# Table of Contents

Welcome to the Center for Experiential and Applied Learning (CEAL)  
Our Vision  
Our Mission  
CEAL Team Organizational Chart  
Our Values  
Faculty Leadership  
2022 Steering Committee  

CEAL Team Updates  
CEAL Celebrates Five Year Anniversary  
CEAL Presents Educator of the Year Awards  
2022 CEAL Staffing Updates  
CEAL Team Members Named Atrium Health Wake Forest Baptist  
2022 Culture Commitment Heroes  
CEAL Featured on WXII-12 News During Women’s History Month  

CEAL Administration  
Improved EMS Scheduling Process  
Social Media Initiatives  
CEAL Website Re-Design  
CEAL Provides Video Services  
Expansion of ROI with Feedback Loop and 3 Month Post-Event Surveys  

CEAL Collaboration  
CEAL/CSC Team Days at Charlotte and Winston-Salem  
CEAL/CSC Collaboration Throughout the Year  
Multi-Station weekend event during the regional HOSA camp - K-12 education  
Summer Immersion Back in Full Swing  
Gynecological Teaching Associate (GTA) & Male Urogenital Teaching Associate (MUTA) Program  
Stakeholder Analysis  

Anatomical Resources  
Commenced Rolling Bones Program - Taking Experiential Learning Labs Into K-12 Schools  
Chris York Receives Faculty Position for the Graduate Program
Simulation

- CEAL Provides Emergency Training for Athletes
- CEAL Leads the Way in Training for Emergencies in Clinical Obstetrics
- Disaster Medicine Physicians from Ukraine Learn and Share Best Practices
- Emergency Medicine Collaborates with EMS and Wilderness Fellowships in Trauma Simulations
- Annual Sim War Competition Takes a Tropical Turn
- CEAL Co-Hosts Symposium in Clinical Simulation
- Climate/Landscape Assessment

Standardized Patients

- Standardized Patient Program Year in Review
- First Annual Standardized Patient Team Ho Ho Holiday Party was a Huge Success

Surgical Service

- CEAL Receives a Karl Stroz Medical Education Grant for Long-Term Equipment Use

Ultrasound

- USGIV Program Expansion
- Neuromuscular Ultrasound Course Returns to In-Person
- Faculty Training with CEAL Ultrasound
- New Curriculum Added for ENT Colleagues
- Ultrasound Mini Fellowship Program
- Calciphylaxis Training Molds
- New Assessment and Procedure Tracking System in Development for USGIV

CEAL Team Abstracts

CEAL Team Grants
Welcome to the Center for Experiential and Applied Learning (CEAL)

CEAL was formed July 1, 2017 to serve the collective Atrium Health Wake Forest Baptist and Wake Forest University School of Medicine (academic enterprise + clinical enterprise + community missions). We celebrated our fifth birthday this year with a big CELEBRATION providing our first ever institutional awards for champions of UGME and GME experiential learning. CEAL continues to expand in the number of learners and healthcare faculty and staff who are engaged annually in experiential learning. While most CEAL learning events have moved back on campus post the COVID-19 pandemic, CEAL continues to deploy experiential learning using various modalities. This year, we served 55 unique departments and even shared learning events with colleagues from the Ukraine. Our most popular simulation experiences remain those that are multidisciplinary in nature. As we think about the future of healthcare, pipeline activities that stimulate the minds and options for ALL children and young adults in our community became even more important. In 2022, we served over 1,115 pipeline learners with over 87.5 hours of experiential learning events in simulation, ultrasound, and anatomy including the return of our Rolling Bones program.

We have also extended our reach into the primate population, instructing research investigators how to complete appropriate primate liver biopsies and other types of scans. Having reached well over 500 nurses in ultrasound guided IV since inception of this monumental program, we extended the reach of this program into the Charlotte market using our CEAL mobile fleet. CEAL provided a long-term loan of a SimMan 3G to our anesthesia colleagues in Charlotte to begin a perioperative simulation space on that campus. CEAL leadership continues to work on strategic planning with colleagues from Carolinas Simulation Center (CSC) as we plan together the future of enterprise simulation.

CEAL had 56,065 learner encounters and served 55 departments. CEAL’s portfolio was 59% clinical enterprise, 33% academic enterprise, and 9% other which included K-12 education. CEAL hosted >1,500 events based upon staff tracking and > 9,500 teaching/event hours.

We hope you enjoy our 2022 report highlighting annual accomplishments!

Best,

JaNae Joyner, PhD, MHA
Associate Vice President & Assistant Dean
Curriculum Experience and Support Services including CEAL
Our Vision

To Train One, Train Many. To Help One, Help Many.

Our Mission

The Center for Experiential and Applied Learning (CEAL) exists to serve Wake Forest School of Medicine, Atrium Health Wake Forest Baptist, and the healthcare community by promoting and sustaining the delivery of superior patient care, using experiential and applied learning that is grounded in educational theory and scientific discovery.
Our Values

We seek to advance the delivery of health care by providing hands-on immersive learning for current and future clinical professionals. We are guided by a responsibility to the patients who will be treated by the health care practitioners we support. For that reason, our primary mission is to improve the care and safety of the patients who will fall under the care of the students we train.

CEAL Team Organizational Chart
Faculty Leadership

JaNae Joyner, PhD, MHA
Associate Vice President & Assistant Dean

Frederick Kremkau, PhD
Emeritus Professor of Radiologic Sciences

Jim Johnson, PhD
Director of Industry Relations and Professional Education

Casey Glass, MD
Director of Ultrasound

Lauren McCormack, MD
Director of Surgical Education and Innovation

Tom Perrault, PhD
Director of Human Tissue Services & Human Body Donation Program

Justin Traunero, MD
Director of Simulation Hawthorne Hill campus
2022 Steering Committee

JaNae Joyner – Associate Vice President & Assistant Dean, CEAL and Education
Experience Areas

Terri Yates – Vice President and Associate Dean, Healthcare Education

Aarti Sarwal – Neurology/Critical Care

Casey Glass – Emergency Medicine

Robin Hack – Nursing

Kathy Nelson – Nursing

Richie Flowers – CRNA/DNP

David Masneri – Emergency Medicine

Dawn Swiderski – Carolinas Simulation Center (CSC) Atrium Health

Greg Ross – Patient Safety/Anesthesiology

Ian Saunders – CEAL/Simulation

Josh Nitsche – OBGYN

Josh Zavitz – Emergency Medicine

Justin Traunero – Anesthesiology/CEAL Director of simulation

Louise Nixon – CEAL/Administration

Matt Miles – Pulmonary Critical Care

Jennifer Roper – Family Medicine

Heath Thornton – Family Medicine

Megan Lee – Radiology

Michael Lischke – CME/AHEC

Scott Carter – GME/Radiology

Rima Jarrah – Anesthesiology

Tom Perrault – CEAL/Director of Human Tissue Services

Jim Johnson – CEAL/Director of Professional Education & Industry

Daryl Henshaw – Anesthesiology

Heath Earley – Nursing

Amy Hildreth – Surgery

Jason Halvorson – Orthopedic Surgery

Bret Nicks – Emergency Medicine, Lexington

Anika Lyerly – Nursing/Clinical Education

Lauren McCormack – Surgery/CEAL Director of Surgical Education

Tina Austin – Navicent Health

Sandra Moore – Navicent Health

Luke Neff – Surgery/Pediatrics

Buddy Marterre – General Surgery/Internal Medicine/Surgical Palliative Care

Alton Sutter – Colorectal Surgery

Elizabeth Shilling – Surgery Trauma/Addiction Research & Clinical Health (ARCH)

Martin Avery – Surgery Trauma

Nildris Cruz-Diaz – Surgery/Hypertension

Stephen S. McNatt – Minimally Invasive Surgery

Toni Jackson – PA Studies

Franklin Watkins – MD Program/Gerontology
CEAL Team Updates
2022 marked the fifth anniversary for CEAL. We celebrated this milestone event with an open house on July 15, 2022, followed by a staff luncheon. The event was hosted in the Ultrasound learning space on the ground floor of the Reynolds Tower in the medical center, where all functional areas of CEAL – Ultrasound, Simulation, Anatomy, Graphic/Digital Design, Standardized Patients, and Industry Relations – were present to display equipment and demo training modalities for prospective learning events to support the delivery of superior patient care.

