



THE UNIVERSITY OF ARIZONA HEALTH SCIENCES

Arizona Simulation
Technology &
Education Center

2019–2020
ANNUAL REPORT



OUR MISSION

Is to ensure that simulation technology and training reaches the highest standard of quality so our students can provide the best possible healthcare.

OUR VISION

Is to be a world-class leader in improving healthcare education by validating simulation methodologies, developing new technologies, implementing innovative curriculum for interprofessional learning, and launching new collaborations in the healthcare industry to improve patient outcomes.

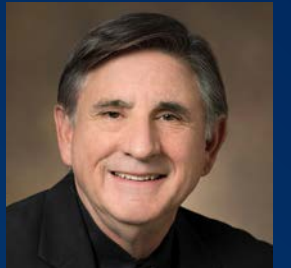


A MESSAGE FROM OUR EXECUTIVE DIRECTOR

2019-20 has been a dramatic one for the Arizona Simulation Technology & Education Center (ASTECC)—as it has for all of us. We had the grand opening of our spectacular new facility in the recently finished Health Sciences Innovation Building on November 1, 2019. It is hard to believe ASTECC started as a 450 square-foot facility fifteen years ago serving a single clinical department in the College of Medicine. It now spans over 35,000 square feet and serves five colleges in the health and veterinary sciences and supports 10 residencies and 3 fellowship programs in our hospitals. Along with the new state-of-the-art facility, ASTECC initiated a massive build-up of new curriculum and activities across the entire healthcare spectrum, including brand-new small-group modular programming in interprofessional education. ASTECC enlisted new collaborations with main campus to include undergraduate and graduate students from the sciences and humanities, from electrical and computer engineering, medical journalism, computer gaming, artificial intelligence (AI), theater production, and gender studies. We also grew our burgeoning undergraduate internship program to 15 students this year. ASTECC's outreach has grown to include training for more than a dozen first responder organizations and outreach to dozens of middle and high school science programs.

But, in the midst of all this growth, COVID-19 hit us all like a bomb. There was little time to emotionally register what was happening as ASTECC was immediately called in to develop a satellite facility at Banner-University Medical Center Tucson to help handle the dramatic needs for training in COVID contamination and respiration precautions. ASTECC turned its 3-D printing lab—normally reserved for making artificial tissues—to fabricating components for personal protective equipment. The facility also designed and assembled new telecommunications towers that could be wheeled into the ICU to help families communicate with their loved ones. ASTECC launched a weekly, up-to-date, COVID-related informational webinar with the Arizona Telemedicine Program to reach children in the K-6th and 7th-12th grade cohorts that has now been accessed thousands of times by

viewers across the state, country, and world. We simultaneously initiated one of the most aggressive and sustained efforts to create virtual patients and virtual cases so healthcare students could keep their skills sharpened when they could not gain access to clinical facilities for training.



COVID has also propelled remote simulation in ways we never imagined. ASTECC is hard at work developing the most advanced virtual patients, powered by AI-driven language capabilities, in collaboration with the School of Information and industry partners. Our global outreach with educational and training programs spans across both the Atlantic and Pacific oceans and opened up new possibilities to harness and train a global workforce in healthcare. Our new, ultra-modern facility also allowed us to create and broadcast innovative, remote simulation training productions using our state-of-the-art telecommunications capabilities.

Now, students have returned to campus to train—with all our COVID precautions in place—in ASTECC. However, ASTECC intends to stay agile and ready to respond to future risks and threats. It will remain determined to lead in both the real, physical world as well as the virtual, remote one.

Stay safe! Endure. Triumph.

Allan J. Hamilton, MD, FACS

Regents' Professor, Surgery
Executive Director, Arizona Simulation Technology & Education Center
Professor, Neurosurgery, Psychology, Radiation Oncology
and Electrical & Computer Engineering

OUR NEW HOME





The Sim Deck, inspired by Shakespeare's Globe Theater and its theater-in-the-round concept, is surrounded by two stories of walkways. This provides inclusive viewing opportunities to our community and aspiring healthcare students.

MORE SPACE, MORE OPPORTUNITY

Requests for training at ASTEC have skyrocketed, leading to a demand for concurrent simulation exercises. ASTEC's new facility in the Health Sciences Innovation Building provides more than twelve separate training environments to simultaneously accommodate the needs of multiple learning groups. This increased space enables ASTEC to conduct required, recurring simulation education for UArizona Health Sciences and first responder organizations at the same time as novel and ad hoc training.

