NORTHWESTERN SIMULATION

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At Northwestern Simulation, we pride ourselves on offering state-of-the-art education. Borrowing from the aviation industry, we embrace the powerful educational impact of simulation-based training. Northwestern Simulation brings together faculty expertise and the latest simulation technology. In a safe environment, we train healthcare professionals to a uniform standard of excellence without the potential for patient harm. As an internationally recognized leader in simulation-based education, we have trained thousands of healthcare professionals and are establishing a worldwide educational standard.

Northwestern Simulation features the most up-to-date simulation equipment, ranging from partial task trainers, to virtual reality simulators, hybrid models, and full body mannequins. Faculty members who lead Northwestern Simulation are global leaders in the study, development, and delivery of innovative education using simulation. Our faculty use research-driven best practices to improve the skills of trainees, enhance their long-term skill retention, and positively impact clinical performance to improve patient care. One of our leaders, William C. McGaghie, PhD, is the most frequently cited US researcher in the field of simulation-based education, and Northwestern University also is a global leader in research impact.

Developing Elite Performers

Northwestern Simulation impacts the entire Northwestern Medicine community, including our medical, physician assistant, and physical therapy students, residents, fellows, nurses, and practicing physicians.

In the spirit of educational outreach, we also offer our expertise and training to a variety of healthcare industry leaders, including medical societies and associations including the Council for Medical Specialty Societies, pharmaceutical and medical device companies, peer medical schools, nursing programs, the Chicago Fire Department, and other partners who derive benefit from our hands-on, experiential approach.

We offer great flexibility in curriculum offerings. From simple task-oriented training modules to complex team exercises, such as cardiac arrest resuscitation, trauma management, and laparoscopic surgery, Northwestern Simulation improves clinical skills that matter.

Clinical Simulation

Our Clinical Simulation space features five patient bays that can be converted into settings including intensive care, home health, emergency rooms, hospital rooms, and outpatient clinics. Patient bays have control rooms where our technicians run the simulation scenario from start to finish. These rooms are equipped with medical air, oxygen, patient monitors, and X-ray viewing. Our state-of-the-art AV system allows live sessions to be viewed across the globe.
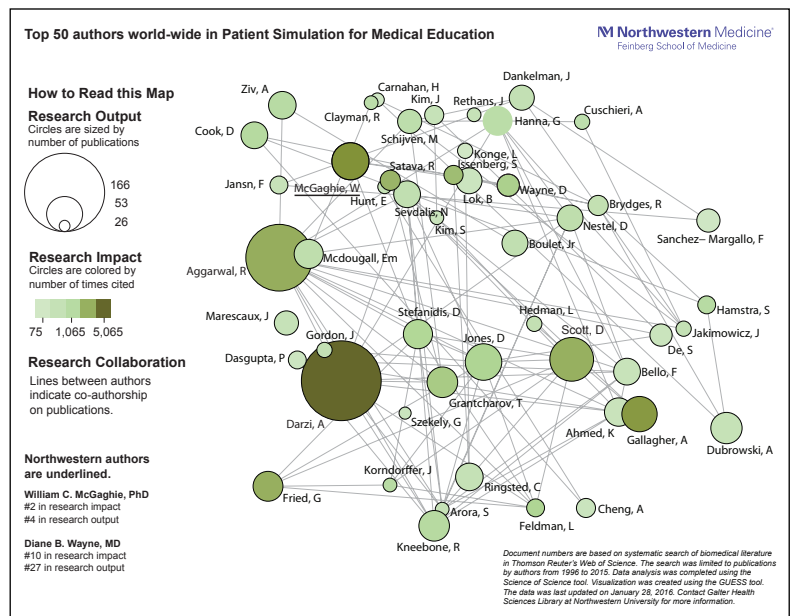
Surgical Simulation

At Northwestern, we embrace that safer surgery leads to safer healthcare and improved outcomes for patients. Prior to working with actual patients, Northwestern surgical trainees practice general and minimally invasive surgical procedures and skills training, utilizing the same instrumentation and equipment available in the operating room. All of the surgical work spaces have large viewing monitors and ceiling cameras for video capture, remote viewing and playback, as well as recording capabilities.

Northwestern Simulation has been designated as an American College of Surgeons Comprehensive Education Institute. Curricula developed at Northwestern Simulation for both adult and pediatric surgery have been disseminated throughout Chicago and the United States. Research is continually ongoing to evaluate the effectiveness of our surgical training protocols on surgical skills and patient care outcomes. Using this training, physicians can perform surgical procedures more quickly, making patient hospital stays shorter and less expensive.

