

# Cultivating Compassionate Clinicians

2021-2022 Annual Report





# Center's Mission: Provide creative, innovative, simulation-based education and scholarship for UT Southwestern and our community.



The UT Southwestern Simulation Center is accredited by these organizations: the American College of Surgeons-Accredited Education Institutes (ACS-AEI) as a Level I Comprehensive Center; the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) as a Fundamentals of Laparoscopic Surgery (FLS) and Fundamentals of Endoscopic Surgery (FES) test center; American College of Obstetricians and Gynecologists Simulation Working Group; and the American Society of Anesthesiology as an endorsed center to hold Maintenance of Certification in Anesthesiology (MOCA) courses.

## A year in review

The UT Southwestern Simulation Center brings the future of health care education to the here and now. In our fourth year of operation and service to the UTSW community, the 49,000-square-foot Simulation Center continued to fulfill our vision of improving patient care while finding innovative ways to train health care providers, students, and other trainees, both in-person and virtually. Our focus remains on providing exceptional educational offerings for all specialty areas and disciplines.

Our strategic framework aligns with UT Southwestern's mission, vision, and strategic goals, including our shared objectives of improving the future of health care and patient-centered care. We continue to concentrate our efforts on innovation, professional development, and scholarship.

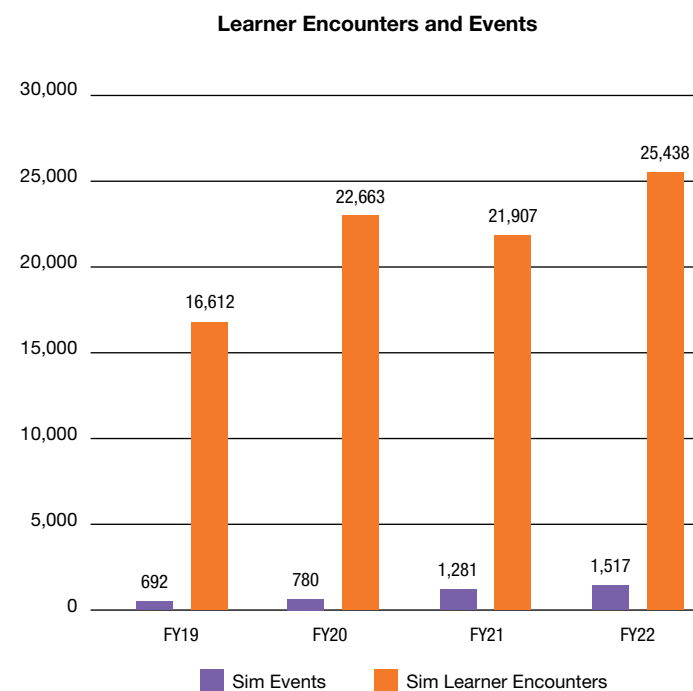
Leading new simulation offerings across the state of Texas and growing local education efforts, we experienced remarkable growth within these three strategic domains. As we transform health care education through cutting-edge techniques, our efforts continue to be focused on becoming nationally renowned.



**Daniel Scott, M.D., FACS, Director**



**Krystle Campbell, D.H.A., M.S., CHSE, Director of Operations**



**In the 2021-2022 academic year, our Center saw 16% year-over-year growth in simulation events, which included 14% growth in learner encounters, including by the year's end:**

- **25,438 Learner Encounters**
- **1,517 Events**





Clemens University Hospital health care team members practice proper intravenous insertions on simulated manikin arms. During this activity, learners safely and effectively practice a series of critical bedside skills on manikins prior to performing those skills on real patients.