INCREASED CAPACITY

ASTEC can now meet the throughput needs of over 300 learners in a single day.

THE FACILITY

Was designed to create a fully immersive, interprofessional simulation environment to address the needs of all the University of Arizona Health Sciences colleges and the graduate medical education program as well as the collaborative research needs of the entire university community.

THE CONTROL ROOM

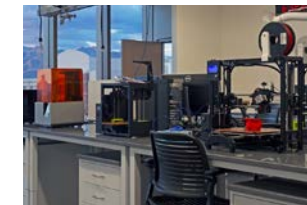
Allows for simultaneous wireless operation of multiple manikins and simulation scenarios.

PATIENT SIMULATOR ROOMS

Are designed as modular sets that can be reconfigured and supplemented by special effects to replicate realistic environments.

INNOVATION LAB AND MAKERSPACE

Provides state-of-the-art synthetic modelmaking development and technological advancements in AR/VR stimulation.



TIMELINE & HISTORY



2004

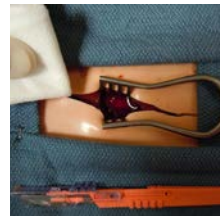
The Dean of the College of Medicine launches initiative to create a medical simulation center within the Department of Surgery

Grand Opening of 450 sq. ft. ASTEC I



2005

ASTEC is named a STORZ Center of Excellence, one of only 10 in the world



2006

ASTEC launches anatomical modelmaking lab



2011

Relocation to 2,500 sq. ft. ASTEC II
ASTEC becomes a center within the College of Medicine in order to serve multiple departments within the college



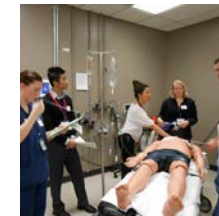
2013

ASTEC expands 3D printing and anatomical modelmaking capabilities



2014

ASTEC achieves full accreditation from the Society for Simulation in Healthcare



2016

ASTEC is reclassified as a center in the University of Arizona Health Sciences to carry out the mission of interprofessional education



2017

Construction begins on the Health Sciences Innovation Building, new home to ASTEC III's expanded simulation training space, fully-equipped makerspace, and simulation research labs



2019

Grand Opening of 35,000 sq. ft. ASTEC III
ASTEC receives full reaccreditation from the Society for Simulation in Healthcare



2020

ASTEC becomes an FLS and FES Test Center



ASTEC BY THE NUMBERS

JULY 1, 2019 - JUNE 30, 2020



LEARNER CONTACT HOURS

13,400+ Total Hours



NUMBER OF LEARNERS

6,000+ Learners



NUMBER OF TRAINING SESSIONS

Nearly 400 Individual Training Sessions



NUMBER OF LEARNER GROUPS

45 Unique Learner Groups

ASTEC BEYOND THE NUMBERS

“The Physiology Club serves to expose undergraduate students to various areas of healthcare. Over the last few years, ASTEC has played a critical part of our club’s mission by showcasing new forms of medical education through simulation. Through hands-on experience with their AI mannequins, laparoscopic surgery trainers, or new Anatomage table, ASTEC engages our members with the most innovative medical training technology and encourages our members to pursue careers in healthcare and health education.

ASTEC will always be an organization that the Physiology Club feels privileged to be so active with!”

—JACOB REF,
Physiology Club President



RECURRING SIMULATIONS

JUST A FEW OF MANY

TRANSITION TO CLERKSHIP

ASTEC plays a critical role in providing a realistic learning environment during Transition to Clerkship training. Skills such as IV placement, suturing, airway, and medical professionalism are critical to a successful clerkship phase. Transition to Clerkship allows students to receive hands-on practice for the skills necessary to thrive in the clinical environment.

INTERSESSIONS

Intersessions is an annual training event and integral part of the College of Medicine curriculum. Medical students in the midpoint of their clinical rotations attend a week-long simulation experience that combines two trauma-based scenarios and an ultrasound training. Given the capabilities of the new facility, ASTEC was able to expand Intersessions to include Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) certification for an entire class of medical students.

INTERPROFESSIONAL EDUCATION (IPE)

This educational modality incorporates multidisciplinary teams in educational events and mimics the multiprofessional healthcare environment that students will encounter as they enter the workforce. IPE allows learners to operate in multifaceted teams to optimize their education. ASTEC houses numerous IPE events, providing students the hands-on training in communication, role assignment, and team dynamics to be successful in their future careers.

