

Interprofessional Simulation-based Education

Educação interprofissional baseada em simulação

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Educators of future health care professionals are challenged to prepare practitioners to meet the needs of increasingly complex patients in dynamic health care settings. Professional competencies are not just specialty specific, but encompass knowledge, skills and abilities in accreditation standards, quality and safety measures, and team science. Simulation-based education strategies are heralded as creating a safe learning environment to promote learning, application of knowledge, and facilitate translation of knowledge to the clinical setting. Institutions of higher learning and clinical facilities utilize interprofessional simulation to accomplish their goals and lead to improved patient outcomes.

The amount of knowledge needed for new graduate health care professionals is expanding compared to past years. For example, health care professionals in the United States need knowledge of accreditation standards on the topics of core measures, care bundles, patient safety goals, and quality metrics as set forth by The Joint Commission. Multiple agencies contribute to quality and safety initiatives such as the Agency for Healthcare Research and Quality (AHRQ) and the Institute for Healthcare Improvement (IHI). The Institute of Medicine (IOM) establishes six goals for healthcare quality; health care that is safe, effective, efficient, timely, patient-centered, and equitable. These goals and quality metrics are best met through teamwork¹.

Simulation was first used in aviation to improve teamwork and communication. The first application of simulation in health care was in the field of anesthesia and has now expanded to other specialties and undergraduate, graduate and residency education programs. Simulation, especially high-fidelity simulation, has the ability to suspend disbelief and create a sense of realism. Learners feel the “patient” is real, not a computer driven simulator, and thus treat the patient and situation as real. High-fidelity simulation affords the learners a chance to assess and respond to a changing patient scenario as they would in a real situation.

According to the AHRQ², simulation in health care serves multiple purposes. As a training technique, it exposes individuals and teams to realistic clinical challenges through the use of mannequins, task trainers, virtual reality, standardized patients or other forms, and allows participants to experience in real-time the consequences of their decisions and actions. The principal advantage of simulation is that it provides a safe environment for health care practitioners to acquire valuable experience without putting patients at risk. Simulation also can be used as a test-bed to

improve clinical processes and to identify failure modes or other areas of concern in new procedures and technologies that might otherwise be unanticipated and serve as threats to patient safety. Yet another application of simulation focuses on the establishment of valid and reliable measures of clinical performance competency and their potential use for credentialing and certification purposes.

The Society for Simulation in Healthcare (SSIH)³ affirms that *Simulation education* is a bridge between classroom learning and real-life clinical experience. Novices – and patients - may learn how to do injections by practicing on an orange with a real needle and syringe. Much more complex simulation exercises – similar to aviation curricula that provided the basis for healthcare – may rely on computerized mannequins that perform dozens of human functions realistically in a healthcare setting such as an operating room or critical care unit that is indistinguishable from the real thing. Whether training in a “full mission environment” or working with a desk top virtual reality that copies the features of a risky procedure, training simulations do not put actual patients at risk. Healthcare workers are subject to unique risks in real settings too, from such things as infected needles, knife blades and other sharps as well as electrical equipment, and they are also protected during simulations that allow them to perfect their craft.

Team science competencies are important in a variety of health care settings, acute care and outpatient settings. Individuals such as Eduardo Salas and others are leaders in research in team science⁴. The Department of Defense developed TeamSTEPPS®, Team Strategies and Tools to Enhance Performance and Patient Safety, as a way to improve teamwork and communication with identified strategies for improvement based on best practices (TeamSTEPPS, n.d.)⁵. The Interprofessional Education Collaborative (IPEC) formed in 2009 with representatives from medicine, nursing, dentistry, pharmacy, public health and allopathic and osteopathic medicine to enhance team-based care and improve patient outcomes⁶. Simulation-based education provides an opportunity for health care team to collaborate to improve patient outcomes.

Simulation scenarios conducted with a single health care profession can accomplish goals of teamwork and communication; however, they are not as realistic as an interprofessional simulation where each team member is represented by an actual student from different professions. Interprofessional simulation introduces learners to other health care roles and provides an opportunity to respect and value each team member's contributions and ultimately break down silos between professions. The World Health Organization defines interprofessional education as “...when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes”. Interprofessional education prepares students for the real world where collaborative interprofessional practice is an expectation⁷.

Simulation experiences at Louisiana State University New Orleans Health Sciences Center (LSUHSC) schools of nursing and medicine range from high fidelity to low fidelity simulation⁸. Each school conducts discipline specific simulations as part of course requirements. In 2005, the health sciences center identified educational technology including simulation as the focus of its quality enhancement plan for accreditation by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC)⁹. Several research projects explored the effect of interprofessional human patient high fidelity simulation on student's team based competencies and communication skills^{10,11,12}. The earliest project used an operating room (OR) scenario with undergraduate senior nursing students, fourth year medical students and nurse anesthesia students¹². The OR scenario simulations are conducted yearly each spring since 2008. In 2009, the research team expanded to an emergency room scenario and incorporated a fourth discipline, respiratory therapy students¹⁰ and an intensive care unit scenario with a fourth student group from physical therapy¹¹.

Based on research results and scheduling difficulties with large student groups, simulations were designed at LSUHSC for senior nursing and third year medical students using multiple trauma and burn scenarios. Research using these simulations, 2010-2011, suggest improved communication and teamwork such that the scenarios became part of the curriculum. Starting in 2012, simulations evaluated emergency room trauma team handoff communication between students in emergency room and operating room simulated environments.

Examples of simulation use in other schools in the LSU health sciences center include a fully furnished four room apartment in the school of allied health that incorporate interprofessional simulations between occupational

therapy, physical therapy and nursing students. The dental school utilizes full head simulators in a lab setting. The 2015 quality enhancement plan for SACSCOC accreditation is interprofessional education, of which simulation-based learning experiences are well suited.

In Brazil, so far, if you search Google about the Universities that are using simulation in healthcare, you find them in Sao Paulo: USP-SP, Unicid, Anhembi Morumbi, and Unoeste. Across the country, other Simulations Labs are also conducted in PUCPR (Curitiba, PR), Unisinos (Sao Leopoldo, RS), UFMG (Belo Horizonte, MG), UnB (Brasilia, DF), Cesupa (Belem, PA), Potiguar (Natal, RN), UFPI (Teresina, PI) and others. The Simulation in Healthcare Brazilian Society (Abrassim) was created in September 2010 with the main goal of gathering all the professionals in the country that work with simulations or have interest in this educational tool, trying to set Brazil as a world reference center in simulation excellence. Another goal of Abrassim is to spread the idea of clinical simulation as an important method for teaching and learning, helping faculty who want to start working with it in their own institutions, guiding them in an adequate and sustainable way either for under graduate programs as well as continuing education courses. Abrassim also works with accreditation criteria for the Universities that are developing simulation centers/activities and their website shows the ones that are accredited¹³.

Current expectations are for interprofessional education and interprofessional simulation in both educational and health care settings. Health care providers of today and the future will be more collaborative and use combined knowledge and skills for improved patient outcomes. However, change may take time to occur. Teamwork and communication are skills that are learned, but many current health care professionals may not have exposure to these skills. Thus, patience, mentoring, and simulation can speed adoption of teamwork and communication skills. Health care teams can build on success in the simulation experience to achieve success in managing complex patients.

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