Visitors were introduced to moulage, with a standardized patient fully made up to demonstrate a trauma event. Multiple ultrasound tables showed different potential uses and training needs that might be served through utilization of CEAL services. Standardized patient, digital & graphic design and anatomy resources were introduced to prospective event leaders and interested departments and providers. Simulation staff set up adult and child manikins and answered a steady flow of questions from interested practitioners.
We received visitors who arrived with specific questions, with learning needs already in mind, and there were drop-in visitors who realized the potential for upgraded performance in their departments or units as they interacted with CEAL staff and realized the potential through future training with CEAL. The event successfully introduced our mission and availability to visitors from throughout the institution, and we will hopefully see an expanded range of requests for new events and a more diverse CEAL portfolio.

Independent of outreach to our professional community, the event was valuable for CEAL staff, after an extended period with reduced contact under Covid, and provided the opportunity to slow down, reflect and frame all that we have developed and accomplished together over five years. Working through the details for the open house demonstrated how much of that success comes from how well we work together.
CEAL Presents Educator of the Year Awards

Heather Chansen

For the first time in 2022, CEAL honored recipients with what will now be an annual award for educators. These two educators were honored for their dedication to experiential learning, recognized as leaders who successfully realize our institutional culture commitments and demonstrate best practices for experiential learning. 2022 recipients were Jerry Clark [CEAL UGME Educator of the Year] and Chris Davis [CEAL GME Educator of the Year]. We are grateful for the accomplishment and generosity of these educators, and all educators who support CEAL’s portfolio of academic and clinical enterprise training programs to realize our mission to promote and sustain the delivery of superior patient care.
2022 CEAL Staffing Updates

Heather Chansen

FEBRUARY 2022
- Eleonora Fallabrino joins CEAL in the position of Graphic & Curriculum Designer. Eleonora is a recent graduate of High Point University with a BA that includes Communication/Game Design & Interactive Media/Graphic Design & Digital Imaging and an MA in Strategic Communications in Public Relations.

MARCH 2022
- Departure of Cheryl Conner, CEAL Logistics Coordinator. Cheryl set the bar high in her work to ensure smooth operations for CEAL scheduling, and we wish her all the best in her transfer to ITS as an Applications Analyst on the Project EAST design team for EPIC operations.

MAY 2022
- Jamie Hadaway accepts the CEAL Sonography Education Specialist position. Jamie comes to CEAL from the Atrium Health Wake Forest Baptist abdominal radiology department, where she developed her passion for teaching.

JUNE 2022
- CEAL welcomes Renae Hutchens as Logistics Coordinator. Renae’s service as a paramedic in Stokes, Forsyth & Yadkin Counties and her work with the Patient Logistics team [Atrium Health Wake Forest Baptist] position her perfectly to manage the daily operational workflow of CEAL scheduling.

AUGUST 2022
- Announcement of Carty Beaston’s September 16th departure. Carty delivered integral support to CEAL Administrative and Ultrasound teams. Carty demonstrated a strong work ethic and consistent willingness to adapt, and we wish her all the best as she departs to work full time toward her Master’s degree.
CEAL Team Members Named Atrium Health Wake Forest Baptist 2022 Culture Commitment Heroes

Maria Crawford

CEAL would like to congratulate our awesome teammates who were recipients of the 2022 Culture Commitment HERO AWARDS, including:

- The CEAL Ultrasound Team (Bridget Francis, Casey Glass, Jamie Hadaway) 2022 Culture Commitment Hero Award – EXCELLENCE
- Tonya Mock | 2022 Culture Commitment Hero Award – BELONGING

“I attended the June 6th Ultrasound Guided Peripheral IV class. Bridget was excellent, and made it a very productive and enjoyable class. I placed a USGIV successfully on my first patient; first try, yesterday, on a patient in Labor & Delivery Triage who is coming in for weekly IV fluid infusions, is a difficult stick, and can only have her Lt arm used for BP’s and IV’s. This is a very useful skill to have, and I like being a helpful resource for people. Thank you so much.”
Bridget, Casey, Jamie and Tonya show the highest levels of excellence consistently putting our Culture Commitments into action on a daily basis. Their dedication to belonging, innovation, trust, working as one team and excellence is inspiring.

In the words of JaNae Joyner, CEAL Associate Vice President & Assistant Dean, “Your work in CEAL deserves to be celebrated, as you all go above and beyond every day and impact so many different learner groups. Ultimately, we influence patient care through the training you all provide. You have great hearts that find time to pack in so many events when the schedules get full, have fun together, and are passionate about what you do.”
CEAL Featured on WXII-12 News During Women’s History Month

Louise Nixon

On March 15, 2022, WXII 12 News featured the Center for Experiential and Applied Learning (CEAL) in a story to showcase female leaders in the medical field in the Triad.

JaNae Joyner, PhD, MHA spoke about medical students’ exposure to ‘real life’ experiences during their education. She stated, “It’s wonderful being a female educator in medicine and encourages women to find what they’re interested in and to go after it”. JaNae went on to share that over the last couple of years, more than half of the students coming into the medicine program are women and that there are different specialties and avenues to explore within the field of medicine.

Joining JaNae in the news feature were Bridget Francis, RDMS and Troyanne McMillan, RN. Each of them demonstrated hands-on learning that simulate real-life patient experiences within CEAL, Bridget with ultrasound guided IV placement and Troyanne with a high fidelity mannequin.
Dr. Joyner went on to explain, “What you see with high fidelity mannequins is around team-based health care so that our students learn how to be part of the health care team before they take care of patients. They see emergencies before they see it in the real-life situation and that is what our simulation lab is for.

“I think it’s really exciting and it helps them get the nerves out before they actually go into the arena because they know what’s going to happen in the clinical space”.

The news feature added that CEAL serves as a pipeline program for health care professionals across the community where people can utilize the simulation resources and education in various ways.

Improved EMS Scheduling Process

Louise Nixon

A Stakeholder Assessment was distributed during October, 2022 to better understand experiences with scheduling CEAL resources. Out of 28 total responses, 54% agreed that the process to schedule CEAL resources is easy to complete, 21% were neutral and 25% disagreed. Considering the complexity of the EMS system, the results were not strongly imbalanced either way.

When asked for suggestions on how CEAL could improve scheduling, the opportunities that surfaced included 1) Simplifying the form; 2) Having the scheduling system link more visible on our website; 3) Evaluating the process for reserving task trainers; 4) Defining terms and providing explanations used within the system; 5) Simplifying the user guide; and 6) Shortening the form.

CEAL’s goal in assessing our scheduling process was to listen to stakeholder concerns and take action on implementing improvements. By the end of December, 2022, the following action items were defined and prepared for implementing in January, 2023.

1. **Shorten the CEAL Template Form** – Many questions were associated with SSH and ACS accreditations, making the form quite lengthy. Six (6) accreditation related questions will be removed from the outward facing form. Since CEAL is now familiar with re-occurring events year-after-year, appropriate responses to the specific questions will be self-entered by CEAL.

2. **Easy-to-Answer Service Questions** – Two (2) “yes” or “no” questions will be added to provide the opportunity for additional support assistance with pre-learn materials, such as video, and case development and/or objective writing.

3. **“CEAL Request for Use” Link** – The link is easy to find at the top of our website at wakehealth.edu/ceal. A gold box button is located under our team photo.

4. **“Navigating EMS Scheduling Guide”** – Though challenging to explain a multilayered system, the process guide will be revised with more concise steps to completion.

5. **Easier Access to Scheduling Guide** – A new access button linked to the document will be added underneath the request for use button on the CEAL website homepage.

6. **Notification of Changes** – Once above changes have been completed, an email will be distributed to stakeholders stating the changes made based on their valued feedback.
Eleonora Fallabrino

CEAL has been connecting with more and more people on social media, with two platforms used to share relevant ultrasound topics, upcoming courses and showcase events we host.