FIRST RESPONDER TRAINING

ASTEC trains many first responder groups including flight paramedics and flight nurses, fire departments, and government agencies. As first responders, knowledge of rapid, lifesaving measures is needed to stabilize patients. Because these measures occur infrequently, simulation training at ASTEC allows first responders to maintain proficiency in these rare, but critical, lifesaving procedures.

EMERGENCY MEDICINE (EM) QUARTERLY

EM Quarterly training remains one of ASTEC's most comprehensive training initiatives in collaboration with Banner University Medical Center (BUMC). These quarterly trainings are uniquely designed to prepare EM residents for multiple adult and pediatric scenarios, high-acuity/low-frequency procedures, and advanced airway management.

CLINICAL SKILLS INSTRUCTION (CSI)

CSI training is a required part of the curriculum for the College of Nursing's Family Nurse Practitioner, Acute Care Nurse Practitioner, Pediatric Nurse Practitioner, and Certified Registered Nurse programs. It teaches the clinical procedural skills necessary to become a certified nurse practitioner. CSI is a weeklong course that occurs prior to hospital rotations. It immerses students in simulated procedures designed to check their proficiency in procedural skills ranging from suturing to central line placement. ASTEC serves as a key location for this simulation training.



HIGH-STAKES SIMULATION

REHABILITATION FACILITY OVERDOSE SIMULATION

In December 2019, ASTEC collaborated with a local rehabilitation facility to train staff on identification and response to narcotic overdose. This event provided an immersive training on the vital steps of overdose management, including providing compressions, ventilating patients, delivering Narcan, and transitioning care to emergency medical services. By sharing these life-saving skills with first responders, ASTEC proudly contributes to the quality of care for individuals suffering from narcotic overdose within the community.

TUCSON INTERNATIONAL AIRPORT EXPLOSION SIMULATION

One of the largest trainings ASTEC participated in this year was the 2020 Triennial Drill at the Tucson International Airport. This high-fidelity training simulated the multi-organizational response to a plane explosion, from triaging victims to reuniting families. ASTEC was recruited for this impactful event to create and apply moulage for scenario actors, replicating realistic traumatic injuries and burns.

MOBILE INTENSIVE CARE UNIT AMBULANCE TRANSPORTATION SIMULATION

The Mobile ICU (MOBI) transport simulation is one of many valuable collaborations ASTEC has with Banner University Medical Center (BUMC). During this training, a wireless mannequin is monitored throughout transport in a real ambulance from a simulated hospital to an emergency department. These exercises are held regularly to help healthcare providers identify the logistical and safety considerations of transporting medically compromised patients.

FUNDAMENTAL CRITICAL CARE SUPPORT (FCCS)

FCCS training provides Surgery and Emergency Medicine Residents with the skills necessary to manage critically ill patients, including adjusting ventilators, hemodynamic monitoring, neurologic monitoring, and obtaining appropriate access. This interdisciplinary event combines an online curriculum with a series of longitudinal high-fidelity mannequin scenarios and hands-on procedural training. After completion of this training, learners obtain an FCCS certification through the Society of Critical Care Medicine.



IMPROVED CAPABILITIES



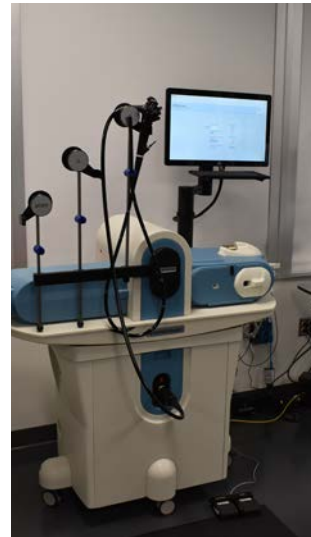
INCREASED VARIETY OF TASK TRAINERS

We have significantly increased the number and variety of task trainers available for the educational needs of our varied learner groups.



ANATOMAGE TABLE

A 3D anatomy visualization and virtual dissection system.



GI MENTOR

3D Systems' Symbionix GI Mentor is the approved of the Society of American Gastrointestinal and Endoscopic Surgeons for the technical skills component of the Fundamentals of Endoscopic Surgery exam.



TEE SIMULATOR

A real-time ultrasound simulator to develop cognitive and psychomotor skills for transesophageal echocardiography (TEE).



SIM NEWB AND SIM BABY

Newborn and infant human patient simulators for use in NRP and PALS training.