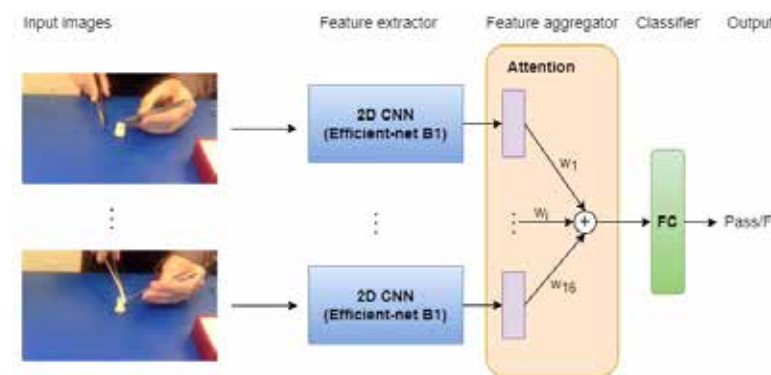
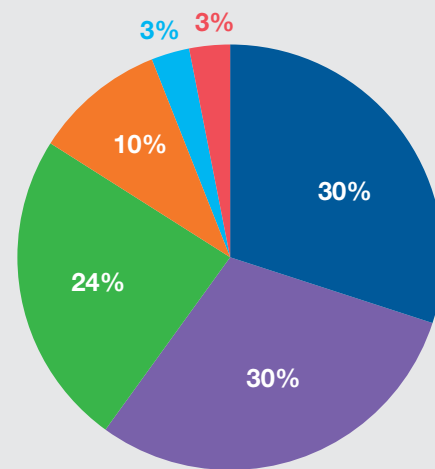
Throughout the 2021-2022 academic year, our Center led regional and statewide simulations while continuing campuswide simulation-based programs for a variety of health profession learners, including: faculty, residents, fellows, nurses, advanced practice providers, and physical therapists, as well as medical, PA, nursing, and other allied health students.

The Center offered a variety of simulation modalities, including:

- Procedural-based sessions, such as suturing, advanced laparoscopic training, robotic surgery, intravenous insertion, lumbar puncture, physical exams, airway management, and ultrasound
- Scenario-based simulations focused on domains such as team dynamics, professionalism, communication, handovers, and crisis resource management
- High-stakes simulated patient encounters, in which learners were objectively assessed on interactions with expertly trained simulated patients

## Learner Group Breakdown (1,517 activities)

- Medical Students
- Residents and Fellows
- Nursing and Allied Health Professionals
- Physicians
- School of Health Professions Students
- Researchers



## Strategic Domains

### Research and Development

#### AI Suturing and Knot-Tying Project

Due to pandemic constraints, activity directors Robert Rege, M.D., and Daniel Scott, M.D., FACS, and surgery research resident Madhuri Nagaraj, M.D., created a virtual format for the suturing and knot-tying simulation curriculum, which is used to teach second-year medical students during their Transitions to Clerkships Course. The remote curriculum used at-home suture kits, and students submitted a video to verify proficiency. In 2021, Drs. Scott and Nagaraj partnered with research faculty members Ganesh Sankaranarayanan, Ph.D., and Babak Namazi, Ph.D., to develop artificial intelligence (AI) models in hopes of creating an automated scoring system of student performance from their videos. The videos were carefully annotated, and machine learning algorithms were optimized using the video segments and scores assigned by human raters. Two separate models – one for instrument holding



A team of EM residents works through a challenging patient scenario on a manikin with the use of a bedside ultrasound and fluctuating manikin vital signs. Kavita Joshi, M.D., chair of the competition, helps guide participants as the audience looks on. Rahm Heymann and Tyler Austin, not pictured, are operating the manikin.

and another for knot-tying – were developed. After several iterations, the AI model predicted a pass/fail rating of performance with 89% accuracy for instrument holding and 91% accuracy for knot-tying. Our simulation community is excited to further develop AI technology for task simulations such as suturing, as well as explore the use of AI to rate additional domains of competence, such as communication, clinical reasoning, and physical examination skills.