Social media plays a relevant role in marketing our external ultrasound courses, especially for those that have transitioned from in-person didactics to virtual, bringing participants to our courses that would not have previously been able to attend.

CEAL has been sharing, retweeting, and using our social media accounts to be more accessible and share our work with the public, in the hopes of increasing exposure to our center and opportunities offered to both internal and external health care professionals. We are growing our social media platforms to enhance communication by providing effective updates, answering questions, taking polls, and sharing best practices.

We want to be able to communicate with more people about ultrasound, and Twitter and Facebook have played an instrumental role in helping us connect with people from different parts of the world. In the last two years, CEAL hosted course participants from Canada, India, Mexico, Singapore, Switzerland, and United Arab Emirates. We would like to think that social media can play a role in the advancement of medical knowledge world-wide.

FOLLOWER INCREASE FROM SEPTEMBER 2022 UNTIL APRIL 2023
EMERGENCY SIMULATIONS CREATE REAL-LIFE SCENARIOS FOR STUDENTS

Our Center for Experiential and Applied Learning (CEAL) prepares students and team members for emergencies and a variety of scenarios thanks to innovative teaching and simulation training.

Patient mannequins play a role in preparing students and team members for emergencies and a variety of scenarios thanks to innovative teaching and simulation training through our Center for Experiential and Applied Learning (CEAL).

Immersing during a team scenario is critical for providing an environment that challenges everyone to improve optimal team performance.

Learn more about our training:
www.wakehealth.edu/CEAL
In 2022, CEAL launched a website re-design from marketing feedback received from their American College of Surgeons (ACS) accreditation site visit. CEAL staff worked closely with the Media and Marketing department for over six months to add website content, photos, and better organization to showcase CEAL’s services. CEAL’s administrative staff team assisted with the content creation, layout, design, and editing. The website re-design improves internal and external user experience by distinguishing external learners from internal learners for prompt identification, displaying CEAL’s complete program and service offerings, and new photos to visualize our offerings.

### Standardized Patients Essential to Clinical Training

CEAL events for internal departments provide opportunities to enrich skills, develop new competencies and in some cases, meet requirements for CME. CEAL regularly facilitates targeted learning for students and providers within our network to develop new competencies. Please view the course offerings below or contact ceal@wakehealth.edu to discuss individualized learning opportunities for your department.

- **Ultrason-Guided IV (Free)**
- **ACOG ECO (free)**
- **MOCA Simulation Course (with cost)**
- **Ultrason CME Portfolio (with cost)**
- **Annual Ultrasound Mini Fellowship (free)**
- **Simulation and Ultrasound Inventory Lists**

### Program Resource Forms

- **Declaration of Consent**
- **Whole Body Donation at Wake Forest University School of Medicine**
- **Whole Body Release Form**

### Questions?
If you have questions about Whole Body Donation at Wake Forest please contact us at 336-716-4369.

### Non-Wake Forest Affiliated Learners

CEAL events provide opportunities to enrich skills, develop new competencies and in many cases, meet requirements for CME. CEAL regularly facilitates targeted learning for students and providers to develop new competencies. Please view the course offerings below or contact ceal@wakehealth.edu for further information.

- **Ultrason CME Portfolio (with cost)**
- **MOCA (with cost)**
- **K-12 Education**
- **FES and FLS Exams**
- **Specialized Programs**
The Whole Body Donation program showcases updated resource forms for prospective donors and more precise answers to the frequently asked questions. The Standardized Patient program includes updated content highlighting various work opportunities, testimonials, and a frequently asked question section with clear explanations. Finally, the CEAL Professional Development page provides further insight for faculty interested in implementing simulation within their respective departments. Visit our website to learn more.

Examples of Standardized Patient Interactions with students can include:

- Presenting a case history in response to questioning by Wake Forest School of Medicine students.
- Undergoing a non-invasive and limited physical examination.
- Providing students with ultrasound training such as abdomen, heart, and lung scanning.
- Providing feedback that assists students with their communication and clinical skills.
- Assisting students in working through challenging emotional situations.
CEAL Provides Video Services

Eleonora Fallabrino

In 2022, CEAL collaborated with several groups among the Atrium organization to meet their photography, videography, and audio project needs.

Brenner Children’s is one group CEAL created content for, when they were seeking a quick, catchy introduction to their Brenner FIT (families in training) program. This project involved recording multiple families in their own homes interacting with family members. We recorded professional dieticians together with families to describe how Brenner FIT can help families live healthier lives by building sustainable habits that can last a lifetime. Examples of this include healthy eating habits, eating together as a family, and having a positive outlook on food, as well as family activities designed to encourage physical fitness.
CEAL also partnered with the department of Social Sciences and Health Policy to help them showcase a series of Neurocognitive tests. We worked together in the recording and editing of these videos, utilizing CEAL’s resources. The finished product will be used for multiple sites to follow protocol in administering neurocognitive testing.

Social Sciences and Health Policy also involved CEAL in their PainTRAINER program, which called for a series of still images of characters and voice over recordings that narrate experiences. This was done utilizing our green screen technology as well as lifestyle shots throughout the Bowman Gray Center for Medical Education building. The program uses PainTRAINER is an internet delivered program designed to teach pain coping skills to people with chronic pain.

As some of our ultrasound courses move to online didactics, CEAL will be managing the recording of those lectures and developing modules for the learning management platform used in the continuing medical education courses moving to this modality.

CEAL is available to help other departments with their audio/video requests and can travel to accommodate the needs of the project. We can execute an existing plan as well as be involved in the planning and staging of events, and offer tips to help achieve optimal results. Interested parties can contact ceal@wakehealth.edu for their audio/video service needs.
Expansion of ROI with Feedback Loop and 3 Month Post-Event Surveys

Maria Crawford

As a continuation of our Return on Learning journey, CEAL has implemented a formal feedback loop for the event data we collect throughout the year.

In 2022, the Center for Experiential and Applied learning collected 1497 post-event surveys. There are several events that are multidisciplinary, and include physicians, PAs, CRNAs, nurses, OR techs, paramedics, etc. that focus on treatment of patients with emergent medical conditions. Other events are designed for skills training, such as Surgical events for Residents and Ultrasound Guided IV Placement for Nurses. The new process calls for major event series evaluations to be summarized annually and formally shared with Faculty/Event Champions. A 5-point Likert Scale is used to determine the subjects’ level of agreement with the statements: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). Most comments fall into three major buckets: Communication/Roles/Teamwork, specific new skill learned, and appreciation or acknowledgment that the simulation was very helpful for their clinical role. Below highlights the groups we covered in the 2022 Feedback loop.

Joint Trauma Simulations are multidisciplinary events that take place monthly and alternate between ED and critical care units. Event cases included, among others, Motor Vehicle Accident, Motorcycle Accident, Football Injury, and Malignant Hyperthermia and included live patient actors in full moulage, or cadavers, as needed.

Surgical Series covers 10 events over 5 weeks that focus on resident surgical skills training with external sponsors/teachers. Topics covered included: wound closure, advanced ultrasound skills, energy cutting and coagulation, thoracic and vascular skills, surgical stapling, vascular surgery lab, FLS training, abdominal skills, hemostasis, and neck and vascular Lab.

Birth Center Crisis Resource Management (CRM) events are multidisciplinary Emergent Obstetric simulations that take place monthly in the Birth Center. Event scenarios included Shoulder Dystocia, Antepartum Emergency C-Section, Hypertensive Emergency, Malignant Hyperthermia, Code APGAR, Maternal Code, OB Sepsis, and Postpartum Hemorrhage. Other CRM Simulations are multidisciplinary events that take place monthly in the Mock OR and involve surgical/OR staff including Residents, CRNAs, Nurses, and Techs. Event cases included Altered Materials, Malignant Hyperthermia, Expired Implant, Power Failure, ACLS Scenario, and Retained Foreign Body.

The American College of Obstetricians and Gynecologists (ACOG) offers a course in Emergencies in Clinical Obstetrics (ECO) that we use at Atrium Health Wake Forest Baptist, and CEAL facilitates this training for all Birth Center Physicians, Nurses, and Midwives, as well as Air Care and Critical Care Transport team.