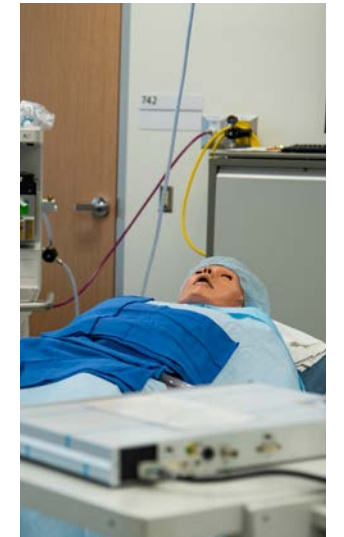
VICTORIA AND NEONATE HAL

Our new high fidelity obstetrics patient simulator and neonatal high-fidelity patient simulator.



ADVANCED HAL

Our most advanced manikin is a pediatric human patient simulator capable of expressing emotions, tracking movement, and speech.



HPS UPGRADE

We've upgraded our human patient simulator that supports the use of real anesthesia and medical gasses.

INNOVATION HAPPENS HERE

FDM 3D PRINTERS

Our fused deposition modeling (FDM) 3D printers enable prototyping of large objects which only require low to moderate levels of print detail. This includes chassis/cases for prototyped devices, components for procedural task trainers, and molds for use with poured silicone. ASTEC utilizes FDM printers from LulzBot (Taz 6/5/Mini) as well as Ultimaker (S5 Pro).

SLA 3D PRINTERS

Stereolithography (SLA) 3D printers give ASTEC the ability to perform prints with very fine detail. This is used for tasks in which the print object is very small or the required detail is very high. These printers also allow for streamlined printing of both rubber and elastic materials for applications where object geometry is too complex for silicone molding. ASTEC utilizes SLA printers from Formlabs (Form 2).



5-AXIS CNC MILL

Computer numerical control (CNC) machines allow 3D models to be cut out of solid, high-strength materials such as delrin, steel, and aluminum. Parts that will be used over long periods of time, and may be subject to repetitive use, can be milled using the CNC machine to improve longevity. ASTEC has a PocketNC 5-axis CNC for these applications.

MIXED REALITY

ASTEC is working in collaboration with an interdisciplinary research team under the leadership of Eugene Chang, MD, FACS from the Department of Otolaryngology-Head and Neck Surgery at Banner University Medical Center (BUMC) to develop a mixed-reality endoscopic sinus surgery simulator. This simulator is composed of a virtual surgical environment within the HTC Vive. By utilizing patient data to create the virtual environment, 3D-printed skull, and soft tissues, this simulator provides a rare opportunity to practice endoscopic sinus surgery on patient-specific anatomy prior to surgery. In the coming year, ASTEC plans to advance the simulator from the development phase to a multi-site research study.

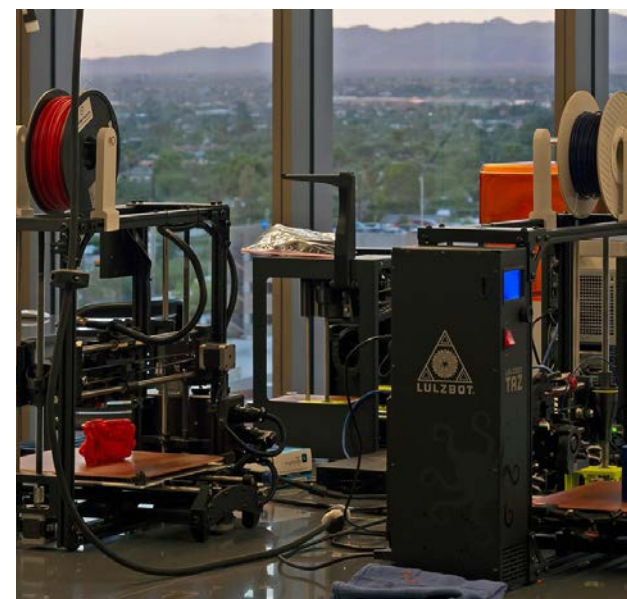
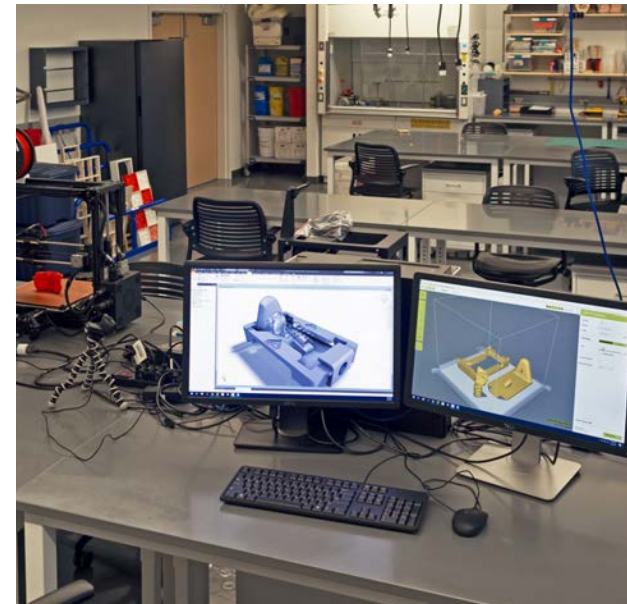
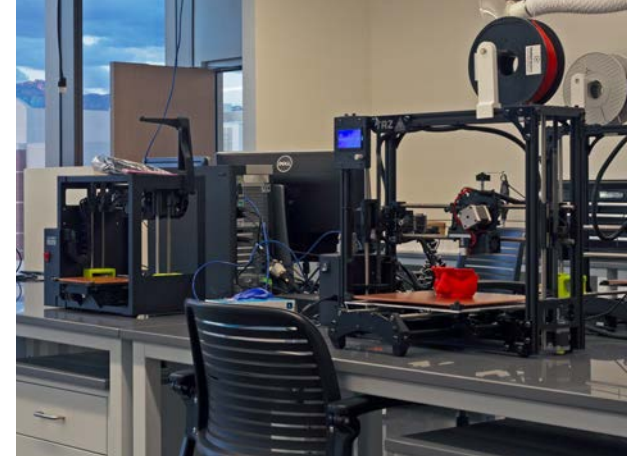
VACUUM MOLD FORMER MOLD MAKER