**“Artificial intelligence has become mainstream and is here to stay. From movies and shopping suggestions to self-driving cars, AI has been impacting our day-to-day life in a big way. We are excited about our collaboration with the Simulation Center, pushing the boundaries of this technology and applying it for surgical simulations, assessment, and feedback.”**

– Ganesh Sankaranarayanan, Ph.D., Director, Artificial Intelligence and Medical Simulation (AIMS) lab, UT Southwestern Medical Center

#### Innovation: SimWars

SimWars, a fun and challenging simulation competition led by Kavita Joshi, M.D., enhanced our opportunities to engage with residents across North Texas. Four Emergency Residency programs competed in complex and team-based sessions that involved high-acuity, low-frequency, manikin-based simulations in front of a large audience, with expert judges choosing the winner. Hosted at UT Southwestern, SimWars included 27 resident participants and many more active, passionate audience members. The competition also included Sonogames, which pitted residents against each other as they raced to scan standardized patients via ultrasound to find different anatomical structures.

**“Simulation is a vibrant and tactile way to learn. The experiences gained through simulated patient encounters come with real emotional impact on the physician learners. They come away from each encounter better able to treat the next patient they meet and carry the memory of these simulations far into their careers.”**

– Kavita Joshi, M.D., Assistant Professor, Department of Emergency Medicine





Top: Attendees at the Society of Surgical Oncology Robotic Surgery Course included UTSW faculty, fellows, residents, and staff.

Bottom: Hands-on simulation sessions at the robotic surgery conference allowed learners to practice at the control console while a facilitator helped direct the procedure via an interactive monitor.

### Continuing Professional Development

In March 2022, in partnership with the Department of Surgery, the Center hosted a hands-on course during the Society of Surgical Oncology's annual conference. Led by Patricio Polanco, M.D., Associate Professor in the Division of Surgical Oncology, and Herbert Zeh III, M.D., Chair of the Department of Surgery, the conference featured keynote presentations by national experts in the field of robotic surgery, observation of live robotic liver and pancreas surgeries, and proctored robotic training at our Sim Center. Over the two-day course, 36 national and international surgeons, fellows, and residents learned the intraoperative setup of robotic-assisted procedures, including pancreatectomy, hepatectomy, colectomy, and mastectomy. Learners completed robotic simulation drills, performing a bowel anastomosis, gastrojejunostomy, hepaticojejunostomy, and pancreatic jejunal anastomosis – all guided by expert robotic surgeons.

**“The Robotic Surgical Oncology Course organized by UT Southwestern during the annual Society of Surgical Oncology meeting in Dallas was an absolute success. Given the high demand, we had to increase capacity three times to accommodate more national and international surgeons. The unique combination of our surgical expertise on these complex operations, our validated robotic training program, and the state-of-the-art Sim Center and hospital facilities made this course possible.”**

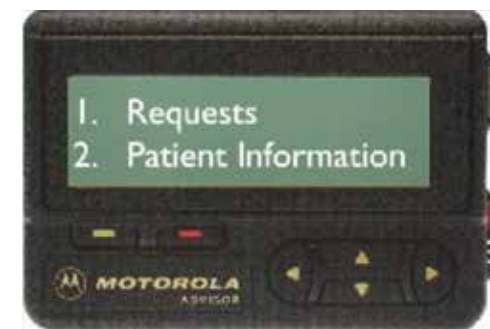
– **Patricio Polanco, M.D.**, Associate Professor in the Division of Surgical Oncology, Department of Surgery