Ultrasound-Guided Intravenous classes are targeted at nurses and other healthcare professionals that place traditional peripheral IV lines with a goal of providing better patient care for hard to stick patients. This class is offered and taught by CEAL staff members.
CEAL/CSC Team Days at Charlotte and Winston-Salem

Heather Chansen

2022 held two events dedicated specifically to team-building between staff from CEAL and CSC [Carolinas Simulation Center]. CSC hosted the first gathering on April 1, 2022 at their Charlotte location. CEAL staff were greeted with a very warm welcome, toured through the facility, treated to a delicious lunch, and members of both teams participated in a team-building exercise that brought everyone to a better understanding of one another and made for a particularly enjoyable afternoon.
CEAL hosted in Winston-Salem on August 5, with a similar itinerary to introduce equipment and learning space, enjoy a shared meal and PowerPoint showcasing the program, as well as a team building scavenger hunt designed to facilitate teamwork across integrated groups that involved staff from both locations. Both visits moved very quickly, and it was a pleasure to spend time outside dedicated work activity to familiarize with our new teammates across the organization.
CEAL/CSC Collaboration Throughout the Year

JaNae Joyner, PhD, MHA

Experiential Learning/Simulation is a strength found at both Wake Forest School of Medicine and Atrium Health. The Center for Experiential and Applied Learning (CEAL; Winston-Salem, NC) and Carolinas Simulation Center (Charlotte, NC) exist to serve learners of all types from pre-licensure to continued competency. Annually, these simulation centers provide over 15,000 event hours garnering 40,000 learner encounters combined. With both large centers being accredited by the Society for Simulation in Healthcare (SSH) and the American College of Surgeons (ACS) as comprehensive accredited education institutes (AEI), these centers are poised and ready to build a strategy that is “better together” to serve the larger enterprise across North Carolina, South Carolina, Georgia and beyond. To complete this “better together” strategy, a simulation center workgroup was initially formed followed by an enterprise simulation advisory board to provide support to the two simulation center leaders Dr. JaNae Joyner (CEAL) and Dawn Swiderski (CSC). Enterprise Simulation Advisory Board members since inception of this advisory board (September 2021-2022) are: Michele Birch, MD, Gayle Bodner, MMS, PA-C, Cam Cruickshank, M.Ed, MBA, PhD, Lindsay Deneault, MBA, Andrea Fernandez, MD, Deb Harding, DNP, RN, NEA-BC, Teresa Helfenberger, MS, JaNae Joyner, PhD, MHA, Jason Kaplan, MUP, Matt Miles, MD, Med, Jennifer Noble, MSN, RN, AGCNS, BC, CHSE, Jaspal Singh, MD, Dawn Swiderski MSN, RN, CCRN-K, CHSE, FSSH, Terri Yates, PhD, and Mary Hall, MD.

The mission of enterprise simulation is: To transform healthcare safety, quality, education, and teamwork for all through experiential learning and innovative research across the continuum of care.

The vision of enterprise simulation is: Together, we lead the transformation of healthcare and advance patient care for all. We deliver innovative experiential learning, optimize systems of care, catalyze trusted collaborations, and develop global partnerships.

In 2022, together we accomplished:

• Completion of a climate assessment of 11 national simulation centers including a thematic analysis
• Co-development of research opportunities including a grant and research symposium
• Participation in WFUSOM-Charlotte campus curriculum committees and space planning
• Expansion of the CEAL Ultrasound Guided IV program into the Charlotte market including the addition of certified nurse educator (CNE) credits
• Onboarding of the Humanity software for scheduling/payment for standardized patients (SPs)
• Stakeholder assessments in both Winston Salem and Charlotte
• Staff engagement events in both Winston Salem and Charlotte
• Co-chaired a Simulation Consultant Workgroup focused on the Charlotte WFUSOM campus
Multi-Station weekend event during the regional HOSA camp - K-12 education

Louise Nixon, Eleonora Fallabrino, Bridget Francis, and Jamie Hadaway

CEAL participated in the regional event for the global organization Health Occupations Students of America (HOSA-Future Health Professionals) on November 5, 2022. Students from different schools across the region were ready to compete with each other at different levels. The state-level championships had just ended, and students were moving on to the national level.

The CEAL team set up various stations to give students exposure to simulation, ultrasound, and medical graphic design.

Our sonographers, Bridget Francis and Jamie Hadaway, demonstrated different ultrasound experiences to let students try hands-on scanning. They also explained the ultrasound guided IV station to show them how to identify a needle on the ultrasound image. Toys within blocks of gel molds were used for scanning practice so they could see the color change based on different densities. Bridget and Jamie also spoke with the students about the physics aspect regarding bioengineering components.

Our simulation team included Ian Saunders, Vernon Williams, Troy McMillan, Joel Ferris, and Renae Hutchens. In these simulation stations, students were able to receive hands-on training, using an airway task trainer, CPR model, and birthing manikin, which was a favorite.

CEAL also showcased a different angle related to healthcare careers by demonstrating the graphic design perspective. Examples of capturing video as well as creating illustrations and learning modules were shared. This attracted various audiences including teachers.

The students had various questions such as – What type of degree does it take for these potential careers being demonstrated? What are the prerequisites and required GPA? How many schools would someone have to attend such as a university versus a technical college or both? For those who felt they already know their healthcare career path, CEAL was able to describe how ultrasound, for example, is being integrated into that career from a point-of-care standpoint and that they will likely see more of it in their future.

When students leave this event, not only do they understand there are many more options, but they also see the technical aspect, which is very empowering for high school students. It’s great talking with the kids because they are engaged and are career-minded individuals who are highly competitive and focused on their careers already at this stage in their lives.

Our CEAL team strives to inspire young minds and guide them to think beyond their original impressions of typical healthcare careers. This can be very impactful as students branch out into their education opportunities.
Summer Immersion Back in Full Swing

Maria Crawford, Louise Nixon

In 2022, CEAL participated in more than 20 in-person K-12 summer simulation experiences for more than 500 students across the triad area. Wake Forest University Summer Immersion Program normally kicks off the season each June and focuses on General Medicine. This year, a sub-specialty program was added with an emphasis on Sports Medicine. These events are always well received and have a positive impact on the students who attend. Below are quotes from some of the learners who participated in the program.

Name one thing you learned from this experience:

My Love for Medicine
More about the medical environment and what I want to pursue
Thank you for a great day!
There are many different paths to get to a certain goal in medicine, and not all paths are the same
A better understanding of what I might want to do as a career

What would you change about this experience?

Make it last longer
More time with the CEAL Team
I don't know how this experience could have been better - it was amazing!
I wouldn't change anything about any of the simulations. They were all hands-on and interesting and the CEAL team was great.

Other Comments:

I think the instructors did an awesome job with showing us the labor and delivery process.
I've gained so many memorable experiences!
I loved the instructors and their engagement with the students. They had amazing personalities that kept us engaged the whole time.
This was amazing I will always remember this experience
Loved and learned so much!!
Everyone here is so nice and so welcoming, it was amazing to learn from all of them.
This was such an amazing experience and I feel very lucky to have it as only a high schooler. The instructors were all incredible and clearly very good at their jobs. Thank you for everything!
Loved this experience. It was truly something I will cherish. So thankful I could participate this program has real do you hold my interest for medicine
Thank you for this opportunity! Coming here made Wake a top choice for undergrad and med school
I had an amazing experience and solidified my passion for medicine”
Dear Ian, I loved hearing you teach us today with a good sense of humor. You’ve inspired me to enjoy every step of the medical process and showed us how to care. Thank you for taking the time to talk to us and let us hold the lung and heart. You are appreciated.

Summer Immersion High School Student

Dear Bridget, thank you so much for teaching us at the summer immersion program. I loved when you showed us how to use the ultrasound machine to find a vein and then place an IV. I can’t wait to use this technology skill when I hopefully become a nurse! Your passion for your job makes me want to bring that type of energy when I treat patients.

