers, Chapter 1 pp 3 - 26.

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involving the urethra vagina and rectum. Later manikins at injection site in their arms. In addition, there were adult male and Infant manikins

Task trainers consist of parts of the anatomy such as arms, which allow students to practice starting intravenous therapy. Another, is the upper body torso with a detachable right arm designed to teach the following skills:



- CVC and PICC line
- External jugular and subclavian catheters
- Blood withdrawal, Heparinization and fluid infusion
- Dressing and suturing techniques

- Role play

Role-Play has allowed students to practice interviewing and communication skills. Often role-play was videotaped so the students have an opportunity to critique their performance. Today we have more sophisticated formats such as the use of standardized patients, computerized games and Internet sites. In addition, high fidelity patient simulations, allow for a more standardized format and is more commonly used today.⁶

- Games

A variety of games have been developed to teach students decision-making skills. Games usually have structure and are based on theoretical frameworks. They're very helpful in dealing with specific patient populations such as the elderly or with specialized nursing content such as the psychiatric clients. One interesting game oriented format is the use of the Wii gaming platform to assist patients in rehabilitation with neuromuscular problems to improve their balance and emulation.⁷

- Computer-assisted instruction (CAI)

⁶ Nehring, W.(2010), *History of simulation in nursing* in Nehring & Lashley, High-Fidelity Patient Simulation in Nursing Practice, Jones & Bartlett Publishers, Chapter 1 p 12.

⁷ Ibid pg.13.

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In 1963 Marie Seedor⁸ published a research on the use of programmed instruction in community college nursing programs. Programmed instruction is self-paced and actively involves a student and provides immediate feedback and evaluation. With the growth of computers, paper oriented programmed instruction morphed into a computer based format.

Computer-assisted instruction has been used in health assessment, decision making, and obstetrical nursing skills. In addition, online instruction for nursing courses is fairly commonplace. Nehring (2010)⁹, discusses Pulse!!The Virtual Clinical Learning Lab (<http://www.elearningcouncil.com/els/pulse-virtual-clinical-learning-lab-avatars-and-diagnosis>) which allows students from various health care professions to work together as part of the team to solve clinical problem. There are also virtual worlds, allowing wide action role-playing.

- Virtual reality and haptic (tactile simulation) systems

Virtual reality allow the user to interact with the computer based world. It's hoped in the future that Internet virtual worlds will be used by nursing educators to teach and evaluate a variety of skills and of nursing students.



"Dozens of hospitals, medical schools and health foundations have staked out space in the online community Second Life, where participants can build their own virtual clinics and stage just about any training drill they can imagine. Interest is so high, both Stanford University and the University of Michigan last month held workshops on medical training and education in the virtual world.

In the drill, developed by Laura Greci, a professor at the medical school at the University of California, San Diego, ER

⁸ Marie M. Seedor, Ed.D, R.N. was an associate professor of nursing education at Teachers College of Columbia University. Dr. Seedor was the author of textbooks on nursing and a pioneer of programmed learning in nursing..(See Seedor, Marie, 1962, Can nursing be taught with teaching machines? AJN, vol.63, No. 8)

⁹ Nehring, W.(2010), *History of simulation in nursing* in Nehring & Lashley, High-Fidelity Patient Simulation in Nursing Practice, Jones & Bartlett Publishers, Chapter 1 p 12.

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nurses log in to the virtual world, where each assumes control of an avatar—a cartoon rendering of a nurse wearing crisp blue scrubs. The nurses can walk their avatars through hallways, up and down stairs and through doorways using keyboard or mouse controls. They can give voice to their avatars by typing—their words pop up as a text box—or by speaking into a special microphone. Headsets let each nurse hear ambient noise from the virtual scene and listen to the other avatars talking."¹⁰

- Integrated simulators: (instructor driven and model driven).

Integrated simulators are defined as low ,moderate and high fidelity model simulations. Low fidelity model simulators are used to instruct psychomotor skills, such as task trainers.(see above information under task trainers.)

Moderate fidelity simulators allow for students to listen for breath sounds heart sounds feel some pulses but do not show any movement such as chest movement when listening to breath sounds.

A realistic, full body adult, wireless patient simulator, **SimMan Essential** offers comprehensive clinical functionality to teach the core skills of airway, breathing, cardiac and circulation management.



Moderate Fidelity Simulator

High fidelity simulators are "computerized, full body manikins that could provide real-time physiological and pharmacological parameters of persons of both genders ferrying ages and with different health conditions."¹¹ the simulators may be instructor driven, or they can be model driven by being set for the running of a particular scenario. For an

¹⁰ From Avatar II The Hospital, Wall Street Journal Health Care April 30, 2010 Downloaded March 28, 2011 from:<http://online.wsj.com/article/SB10001424052748703909804575124470868041204.html#articleTabs%3Darticle>

¹¹ Nehring, W.(2010), *History of simulation in nursing* in Nehring & Lashley, High-Fidelity Patient Simulation in Nursing Practice, Jones & Bartlett Publishers, Chapter 1

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example of a virtual teaching hospital, visit the SIMS Medical Center at Springfield Technical Community College (Springfield, MA) <http://health.stcc.edu/SIMSMedical/>

Comments

The demands of today's society for patient safety and quality care require that clinicians are competent meaning that they use the knowledge, skills and judgment associated with their professional scope of practice. Nehring (2010) states that "it is again time for nursing to consider expanding the measure of competence to include an assessment of skills."¹² She suggests that nursing consider both multiple-choice questions and skills assessment. While some professions (i.e. medicine) use standardized patients, simulation can be used for the skills assessment.

With the advent of virtual hospitals, which provide clinical simulations for a variety of student and graduate health care professionals, discipline specific silos are broken and patient-centered team work can be fostered.

Today's nursing students have grown up with technology. They prefer experiential activities, team work and are goal oriented. Convenience and structure are important. . Students expect faculty to have in-depth, practical clinical and theoretical knowledge.¹³ While students prefer images to text, many have grown up with PowerPoint® presentations and, to put it mildly, are tired of PowerPoint and being passive learners; they want to be active learners. Simulation, in all its forms ,allows students to take an active role.

¹² Ibid p. 5

¹³.Skiba, Diane J. Education Meets Virtual Reality, University of Colorado at Denver & Health Sciences Center, Downloaded March 28, 2011 from http://www.nursing.umn.edu/img/assets/15662/Skiba_Diane.pdf