Suction mold making allows for a plastic sheet mold to be quickly produced for a solid object. This may be used in applications where an organically shaped (non-geometric) object, which is difficult to model on a computer, must be duplicated using poured silicone. The resulting mold is lightweight and reusable, resulting in more efficient mold generation for certain applications. ASTEC has a Mayku Mold Maker for this purpose.

AUGMENTED REALITY

With funding from the Academy of Medical Education Scholars (AMES) Grant, ASTEC internally designed and tested a HoloLens suturing application to reinforce proper suturing technique during independent practice. The application uses AR technology within the Microsoft HoloLens to project guides over a suture pad. Preliminary results from the study showed that students had greater improvement in their suturing skills after using the application compared to a control group that practiced without the application. ASTEC plans to launch an updated version of the application using the Microsoft HoloLens 2 in the near future.

ASTEC extends a special thank you to Carol Brown for her continued support of our innovative endeavors.



RESEARCH INITIATIVES

EXTERNAL RESEARCH

- Multi-resolution foveated laparoscope for safer surgery, NIH R01 Grant
- Augmented computer guided laparoscopy training, NSF Grant
- The impact of a navigation grid on focusing instruments during FLS surgery tasks, Usability Study with Storz
- Leadership education advanced during simulation, usability studies collaboration with Emergency Medicine, control site for AHRQ R21
- STORZ drift study: Testing efficacy of a navigational grid overlay on the reduction of camera operation “drift” with novice camera holders.

RESEARCH & DEVELOPMENT PROJECTS

- Mixed reality ENT simulator combining patient specific 3D printed models synchronized with virtual reality, Collaboration with ENT Department
- Virtual reality airway management training platform for effective decision making with pulmonary fellows, Collaboration with Pulmonary Department
- Optimizing individual suturing practicing using augmented reality, Internal Grant
- Development and validation of kidney biopsy ultrasound task trainer, Collaboration with Urology Department, Patent Pending
- Development of 3D printed bleeding cricothyrotomy model, Collaboration with EM Department
- Pilot study for validating the advanced laparoscopic skills curriculum, International Collaboration
- Development of ultrasoundable IV trainer
- Pilot study on gender discrimination in medical education, Undergraduate Honors Thesis
- Can ultrasound naïve first-year medical students develop hands-on skills in image acquisition after reviewing online ultrasound modules?, Internal Grant Collaboration with the EM Department
- Understanding emotional and cognitive response, perception of task difficulty, and presence during virtual simulation sessions to improve educational outcomes and future development of interventions to deal with stress and anxiety before they occur in clinical settings, Collaboration with iSchool
- Eye tracking study: Evaluation of eye movement patterns as well as changes in communication during an adverse event is analyzed and compared across skill levels.