Thank you.
Summer Immersion High School Student

Dr. Ms. Hadaway, Thank you so much for teaching us at the Medicine pre-college program about ultrasound! You really sparked an interest in me about ultrasound and I’m considering that as a possible career now! I can tell you really care about your occupation, and it’s inspiring to see someone as caring and sympathetic as you in the medical field. Thank you for everything you do to teach and educate.

Summer Immersion High School Student

We would like to give a HUGE THANK YOU to you for making this year’s in-person summer experience a great success! Based on our participants feedback, our program was interactive, fun, and engaging! We received so many compliments on how fun and interactive everything was and we know that would not have been possible without each and every single one of you. We can’t thank you enough for your eagerness to be a part of this amazing experience. Thank you again for your continued commitment to our Student Inclusion and Diversity programs and initiatives.

Office of Student Inclusion & Diversity
Gynecological Teaching Associate (GTA) & Male Urogenital Teaching Associate (MUTA) Program

JaNae Joyner, PhD, MHA

In 2022, our WFUSOM Physician Assistant (PA) program approached CEAL to ask if we had ever considered starting a GTA/MUTA program. Prior to the COVID-19 pandemic, both WFUSOM PA and MD programs held contracts with an outside institution for these services and currently only provides instruction on these sensitive exams using task trainers.

CEAL completed climate assessment with several other schools who have started their own programs of this nature in recent years to obtain knowledge, insight, and lessons learned. CEAL has located a partner organization who can provide a train-the-trainer curriculum for GTA/MUTAs who express interest.

Working with our legal team, CEAL created a recruitment flyer and is currently in discussions with Human Resources as to the best onboarding process for future GTA/MUTAs. It is hopeful that recruitment will begin in 2023. If the recruitment phase is successful, CEAL plans to host the train-the-trainer program in spring/fall, 2023 to commence the program in 2024. This is an exciting opportunity to offer this service to our learners.

We’ve received great feedback on the simulation programs in Emergency Medicine. 77% of our residents in a recent survey said they wanted more simulation time. 100% of them had positive reviews, saying this was worth their time and the felt like their simulation time was well spent. The CEAL procedure labs are one of the things that is unique to our organization. Our access to human tissue sets our institution apart from others. CEAL staff has been incredibly helpful and I so appreciate all CEAL is doing to support this mission.

Chris Davis, MD
In June 2022, a stakeholder assessment survey was sent to CEAL stakeholders and CEAL steering committee members. The stakeholder list was created using the CEAL scheduling system (EMS).

The survey was distributed to 146 colleagues and 28 colleagues provided responses (19% response rate). Strengths indicated included friendly and supportive teammates, availability and flexibility, responsiveness, expertise of CEAL teammates, ease of access and service, and shared facilities, equipment, and resources. Opportunities included updated equipment and new technologies, increased personnel, familiarity of resources by stakeholders, and improved scheduling process.

More specifically, 82% of respondents agreed that they were satisfied with the services received from CEAL to carry out experiential learning events for their learners/departments. 54% of respondents agreed that the process to schedule CEAL resources is easy to complete. As a result, CEAL made changes to the questions inside our scheduling form, added new services, ensured our website access button was easily accessible, and updated our CEAL user guide. We also have a dedicated logistics coordinator as of 2021 to handle real time requests and serve as a hub to scheduling and guidance of changes to events.

96% of respondents agreed that the CEAL staff has the knowledge and expertise to help carry out experiential learning events for my learners/department. 75% of respondents agreed that CEAL has the equipment needed to complete the experiential learning events needed for their learners/department. Improvements requested were updates to the 4th floor Gray anatomy lab. This renovation was in process in early 2022 before capital renovation funding was paused in fall, 2022. We are hopeful to resume renovation conversations in 2023.

75% of respondents felt that CEAL has the space needed to complete experiential learning events for their department. Opportunities include more Mock OR space and allowing the BGCME anatomy lab to be used outside MD students. The CEAL Mock OR will move locations in/around 2025 as part of the Project East surgical tower renovation. We are currently working on those floor plans.

New services such as education development support and embedded nurses are being explored within CEAL. We have added questions to our EMS scheduling system regarding educator/instructional designer assistance. 43% said that maybe they would use these services as part of this survey. We are planning to begin an embedded nurse program in 2023. We have been working in partnership with nursing education on recruitment materials. Our stakeholders indicate that 46% might use this service. We are currently working to identify the departments that would use the service to guide our recruitment efforts.
Once restrictions were listed in the post COVID era, the anatomy team worked to restart the Rolling Bones program. This outreach event travels to different local high schools with the hopes of increasing interest in STEM education. Students get a hands-on opportunity to examine human brains, hearts, and lungs.

They learn the dangers of smoking and vaping on the cardiopulmonary system and get an opportunity to interact with rising health care professionals working through their MD curriculum. The event is orchestrated by Chris York and Ken Long and looks to expand its outreach to middle schools and elementary schools this upcoming year. Events were held at West Stokes High School, East Forsyth High School, Walkertown High School, and the Career Center at the Forsyth Community College.

One thing about this experience that has stuck with me is realizing what nerves are connected to things we do. Thank you for this!

I enjoyed learning about the lungs - a good lesson about smoking.

The best part of today’s experience is learning about and seeing our main living organs in person. Being able to hold the organs changed my perspective of everything.
Chris York Receives Faculty Position for the Graduate Program

Maria Crawford

The CEAL team would like to congratulate Chris York for his faculty appointment from the Dean of the Graduate School of Arts and Science. His new role will include service on thesis and dissertation committees, in addition to his ongoing teaching responsibilities.

Chris has worked for Wake Forest for more than 21 years in Anatomical Resources, where he is highly regarded by his students, but his ties to the black and gold run even deeper, playing baseball for the Demon Deacons in the mid-nineties.

His passion for baseball continues, as coach of the North Stokes High School baseball team, although his main passion is his wife, Elizabeth, and their children, Leah and Lydia. Thanks, Chris, for being such an asset to the CEAL team.
CEAL Provides Emergency Training for Athletes

Renae Hutchens, NPR & Jeff Hinshaw, PA-C

With the recent events in the sporting world involving emergency care issues and sudden cardiac arrest being thrust into the national spotlight, CEAL is taking a proactive approach in the education of healthcare professionals and their care for athletes. CEAL team member, Renae Hutchens, along with Jeff Hinshaw, Physician Assistant from Emergency Medicine, is again providing insight to unique cardiac pathologies through an educational platform developed over 10 years ago. The session specifically addresses sudden cardiac death in young athletes that a large majority of pre-hospital providers may never receive specialized training on, nor treat during their career.

Jeff Hinshaw, who is a member of our Atrium Health WFB Sports Medicine Outreach Program and a member of the Sports Medicine Medical Staff for Wake Forest Athletics, also participated in the sports medicine summer camps offered through the Wake Forest University Summer Immersion Program hosted by CEAL. The hands-on session focused on management techniques for athletes with potential spine injuries. The program reviewed best practices for sports medicine and emergency departments and allowed the students to scenario role play the care and skills, such as gear removal, that would occur in a hospital emergency department.
Maria Crawford

CEAL held 22 courses in 2022 for the American College of Obstetricians and Gynecologists (ACOG), training and certifying 152 physicians, nurses, and paramedics on Emergencies in Clinical Obstetrics (ECO). Troy McMillan, RN, CHSOS, CHSE led 19 of these training sessions, which focuses heavily on teamwork and communication strategies of medical professionals participating in child births containing shoulder dystocia, breech delivery, umbilical cord prolapse, postpartum hemorrhage, hypertensive emergency, and maternal cardiac arrest.

The core audience for this training is the birth center staff at our Winston-Salem and network hospital locations, as well as our AirCare and Critical Care Transport teams. Ongoing in-situ simulations lead by CEAL, and department champions continue to reinforce the ACOG ECO protocols followed at the institution. In addition, all first year OB residents go through ACOG ECO curriculum as part of their onboarding plan.

Pictured below with Troy is AirCare flight nurse, Krisi Linton, RN CCRN, NREMT. Here, she sees, firsthand, how little space our AirCare/EMS Transport teams have to work with, which is helpful when performing simulations in the classroom.