### Department of Obstetrics and Gynecology Grand Rounds, “Paging Doctor ...”: A Virtual Teamwork Training Activity

In fall 2021, the Center, in partnership with Jamie Morgan, M.D., Krystle Campbell, D.H.A., and medical student Devin Shah, hosted an innovative and immersive virtual training event during Ob/Gyn Grand Rounds. An animated video presented the learners with a case and a simulated pager, which allowed them to divide into smaller groups to perform critical skills of team communication. Each of the breakout rooms were led by simulation experts across campus, including faculty members from Emergency Medicine, Pediatrics, and the Division of Anesthesiology and Pain Management. They included Ladan Agharokh, M.D., Aditee Ambardekar, M.D., Ravi Bhoja, M.D., Philip Greilich, M.D., Jessica Hernandez, M.D., Megan Michael, M.D., and Jeremy Riekema, M.D. The training activity successfully improved confidence in and allowed self-assessed performance of skills pertaining to teamwork competencies for the Department of Ob/Gyn. The activity, which focused on skills necessary for building high-functioning teams via a virtual, live, interactive format, was perceived as valuable by all participants. In the one-hour session, 58 participants were divided into 10 groups, which included 28 faculty members (48%), 14 residents (24%), five fellows (8.6%), five physician assistant (PA) students (8.6%), one medical (M.D.) student (1.7%), and five other participants (8.6%). Based on pre/post-tests, there was a significant improvement ( $p < 0.05$ ) in multiple teamwork competencies, including mutual performance monitoring, recognizing and mitigating obstacles to teamwork, psychological safety, and team mental models. Additionally, respondents observed significant improvements ( $p < 0.00001$ ) in the performance of all self-assessed teamwork skills.

**“Communication and teamwork are two of the most important tools of the medical profession, not only between patient and caregiver, but also between medical professionals. Yet, the ability to communicate and collaborate has, at times, been overlooked as a learned skill. As shown in repeated studies, these skills have proven effective in promoting and ensuring high-quality, safe, and reliable patient care. Integrating simulation-based team training in the educational curricula offers UTSW trainees and faculty the opportunity to learn and hone these skills in the virtual environment, preparing them to successfully navigate the intricacies of providing outstanding and consistent patient-centered care.”**

– **Jamie Morgan, M.D.**, Director of Simulation for the Department of Obstetrics and Gynecology, Associate Professor, Department of Ob/Gyn, UT Southwestern Medical Center



Department Chair Catherine Sponge, M.D., and simulation experts welcomed learners to the virtual Ob/Gyn Grand Rounds simulation in a prebrief session that oriented the team to the simulated pager (pictured at left), ground rules, timing, patient information, and expectations of the sessions prior to moving to breakout rooms.





**Jamie Morgan, M.D.,** provides Obstetric and Gynecologic residents with reflection-in-action feedback on critical psychomotor skills during an intense, simulation-based intern curriculum, ensuring incoming residents are able to demonstrate critical skills under direct supervision.

### Scholarship

#### Simulation-Based Quality Improvement and Research Forum

At the core of the Center's efforts is advancing scholarly work through education and building a robust simulation community, rich with different perspectives, expertise, and passions. As such, the Center recognizes its critical role as a conduit across a variety of champions from different disciplines and professions, all of whom hold a common interest in simulation. The Simulation-Based Quality Improvement and Research Forum continues to offer a venue for our community to share diverse simulation efforts across the region, obtain mentorship, and collaborate on future initiatives.

The Center hosted the fifth annual Simulation-Based Quality Improvement and Research Forum, which was conducted virtually and received a record number of submissions. The event, on May 11, 2022, brought together more than 200 participants across campus, the region, the state, and the nation. We were honored to have as our keynote speaker Teodor Grantcharov, M.D., Ph.D., FACS, Professor of Surgery at Stanford University, who

is a visionary clinician and scientist in the field of design, human factors, computer and data science, and health care research. We also continued an integral session called "Emerging Ideas," which enabled presenters to share their novel ideas and works in progress. An expert panel provided their perspectives and advice on potential opportunities as well as on collaborations to enhance each presenter's work.