PUBLICATIONS

- Lovett M, Phung M, Biffar D, Hamilton A, Lee B, Tzou D. Development of a Low-Cost, High-Fidelity Simulator for Ultrasound-Guided Percutaneous Nephrolithotomy (PCNL). The Journal of Urology, 2020. 203_supplement 4_e688.
- Srikar A, Situ-LaCasse E, Acuna J, Irving S, Weaver C, Samsel K, Biffar DE, Motlagh M, Sakles J. Integration of Pre-intubation Ultrasound into Airway Management Course: A Novel Training Program. Indian J Crit Care Med. 2020 24(3): 179-183.
- Gabrysz-Forget F, Bonds M, Lovett M, Alseidi A, Ghaderi I, Nepomnayshy D. Advanced Training in Laparoscopic Suturing Curriculum (ATLAS): Is Mastery Learning In Residency Feasible to Achieve Expert Level Performance in Laparoscopic Suturing? Journal of Surgical Education, 2020. 77(5):1138-45.
- Hughes KE, Hughes PG, Cahir T, Plitt J, Ng V, Bedrick E, Ahmed RA. Advanced closed-loop communication training: the blindfolded resuscitation. BMJ Simulation and Technology Enhanced Learning. Published Online First: December 20, 2019. doi: 10.1136/bmjstel-2019-000498.
- Lovett M, Katz J, Lee S, Biffar DE, Hamilton A, Nguyen M, Hua H. Evaluation of Learning Curve and Peripheral Awareness Using a Novel Multiresolution Foveated Laparoscope. Proceedings for SpringSim 2019, The Society for Modeling & Simulation International, IEEE Xplore, ISBN: 978-1-7281-3547-2, June 10, 2019.
- Collins C, Biffar DE, Lovett M, Holder K, Yonsetto P, Holcomb M, Weinstein R, Hamilton A. The Use of Remote and Traditional Facilitation to Evaluate Telesimulation to Support Interprofessional Education and Processing in Healthcare Simulation Training. Proceedings for SpringSim 2019, The Society for Modeling & Simulation International, IEEE Xplore, ISBN: 978-1-7281-3547-2, June 10, 2019.
- Hamilton AJ, Biffar DE, Lovett M, Rozenblit J, Weinstein R, Kanda, J. When Hollywood Inspires Medicine: New Concepts in the Design and Architecture of Medical Simulation Facilities to Support Inter-Professional Healthcare Education and Training. Proceedings for SpringSim 2019, The Society for Modeling & Simulation International, IEEE Xplore, ISBN: 978-1-7281-3547-2, June 10, 2019.

ORAL PRESENTATIONS

Keynote Address

- “How Come My Brain Stopped Working During the COVID-19 Crisis?” at the Applied Brilliance Global Webinar; April 30, 2020.
- “Medicine and Emerging Technology: For Better or for Worse?” at the 13th Annual Ozarks Neuroscience Education (ONE) Clinics; Big Cedar Lodge Conference Center, Branson, MO; August 22, 2019.

Invited Presentations/Guest Lectures

- “Hexagonal Neuronal Fields in the Hippocampus: How the Brain Encodes Time, Place, and Experience,” at the Banner Health and University of Arizona Health Sciences Conference, HSIB Forum, February 29, 2020.
- “Play Frankenstein: Make the most of your simulation makerspace” for the Webinar for the Society for Simulation in Healthcare Simulation Operations and Technology Section, December 9, 2019.
- “The Blood and Guts of Medical Simulation: An Overview of Artificial Tissue Design” for the ECE 472/572 Healthcare Technology and Simulation course in Tucson, AZ on November 20, 2019.
- “The Hexagonal Neuronal Fields in the Human Hippocampus: A Unified Field Theory of How the Brain Encodes Time, Place, and Experience” at the 10th Annual Medical Innovation Institute, University Marriott, Bethesda, Maryland, November 19, 2019.
- “Harsh Realities to Virtual Realities: An Introduction to the Medical Simulation Field” for the ECE 472/572 Healthcare Technology and Simulation course in Tucson, AZ, on September 4, 2019.
- “The Changing Face of Medicine in Public Policy,” at the 13th Annual Ozarks Neuroscience Education (ONE) Clinics; Big Cedar Lodge Conference Center, Branson, MO; August 23, 2019.
- “Challenges in Healthcare Simulation – Clinical and Research Perspectives” at the Annual Meeting of International Modeling and Simulation in Medicine (MSM) Conference, Tucson, AZ, May 1, 2019.