The ACOG ECO course is a favorite among team members, and consistently receives great feedback from participants.

* Troy did an amazing job teaching this class and keeping it educational but fun and easy to follow along.
* Incredibly helpful and timely, thank you for giving every person the opportunity to do each simulation. The online portion prepared me well for the risk factors, causes, etc.
* Excellent class. Great instructors who make each person feel comfortable and important. Great learning environment!
* By far the best course we are required to regularly take. The instructors and sim lab technicians are amazing and make this class stress free, fun, and very informative. All staff has been great and helpful.

CEAL Leads the Way in Training for Emergencies in Clinical Obstetrics (ECO)
Disaster Medicine Physicians from Ukraine Learn and Share Best Practices

October 31, 2022

On October 19, a delegation of emergency medicine physicians from Ukraine visited Atrium Health Wake Forest Baptist Medical Center. They spent the day learning and sharing best practices in trauma medicine and building professional relationships.

“We are a Level 1 Trauma Center and Regional Burn Center, so it’s a natural fit for the delegation to come here,” said Stephen Powell, MD, Assistant Professor, Emergency Medicine, who is also medical director, Forsyth County EMS.

The day began at the Command Center, where medical center and Emergency Management leaders greeted the group of five physicians, one interpreter and one facilitator.

“We look forward to exchanging ideas, sharing ways we train future doctors and starting a lifelong friendship,” said Andrea Fernandez, MD, FACOG, Regional Chief Medical Officer.

Managing Trauma Care

A trauma care demonstration began at the helipad, where the AirCare crew managed a simulated patient with life-threatening injuries. The group discussed treatments and capabilities they could bring to the patient at the scene and while en route to the medical center on the helicopter.

The delegation continued to care for the simulated patient as they moved to the Emergency Department. A trauma team continued to resuscitate and treat the simulated patient.

“This mimicked how we would care for an actual trauma patient arriving at our medical center,” Stephen said. “This also demonstrated how we train our physician learners, such as medical students, residents and fellows. Many of the physicians from Ukraine work with simulation and train their doctors with simulation methods, so they were very interested in our approach.”
The physicians from Ukraine were very meticulous with all aspects of trauma care, given some of their limited resources, Stephen said. “For example, they have incredible focus on hypothermia prevention as a cornerstone of trauma resuscitation. They focus on the fundamentals because they may not have other capabilities for resuscitating the patient, such as blood to transfuse.”

Comparing Best Practices
After the trauma scenario, there was a debrief session with Stephen, Bret Nicks, MD, Jacob Schoeneck, MD, and Martin Avery, MD. The group discussed and compared best practices for resuscitating a trauma patient to learn from one another.

Next, the delegation observed and discussed our operations in the Pediatric ED. “They were very eager to learn as much as they could,” said Michael S. Mitchell, MD, Medical Director, Pediatric ED at Brenner Children’s Hospital, and Associate Professor of Emergency Medicine. “It was an honor to host them.”

Later in the day, the delegation participated in hands-on skills training with simulation expert Jim Johnson, PhD, from the Wake Forest Center for Experiential and Applied Learning (CEAL). Chris Davis, MD, other experts in trauma, and trauma fellows also provided training, along with a member of the U.S. Special Forces.

Building a Friendship
During their visit, the delegation stayed in the homes of Friendship Force members and their families in the Triad. The Friendship Force is a nonprofit cultural organization under the Open World program of the Congressional Office for Internal Leadership. It promotes understanding, cultural education and citizen diplomacy.

“Perhaps one of the greatest aspects of this exchange was for our colleagues to recognize that they are not alone,” Bret said. “And while their care scenario is greatly impacted by the civil and economic effect of war, providing exceptional patient care remains their primary focus.”

“Our goal was to create a network for them as a resource,” Stephen said. “This is an international friendship to allow them to have resources they can take home.”
Emergency Medicine Collaborates with EMS and Wilderness Fellowships in Trauma Simulations

Chris Davis, MD

This spring, Wake Forest hosted the Wilderness Medical Society’s national student and resident elective participants for a 4-day training at Pilot Mountain State Park. Students learned the fundamentals of medically-directed rescue, and had the chance to learn basic technical skills to access and care for patients in challenging terrain. Students also had the chance to apply their medical skills such as hemorrhage control, airway management and patient assessment to new environments, though high-fidelity simulation. The purpose of these simulations is to build resilience and apply principles outside of the comfort and familiarity of taking care of a patient in the emergency department. In these simulations, there are no monitors or additional staff to assist, so they are required to do assessments or possibly perform procedures without being able to rely on the technology they’re accustomed to.

I had no idea how lucky I was to have access to this much procedural based training, which has been really incredible.

Great sessions with awesome teachers who promote a warm, friendly, and interactive learning environment. Keep it up!
Events included an integrated technical ropes system, and drowning rescue, a hypothermic patient in a ravine, high angle trauma care on the side of a mountain, and a nighttime, low temperature multi-trauma treatment and evacuation through challenging terrain.

These sort of austere environment simulations are really dramatic, and introduce challenges people are not used to. In the future, we hope to interact more with our local EMS agencies as a regional resource to try and improve the continuity of care all the way from our austere environments to the trauma bay. At the heart of this is working as a team.
Annual Sim War Competition Takes a Tropical Turn

Chris Davis, MD, FACEP, FAEMS, FAWM

Each spring, the Emergency Medicine residents look forward to the annual Sim Wars competition, held each March, and facilitated by CEAL. The competition is a highlight of the residency’s didactic program that is part TV game show, part high-fidelity medical simulation, inspired by March Madness. Teams face off head-to-head in a bracket, each completing the same case and receiving a score from judges, with the best scoring team advancing to the next round. Each year there is a theme, this year “Tropical Vacation.” Two residents served as emcees and announcers, providing comedic interludes and color commentary. The residents formed teams, donned their best Hawaiian shirts and vacation attire and took on challenging simulation cases, starting with a case of anaphylaxis on an airplane flight to Hawaii, while over the Pacific. Two teams each completed the first case and were ranked by a panel of faculty judges on their performance. Following an educational debrief of the case, the winner of that round was announced. This team, named “Tropic Thunder” would move on to the finals.

A second two teams would then face off against one another with a case of an unresponsive child brought to the beach resort town’s emergency department after ingesting some of her grandmother’s calcium channel blocker pills. The SPRCs and peds EM faculty and fellows provided an excellent review of calcium channel blocker toxicity, and the judges announced the winner, “Spirochetes and Bare Feet” who would face “Tropic Thunder” in the finals.
For the final case, the stakes were at an all-time high as a hypoxic, cyanotic baby was brought from a pediatrician’s office to the ED in severe distress, and was found to have a late presentation of a critical coarctation of the aorta. “Tropic Thunder” took home the trophy and bragging rights for the next year, as the champions of the annual Sim Wars event.

This event is consistently one of the most highly anticipated events of the year. It allows the residents to test their diagnostic and resuscitation skills while interacting with each other and the faculty in a lighthearted and above all, fun environment.
CEAL Co-Hosts Symposium in Clinical Simulation

JaNae Joyner, PhD, MHA

On June 30, 2022, CEAL co-hosted their first Symposium in Clinical Simulation with colleagues at Carolinas Simulation Center (CSC). This was an enterprise event arranged by the Clinical and Translational Science Institute (CTSI) at Wake Forest University School of Medicine. The agenda included a welcome and setting the stage by simulation leaders, Dr. JaNae Joyner and Dawn Swiderski. During the hour and a half long session, ten faculty/staff members spoke on various simulation subjects, with five topics being presented by CEAL and five presented by CSC.