Innovations Laboratory

Within Northwestern Simulation, our Innovations Laboratory allows us to internally produce and develop novel medical training devices used for education and research. Typically, a medical professional recognizes an educational gap and reaches out to our team for help in developing and producing a training device to fill that need. To achieve this, the Innovations Lab combines design thinking with engineering to focus on modeling, prototyping, and production. Research is a key driver in the success of the Innovations Laboratory. Our design process is iterative, with each phase being guided by data and results from the previous iteration. We are passionate about improving training devices to make them more impactful for medical education.

Virtual Reality

We offer a number of virtual reality simulators at Northwestern Simulation, including ultrasound, endobronchial, robotic, and ophthalmology simulators. Multiple departments across surgical and medical specialties at Northwestern rely on these cutting-edge educational tools to help facilitate the training of their residents in procedural tasks and operations.

A Culture of Excellence

With its extensive reach across healthcare and forward-looking approach, Northwestern Simulation is a formidable force in 21st century medical education and training. We are proud to set a standard of how education should be delivered, including our commitment to these principles:

- Opportunities for interprofessional team learning

- Requiring rigorous clinical skills assessment

- Featuring well-defined opportunities for deliberate skills practice

- Providing effective debriefing and feedback

Research produced by Northwestern Simulation investigators shows that rigorous education can:

- Reduce hospital-acquired infections and other complications

- Produce highly trained clinicians who retain skills over time

- Improve the clinical environment and safety culture

- Provide high return on investment and lower healthcare costs
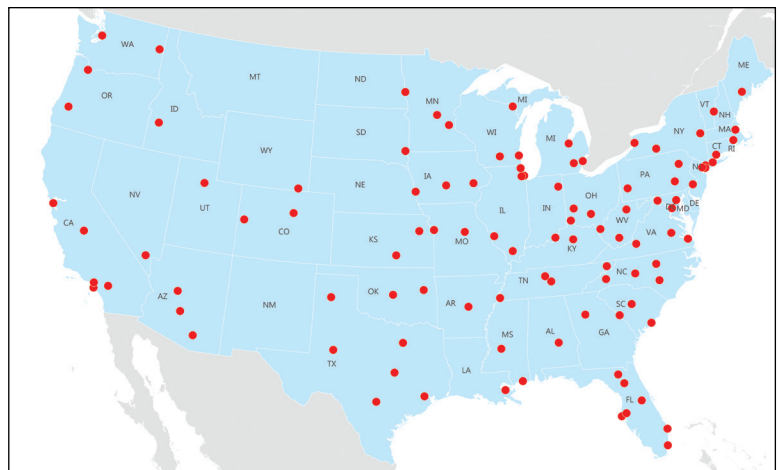
Northwestern Simulation has trained Veterans Administration physicians throughout the US on how to perform critical care procedures.

Next Steps

With an ever-increasing demand for our education programs, Northwestern Simulation must continue to grow in both scope and size. Our current space is certainly impressive, but to think bigger and to have more impact, we must pursue opportunities to build out Northwestern Simulation in terms of space, the recruitment of additional faculty leaders, and the ability to launch new high-impact training programs and research efforts that span the continuum of healthcare professions education.

We urge interested friends to invest in the future of medical education and patient care by making an outright or planned gift in support of Northwestern Simulation. Thank you for your consideration.

Using 3-D printing technology, Katherine Barsness, MD, '11 MS, associate professor in surgery and medical education, may have solved a common catch-22 for pediatric surgeons. To deftly perform tricky surgical procedures in a newborn chest cavity no bigger than an egg, they need practice with the real thing.

"The overwhelming majority of surgeons just train in the operating room," says Dr. Barsness. "Everybody has a learning curve when they're developing new skills, a time when they make mistakes while trying to master a certain technique. Unfortunately, a learning curve places patients at risk."

To prevent consequential errors from occurring on real patients, Dr. Barsness has created life-sized, reusable models of a newborn's ribcage in collaboration with engineers from Northwestern Simulation's Innovations Laboratory and the McCormick School of Engineering and Applied Sciences. With the models, training pediatric surgeons receive uniquely authentic simulation-based education. Through the Northwestern Simulation training facility, students use the models to practice performing complicated minimally invasive procedures to repair rare birth defects.

Dr. Katherine Barsness leads a pediatric surgical training course for visiting second-year fellows.

(*Northwestern Medicine Magazine*, Winter 2015, magazine.nm.org)

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Feinberg School of Medicine

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