- “When Hollywood Inspires Medicine: New Concepts in the Design and Architecture of Medical Simulation Facilities to Support Inter-Professional Healthcare Education and Training,” at the Annual Meeting of International Modeling and Simulation in Medicine (MSM) Conference, Tucson, AZ, May 1, 2019.
- “Single Shot State Detection in Simulation-based Laparoscopy Training,” at the Annual Meeting of International Modeling and Simulation in Medicine (MSM) Conference, Tucson, AZ, April 30, 2019.
- “Enhancing a Laparoscopy Training System with Augmented Reality Visualization,” at the Annual Meeting of International Modeling and Simulation in Medicine (MSM) Conference, Tucson, AZ, April 30, 2019.
- “Intellectual Properties: The Neuroscience of Innovation,” at the Howarth Annual Conference, Parker House Palm Springs, Palm Springs, CA, April 26, 2019.
- “The Use of the Horse in Post-Traumatic Stress Disorder (PTSD)” at Sierra Tucson, Oro Valley, AZ, April 12, 2019.
- “Ancient Values, Modern Healthcare,” at the Optical Science Auditorium, Optical Science Building, University of Arizona, Annual Alpha Epsilon Delta Presentation, April 9, 2019.

Presentation & Live Demonstration:

- “Mixed-Reality Endoscopic Sinus Surgery Simulator” at the 2020 International Meeting on Simulation Healthcare SimVentors Showcase in San Diego, CA, on January 19, 2020.
- “AR-Guided Wound Closure Application” at the 2019 International Meeting on Simulation in Healthcare (IMSH) SimVentors Showcase, San Antonio, TX, January 26-30, 2019.

Podium Presentation:

- “Development of a Low-Cost, High-Fidelity Simulator for Ultrasound-Guided Percutaneous Nephrolithotomy (PCNL) Training” at the Western Section AUA’s 95th Annual Meeting in Monterey, CA, on November 6, 2019.

- “Crisis resource management training: the blindfold code exercise” at the American College of Emergency Physicians Scientific Assembly, Denver, CO, October 28, 2019.
- “The Use of Remote and Traditional Facilitation to Evaluate Telesimulation to Support Inter-professional Education and Processing in Healthcare Simulation Training” at the 2019 Spring Simulation Conference in Tucson, AZ, on May 1, 2019.
- “Evaluation of Learning Curve and Peripheral Awareness Using A Novel Multiresolution Foveated Laparoscope” at the 2019 Spring Simulation Conference in Tucson, AZ, on April 30, 2019.
- “Telesimulation: The Journey and Facilitation” at the International Meeting for Simulation in Healthcare (IMSH), San Antonio, TX, January 26-30, 2019.
- “The Blindfolded code simulation training exercise” at the International Meeting for Simulation in Healthcare. San Antonio, TX, January 26-30, 2019.

POSTER PRESENTATIONS:

- “Design and Evaluation of an immersive pandemic exercise for interprofessional healthcare education utilizing virtual experts” at the 8th Annual Interprofessional Rural Health Professions Conference via Zoom on April 3, 2020.
- “Pilot Study: Evaluation of Interprofessional Education through Telesimulation using Remote and Live Facilitation” at the 8th Annual Interprofessional Rural Health Professions Conference via Zoom on April 3, 2020.
- “Can Nurse Practitioner Students Learn Point-of-Care Ultrasound Applications after One-Day Training Session?” at the American Institute of Ultrasound in Medicine, Orlando, FL, April 6 – 10, 2019.
- “Evaluation of an Innovative Bleeding Cricothyrotomy Model” at the International Meeting for Simulation in Healthcare. San Antonio, TX, January 2019

ASTEC ACCOLADES



In December 2019, ASTEC was reaccredited through a peer-reviewed process by the Society for Simulation in Healthcare (SSH) in the areas of assessment, research, systems integration, and teaching/education. The accreditation process provides validated recognition of expertise, best practices, and performance improvement within simulation centers.



The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) is an American professional organization that provides accreditation to surgeons in skills such as the Fundamentals of Endoscopic Surgery (FES) and the Fundamentals of Laparoscopic Surgery (FLS). All graduating general surgery residents must meet these proficiencies prior to their matriculation. As an accredited testing center, ASTEC can provide both training and exam administration for these proficiency standards.