The presenters and topics covered by CEAL included:
- Vernon Williams | Encouraging the Future of Healthcare through Pipeline Simulation Programs
- Troy McMillan | Using an Adopted Curriculum - Preparing Healthcare Professionals for the Opening and Daily Operations of the Wake Forest Birth Center
- Bridget Francis | A Standardized Training Program in Ultrasound Guided Intravenous Placement - Improving Provider Comfort and Success
- Dr. Justin Traunero | Multidisciplinary Crisis Resource Management (CRM) Simulation - Facilitating Teamwork Skills to Lessen Sentinel Events
- Dr. Martin Avery | Improving the Clinical Care of Trauma Patients through Multidisciplinary Simulation

The symposium had a wrap-up summary by simulation leaders Drs. Justin Traunero and Mark Bullard. Closing comments were provided by Dr. Angela Sharkey. A follow-up session was held three weeks following the symposium to allow continued discussion in ways to increase training and research in clinical simulation across our enterprise.
Climate/Landscape Assessment

JaNae Joyner, PhD, MHA

As part of our enterprise simulation journey, Dr. JaNae Joyner and Dawn Swiderski completed eleven climate/landscape assessments with colleagues from around the nation in 2022. Simulation Centers interviewed were from the following states: AL, AZ, FL, IL, IN, NC, PA, SC, TN, and CA. Our major theme was if you have seen one simulation center, you have seen one simulation center. We also noted that having sufficient personnel and being able to refresh capital equipment were major needs across all interviews. Most centers are a centralized resource serving across the entire spectrum of healthcare professionals and students in a plethora of general and specialty areas. Many simulation centers cater to nursing but mentioned serving everyone in their hospital and/or university based system. Future trends mentioned included telemedicine, simulation-friendly electronic health record, making simulation financially reachable to those without funding, desire to explore virtual reality, and a mobile unit for rural health expansion. The biggest challenges included securing funds for consumables/warranties, receiving top-down support from all facilities and navigating relationships within hospital system and/or academic institution. Advice bestowed from our colleagues included finding a champion at the highest level, being at the table day one when building a new center, focusing on the long-term journey, hiring enough people to do the work, and envisioning larger than you think you need (ask for more and be happy if you get 50%). These and other themes were taken to our Enterprise Simulation Advisory Board which meets quarterly for discussion as we continue to work on enterprise integration in simulation. The Enterprise Simulation Advisory Board is co-led by Dr. JaNae Joyner and Dawn Swiderski.
Standardized Patients
2022 was a busy year for the Standardized Patient program, with the development of several new programs and initiatives. We continued to work on the long-term strategic plan of professional development for our patient actors. We have developed an online training module for the standardized patients, called Rise 360, that includes a multitude of different training topics and guides for SPs to refer to in addition to the onboarding module.

As part of our yearly training for the SP pool, we partnered with the University of North Carolina Greensboro theatre department to hold a 2-hour virtual training event for all SPs to teach acting skills and provide tips for better student/SP encounters. Positive feedback was received, and our SPs look forward to this training again in 2023. We have partnered with SP educator for Y3, Kimberly McDonogh, who created an “SP focus group”. This group includes 11 SPs with various years of experience that meet in person after each Y3 CPX to provide feedback on any issues they may have encountered during the testing events.

This provides an forum where SPs can share what worked well as well as ideas that may improve future events. The focus group participants have voiced their appreciation for these meetings and overall learning experience gained. Humanity scheduling system was implemented in 2022 and went live in July. This online scheduling system is used to communicate and schedule SPs for events, house cases, provide training links, WebEx links, and clocking in and out. This tool allows us to streamline weekly payroll processing for SP payments. This new system has proved to be more efficient than the previous process of emails and Microsoft forms. In fall of 2022, we designed an evaluation tool and feedback process for SPs as well as feedback for stakeholders from SPs regarding events.

The purpose of the new SP evaluation process is to develop and maintain a consistent pool of talented SPs, advance SPs skillset to enhance their future performance, and identify SPs whose performance level meets the eligibility criteria for our “advanced track”. The pilot program is set to begin in early 2023. Evaluations will be completed on every SP, using videos of encounters, and feedback will be provided throughout the year. An abstract, titled “A Comprehensive Training Plan to Increase Standardized Patient (SP) Skill Sets” was submitted and accepted in 2022 and was presented at IMSH, January 2023, in Orlando, FL. The Boone PA program has reached out to CEAL in order to streamline SP requests through EMS. The template was created, and they can now request SPs for their location in the system. Payment for the Boone SPs will be managed by CEAL starting May of 2023. Boone SPs will not be added to the Humanity system at this time.

We look forward to what 2023 has in store for the Standardized Patient program.
First Annual Standardized Patient Team Ho Ho Ho Holiday Party was a Huge Success

Tonya Mock

CEAL hosted its first ever holiday SP potluck luncheon at our downtown campus location (BGCME). The gathering included great food and fun, and fellowship. The festivities also included a small gift from CEAL and heartfelt appreciation for their service throughout the year.
CEAL Receives a Karl Storz Medical Education Grant for Long-Term Equipment Use

JaNae Joyner, PhD, MHA

In fall, 2022 Karl Storz, a leading endoscope manufacturer, notified CEAL that we had received a medical education grant for a long term equipment placement from their company. Due to supply chain issues, we are still awaiting arrival of the equipment as of March, 2023. We have been awarded five simulated laparoscopic trainers, one video endoscope, one endoflator, one telepack, and one camera head with irrigation bottle holder. Once the equipment arrives, CEAL anticipates this equipment residing in our hospital surgical skills lab/Mock OR area. As noted in our stakeholder analysis and in the grant application, we described the age of our current equipment and highlighted the vast number of training events that would utilize this equipment. We will be storing old equipment to use for parts as we incorporate the new equipment into inventory. We look forward to having this new equipment on-site soon to better serve learners of all types. We are thankful to Karl Storz for this investment.

Thank you for all of the help you gave us this week running our annual radiology residency contrast reaction simulator. It was incredibly valuable to everyone. This training is critical to patient care, and we are so fortunate to have simulation experts like yourselves helping us provide this educational experience. We are very grateful. - Carol Greer, MD
The ultrasound-guided IV class continues to grow in popularity. The class was originally targeted at nurses but has quickly become a popular course among PAs, MDs, and paramedics. The class was originally offered at Winston Salem, Davie, High Point, Wilkes, and Lexington Medical Centers. Last year CEAL expanded their traveling locations to reach new Atrium facilities.

In 2022, CEAL sonographers Bridget Francis and Jamie Hadaway and ultrasound director Dr. Casey Glass packed up in the CEAL mobile and hit the road to train staff at new hospitals adding Lincoln, Cleveland/Kings Mountain, Charlotte, and Cabarrus Medical Centers to their course-held locations.

The Burn Center at Atrium Health Wake Forest Baptist started training nurses on the unit to place ultrasound-guided intravenous lines, choosing to use a train the trainer approach. The unit started with training 2 nurses. Each nurse trainer is required to take a CEAL USGIV class, become proficient in placing IVs using ultrasound guidance, teach an USGIV session with supervision, and then begin teaching independently. CEAL held the first teaching session in 2022 and will be supervising nurse trainers in 2023 as they train new staff in their department.

The CEAL Ultrasound staff over 90 USGIV training sessions in 2022.
Neuromuscular Ultrasound Course Returns to In-Person

Maria Crawford

2022 marked the first time the Neuromuscular Ultrasound course was able to return to in-person learning since the beginning of the pandemic. The course did not take place in 2020, and was virtual in 2021, which eliminated the hands-on scanning element that is typically half of the course curriculum. The positive outcome of the virtual course was that folks across the world could participate (8 countries and 16 states) and they had access to the best of the best in neuromuscular ultrasound physicians, thanks to course director, Dr. Michael Cartwright. Positive feedback was received but folks were anxious to get back to in-person learning.

As the 2022 course approached, faculty and exhibitors alike were excited to participate in the course. Two days before the start of the course, Dr. Cartwright contracted Covid. Our CEAL staff and IT folks sprang into action to be able to have him join us remotely. He was wheeled around on a cart with a laptop for the lab sessions, going room to room and throughout the anatomy lab. He even addressed the exhibitors one by one to show his appreciation for their participation in the event. If Covid has taught us anything, it is how to adapt and persevere with technology when physical presence isn’t an option.