#### Simulation National Presentations

To advance the science of simulation across the health care sector, our passionate simulationists and simulation team published more than 17 manuscripts in peer-reviewed journals and led 20+ workshops, lectures, and podium presentations at regional, state, national, and international conferences. This included sessions at the International Meeting for Simulation in Healthcare (3), American College of Surgeons Accredited Education Institutes Summit (3), Surgical Safety Network (4), the Gathering of Healthcare Simulation Technology Specialists (2), Association of SP Educators (2), the Simulation Professionals of Texas quarterly conference (1), and Texas Association of Surgical Skills Laboratories (5). Presenters at all these venues shared their scholarship, highlighting the outstanding work being done in simulation at UT Southwestern.



**Adrienne Hunter, Ph.D.** (left) and **Monique Ridge, Education Technology Specialist,** facilitated a workshop on moving standardized patient training sessions virtually at the ASPE conference.

With a record 52 submissions, the virtual QI and Research Forum spotlighted simulation scholars through:

- 12 oral presentations**
- 5 "Emerging Ideas" presentations**
- 27 poster presentations**
- 3 interactive workshops**

### Simulation Center Staff

**Daniel Scott, M.D., FACS,** *Director*

**Krystle Campbell, D.H.A., M.S., CHSE,** *Director of Operations*

**Deborah Hogg, M.B.A.,** *Manager, High-Fidelity and Procedural Simulation*

**Carla Mosley,** *Manager, Standardized Patients*

**Bradley Mueller,** *Simulation Operations Specialist*

**Dante Castro, B.A.,** *Clinical Simulation Educator*

**Dawnette Adkins,** *Program Coordinator*

**Ian Nazareno,** *Program Coordinator*

**Kirk Atkinson,** *Simulation Operations Specialist II*

**Kyairae McCray,** *Senior Administrative Assistant II*

**Lenora Young,** *Clinical Simulation Educator*

**Llyod Hoskins,** *Standardized Patient Educator*

**Mary Kathryn Adcock,** *Administrative Associate*

**Marcela Castro, M.S.,** *Standardized Patient Supervisor*

**Mary Jones, B.S.,** *Clinical Simulation Educator*

**Monique Ridge,** *Education Technology Specialist*

**Rahm Heymann, B.S.,** *Senior Clinical Simulation Educator*

**Sheilah Hill Ukpadi,** *Standardized Patient Educator*

**Silvia Tapia,** *Standardized Patient Educator*

**Tina Tran, M.B.A.,** *Financial Analyst II*

**Tyler Austin,** *Simulation Operations Specialist*

### Simulation Governance Committee

**Charles Ginsburg, M.D.**

Vice Provost and Senior Associate Dean for Education; Professor of Pediatrics; Marilyn R. Corrigan Distinguished Chair in Pediatric Research

**Daniel Scott, M.D., FACS**

Assistant Dean, Simulation and Student Integration, Graduate Medical Education; Director, Simulation Center

**Krystle Campbell, D.H.A., M.S., CHSE**

Director of Operations, Simulation Center

**Aditee Ambardekar, M.D.**

Associate Professor and Residency Program Director, Department of Anesthesiology and Pain Management

**Cameron Slocum, M.B.A.**

Vice President and Chief Operating Officer for Academic Affairs

**Deborah Farr, M.D.**

Director, Surgical Simulation

**Gary Reed, M.D.**

Associate Dean for Quality, Safety, and Outcomes Education

**Joseph Martinez, M.D.**

Director of Emergency Medicine Simulation; Professor of Emergency Medicine

**Kim Hoggatt Krumwiede, Ph.D.**

Associate Dean for Academic Affairs, School of Health Professions

**Melanie Sulistio, M.D.**

Associate Dean for Student Affairs; Director of Quality Improvement, Simulation Center

**Robert Rege, M.D.**

Associate Dean for Undergraduate Medical Education

**Wade Radicioni**

Assistant Vice President for Academic and Business Operations



The Simulation Center occupies the second and third floors of UTSW's West Campus Building 3.

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[utsouthwestern.edu/departments/simulation-center](https://utsouthwestern.edu/departments/simulation-center)

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