STORZ is a biomedical device company that specializes in endoscopic and surgical instrumentation. As part of their company’s educational initiative, they select certain institutions as Centers of Excellence. ASTEC is a STORZ Center of Excellence. As part of this initiative, STORZ provides the latest and most groundbreaking technology for our students to practice with so they may gain skills utilizing technology they are likely to encounter in a hospital setting.



ASTEC is one of only **24** simulation centers in the world with full SSH accreditation.



ASTEC is one of only **two** FES and **two** FLS test centers in the state of Arizona.

SIMULATION SPOTLIGHT:

ASTECS PANDEMIC INITIATIVES

NEWLY DEVELOPED PROGRAMS

- Virtual elective course for medical students
- COVID-19 educational series for K-12 students

NEWLY DEVELOPED RESOURCES

- COVID-19 first responder public health screening tool for use across Pima County, Arizona
- i-Human faculty development and onboarding resource center for interactive online simulation as a replacement for clinical clerkship students during the pandemic
- Comprehensive online video library of annotated simulation encounters
- Resource center for interactive game-based medical simulation software
- COVID-19 educational resource page on the ASTEC website
- Mobile, bedside telecommunication device for ICU patients to interact with family members and caregivers
- A.I. application for determining classroom and laboratory capacity with COVID-19 precautions

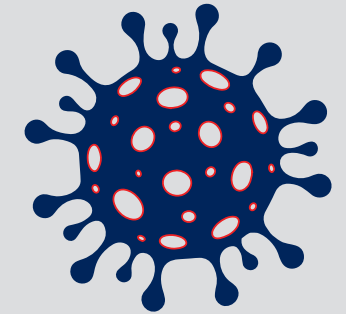
STRENGTHENING EXISTING PROGRAMS

- Established a remote ASTEC facility at Banner University Medicine, Tucson for ad hoc pandemic-related skills training
- Curriculum design for interprofessional activities moving to remote learning modalities
- Ventilator management and testing for Pulmonary and Emergency Medicine Departments
- Preparation protocols and execution of intubation procedures for Emergency Medicine Department
- Central line access training for Anesthesia and CRNA students
- Demonstration of proper PPE techniques for COVID-19 protection
- Designing, testing, and facilitating live, remote simulation activities
- Alternative simulation activities implemented for Surgery, Emergency Medicine, and OB/GYN clerkships
- Alternative, virtual simulation activities for College of Nursing and MEPN program



K-12 outreach videos
have been viewed nearly

2,000 Times



In October and December 2019, after 3 years of development, ASTEC launched its immersive IPE pandemic training exercise. Interprofessional teams of learners developed approaches to challenges during a global flu pandemic, including: local disease spread, public unrest, international travel, medical equipment shortages, and vaccine distribution.

This training was implemented among on-site and remote learner groups and emphasized the importance of effective interprofessional communication, collaboration, and problem solving during a pandemic.

This training provided a strong foundation for UArizona Health Sciences and Arizona Area Health Education Centers (AHEC) students, who are currently a part of the healthcare workforce addressing the COVID-19 crisis.

OUR TEAM



ALLAN HAMILTON, MD, FACS
Executive Director



DAVID BIFFAR, MS, CHSOS
Director of Operations



DEANA SMITH, BS, BSN, RN
Simulation Education Specialist



CHRISTINA PARTICA
Senior Program Coordinator



COY COLLINS, MSN, FNP-BC, NR-P, CEN
Simulation Education Specialist



ROCHELLE MARSHALL
Administrative Associate



MERYLL LOPIDO
Simulation Operations Specialist



MARISSA LOVETT
Research Specialist



LUCAS GRIJALVA
Simulation Operations Specialist



THOMAS CAHIR
Research Specialist



EZE AHANONU
Makerspace Specialist





THE UNIVERSITY OF ARIZONA HEALTH SCIENCES

Arizona Simulation
Technology &
Education Center

Special thanks to Dr. Michael Dake,
Senior Vice President, UArizona Health Sciences,
for his role in bringing ASTEC III
to fruition and his continued support
of ASTEC's mission and vision.

astec.arizona.edu

All contents © 2020 Arizona Board of Regents. All rights reserved.

The University of Arizona is an equal opportunity, affirmative action institution. The University prohibits discrimination in its programs and activities on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation and is committed to maintaining an environment free from sexual harassment and retaliation.

For information in an alternate format (Braille, digital, tape or large print), please contact cpartica@arizona.edu or email.arizona.edu

Design: Edgar Mendoza, The University of Arizona Health Sciences BioCommunications

Photos: Kris Hanning, Noelle Haro-Gomez, Evan Zavitz, and ASTEC