The course was a success, and we are planning for a larger event in 2023, where we hope to get back to pre-pandemic numbers for this one-of-a-kind course.
Faculty Training with CEAL Ultrasound

Jamie Hadaway, RDMS, RVT

In October of 2022, CEAL’s Ultrasound team began working with Wake Forest University School of Medicine’s Nurse Anesthesia (CRNA) Program. Dr. Casey Glass provided in-person didactics on sonographic topics including echocardiography, lung ultrasound and abdominal scanning. CEAL ultrasound instructors, Bridget Francis and Jamie Hadaway then assisted with hands-on instruction with the use of CEAL’S Standardized Patient program. Additionally, Drs. Clifford Gonzalez, Luci New, and Elena Meadows had the opportunity to practice peripheral IV placement on multi-vessel phantom arms provided as part of CEAL’s training equipment resources. An additional session was held in November with the CEAL ultrasound team and the CRNA faculty members where the CEAL resource VIMEDIX patient simulator was used to practice eFAST exams, which is a rapid ultrasound protocol to quickly locate free fluid in different areas of the body when patients have suffered traumatic injuries or are critically ill.

Thanks! Excellent instructor and all support staff were engaged and professional. Appreciate being allowed to participate in the course!

The experience with Vimedix and education from Bridget has continued to be one of the highlights of the medical student rotation. Thank you for your support. - Joshua Zavitz, DO
Wonderful instruction. I learned many things about ultrasound that I had not previously been exposed to, and I improved existing skills and knowledge.

It’s so great when we see the impact CEAL can have on care at the bedside.
Kim Sadler, MBA, MSN

Great class. Very informative. Highly recommend.
Clinical applications of ultrasound are rapidly expanding, which means CEAL’s ultrasound staff are on the move. This year, ultrasound supervisor Bridget Francis and sonography education specialist Jamie Hadaway developed an enhanced curriculum for the residents, fellows and faculty at Atrium Health’s Diabetes and Endocrinology Center. It was from this curriculum that Bridget was able to create an exclusive template for this group to keep with them as a guide from their training sessions. Bridget and Jamie were also able to provide an in-depth training session on the clinic’s ultrasound equipment to enhance their scanning of the thyroid and lymph node and ultrasound-guided procedure technique.

Bridget was awesome! Wonderful coaching and boosting my confidence. I will recommend other staff members to come.

Thank you for a friendly environment. Learned so much! Look forward to using this in my nursing practice.

Jamie Hadaway, RDMS, RVT

New Curriculum Added for ENT Colleagues

Took class with rep at a different hospital and didn’t feel confident. Instruction today made all the difference!

This class is amazing. I feel that I will use this all the time and will be well prepared to do so!
Ultrasound Mini Fellowship Program

Casey Glass, MD

CEAL welcomed its fifth cohort of mini-fellows into its hands-on bedside ultrasound program for Wake Forest Faculty in 2022. Dr. Hooman Sadri, Urology, from Atrium Health Wake Forest Baptist in Winston-Salem, and Dr. Brooks Keene, Internal Medicine, of Atrium Health Carolinas Medical Center in Charlotte, where chosen among the pool of applicants.

Since 2018, the program has worked with faculty from various departments, including Anesthesia, Internal Medicine, Pulmonary/Critical Care, Hospital Medicine, Neonatology, Urology, and Family and Community Medicine. The purpose of the program is to enhance faculty’s practical ultrasonography skills and develop their expertise in bedside ultrasound instruction and program management.

During the program, mini-fellows work closely with Dr. Glass and the sonography team to review relevant bedside ultrasound exams in their area of practice. Over the course of an academic year, they participate in approximately 60 hours of fellowship content at no cost. In exchange, they commit to assisting with UGME and other ultrasound instructional events for two years and participating in their department’s ultrasound activities.

Past fellows have leveraged the fellowship to create ultrasound curricula and clinical programs in their departments, which has become a key aspect of their academic and professional advancement. In 2022, the program was expanded to include faculty from Charlotte, with the first mini-fellow from the Department of Internal Medicine at CMC.

The fellowship has two to three positions available annually, and competition for these spots continues to grow. So far, the program has been successful in meeting its goals of equipping departments with the resources to develop their own ultrasound programs and curricula, providing mentorship for faculty interested in bedside ultrasound, and increasing the number of instructors from diverse clinical backgrounds for medical student education. We look forward to working with new groups of learners as the program expands.
Calciphylaxis is a disease of the tiny blood vessels in the skin and fat. The vessels become calcified, which leads to ischemia and infarction. The disease causes tremendous pain for patients and lesions that are difficult to heal. It carries a high mortality rate due to patients becoming septic. Currently, there is not a lot of research or known task trainers to help teach residents, fellows, and other healthcare professionals on what to look for when diagnosing calciphylaxis using ultrasound.

Calciphylaxis Training Molds

Bridget Francis, RDMS

In spring of 2022, CEAL ultrasound staff (Dr. Casey Glass) and (Bridget Francis, RDMS) was approached by Dr. Christopher Kelly (Internal Medicine) and Dr. Lindsay Strowd (Dermatology) about trying to make some training blocks that would resemble calciphylaxis on ultrasound. The team met to discuss what the model should look like, and how to achieve what they envisioned. The first batch of molds was ready in May 2022. The team placed crushed tums, seashells, bread ties, and braided fishing line in ballistic gel to create the models. A pork belly was also tested with nails and pasta noodles placed inside.
The pork went belly up. The image was not clear, the material was too linear, and the meat was not sustainable, so the project moved forward only using ballistic gel. Some of the items used to experiment with shadowed like calcium would on ultrasound, but the team was still challenged with achieving a realistic pattern of the calcium appearance in the mold. The group continued through trial and error with various material each month through 2022. A meeting with the innovations group was held in the fall to discuss the possibility of putting a patent on the final model. The molds held glitter, various fishing lines, powders, gut, and more, and some have been through a hand-made vacuum Dr. Glass built to help remove air bubbles from the gel. The project is continuing into 2023.
The ultrasound guided IV course is a comprehensive training program that provides 3 hours of online and in-person instruction for healthcare providers, including nurses, who want to learn how to place intravenous catheters using ultrasound guidance. Over the years, the course has proven to be very successful, with over 400 healthcare providers receiving training. In 2023, the course is being taken to the next level with the implementation of new assessments and procedure tracking systems for students. These changes are aimed at better documenting students’ successes and providing more complete course completion data to stakeholders.

The new assessments and procedure tracking systems will allow students to demonstrate their proficiency in ultrasound-guided IV placement and earn the coveted “chicken cutlet” Ultrasound IV pin upon successful completion of the course. This recognition will not only serve as a source of pride for the students, but it will also demonstrate the value of the program to institutional partners. The ability to provide comprehensive course completion data and recognition for students’ skill proficiency will help to build trust and demonstrate the effectiveness of the program.

"Thanks! I was excited for this course and I was not disappointed."

"Outstanding class. Very detailed. Definitely recommend."

"I enjoyed and appreciate the instructor. Very patient and professional. Thank you!"

"Class ratio was perfect for asking questions and getting one on one coaching."
The team behind the ultrasound guided IV course is excited about the potential for these new changes to demonstrate the value of the program in new ways. The program has been very successful over the years, but the implementation of these new assessments and tracking systems is expected to take the program to the next level. The hope is that these changes will not only benefit the students who complete the course but also the healthcare providers who rely on their skills to provide high-quality patient care. By continuing to improve the program and demonstrate its value, the ultrasound guided IV course will continue to be a valuable resource for healthcare providers for years to come.
CEAL Team Abstracts


Joyner J, Crawford M, Parnian D, Traunero J, Ingle J, Dean L, Nitsche J. Using Quality Improvement to Shape Birth Center Simulation Training. IMSH. 2022 (oral recorded presentation)

Joyner J, Parnian D, Williams V, Francis B, York C, Long K, McMillan T, Ferris J, Saunders I. Addressing Diversity and Inclusion through Educational Pipeline Programs Using Simulation. IMSH. 2022 (Oral recorded presentation)


I love this experience! It seemed like I was in person! Great experience for something virtual!
AHEC Scholar
CEAL Grants


This was done very well and I now feel more prepared for 2nd year! Neurology PGY 2 Resident