

Clinical Simulation Center

Patient Safety Starts Here
2016 Year in Review



PennState Health
Milton S. Hershey Medical Center



PennState
College of Medicine

Our Mission

The mission of the Penn State Hershey Clinical Simulation Center is to improve patient outcomes with effective programs that promote and enhance practitioner skills, clinical competence, teamwork, and interdisciplinary collaboration. To advance the field of healthcare simulation, the Center conducts innovative research into simulation theory, practice, and technology.



Message from the Director



The Penn State Hershey Clinical Simulation Center is reaching out in all directions!

New Relationships: We jointly presented a distance-learning strategy successfully employed in Kazakhstan with a research team from Lithuania at the

World Congress of Anesthesiologists. Joint research will explore how to implement this highly-efficient hybrid learning strategy. Our widely-acclaimed Simulation Instructor Course was rolled out at the new national VA simulation facility in Orlando and will soon be used in one of the largest healthcare systems in the country! Dr. Angel Diaz Sanchez is translating our Simulation Instructor Course into Spanish, and we are developing South American faculty who will lead its implementation.

Accreditations: We were re-accredited by the Society for Simulation in Healthcare. Adding research gives us the highest level of recognition for Assessment, Research, Teaching, and Systems Integration. Thanks for Dr. Bosseau Murray who volunteered to head our research program! He will direct the distribution of several small research grants in the future. We were re-endorsed by the American Board of Anesthesiology and re-accredited by the American College of Surgeons including recognition of best practice for faculty development.

Patient Safety: Our portfolio now includes OR teamwork practice every month led by Lynn Lee and Donna Ceschini. These IPE sessions bring entire OR teams together to practice emergencies. Many system improvements have resulted.

Simulation Fellows: Dr. Hector Lopez is redesigning anatomy courses and the anatomy lab for the College of Medicine. He will leverage the combination of high-tech and cadaver simulation to help teach the relationships between anatomy, physiology, and pathophysiology. Dr. Lidys Rivera from Columbia plans to develop her skills as a simulation educator.

Updates: Construction of a replica ICU room will allow practice for highly contagious organisms and use of the new eICU system, as well as other critical care training. New capabilities for ultrasound training are coming. You can now access the library and the Sim Center any time with options that were not available before, including the One Button Studio and the 3-D printing resource.

Come explore our many experiential learning options.

Elizabeth H. Sinz, MD, MEd, FCCM, FSSH
Associate Dean of Clinical Simulation
Director of Patient Safety Simulation
Professor of Anesthesiology and Neurosurgery
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Education

During 2016, 122 unique course titles were supported or presented by the Clinical Simulation Center. In all, the Center maintains nearly 150 courses in its course catalog. The Center impacts the entire cross section of health care provider education on the Penn State Hershey Campus, for both students and practicing clinicians. Consistent with national trends, Interprofessional Education (IPE) has become an important area of the focus for the Center.

Among the course highlights in 2016:

- Adult ECMO joined the previously established Neonatal ECMO program with simulations of these highly complex patients
- A new Home Care simulation was introduced by Penn State Nursing
- The Central Venous Access Course, started in 2013, has been conducted 35 times with 394 participants and 52 faculty
- Ebola and infectious disease training continued to be a major program through 2016
- A new series of interprofessional education (IPE) in-situ simulation Operating Room sessions started a regular monthly schedule
- A new series of IPE sessions was started that included students from Penn State College of Medicine and College of Nursing as well as health careers programs from Lebanon Valley College and Elizabethtown College

"I wanted to let you know that I took the CHSE (Certified Healthcare Simulation Educator) exam yesterday and passed! I wanted to thank everyone in the Sim Center. So many times when I was studying, I found a memory of something we did during our week together that helped transfer the knowledge."

Simulation Instructor Course Graduate

"Recognition: Janice Mills for conducting a First Four Minutes (simulation) Drill in State College which saved the life of a patient at Benner Pike who went into respiratory arrest."

Penn State Hershey Medical Group Minutes

"This course went beyond my expectations. I have a better understanding of how useful simulation can be and the techniques to make it effective."

Simulation Instructor Course Participant

Adult ECMO Transport Course Features Interprofessional Team

To meet the need for expansion of the Adult ECMO (extracorporeal membrane oxygenation) transport team, the Clinical Simulation Center participated in a new interprofessional course with perfusionists, nurse practitioners, nurses, and respiratory therapists to prepare and transport an ECMO patient from the ICU to another location such as radiology. These highly complex patients have multiple devices attached to them in addition to the ECMO device itself.



The Clinical Simulation Center's crew of Simulation Technologists created a realistic patient appearance with all the needed devices making for one of the more elaborate patient presentations designed by the Center's team.



Research, Publications, and Presentations



Faculty and staff affiliated with the Penn State Hershey Clinical Simulation Center had six peer reviewed publications during 2016. Other academic output from the Center included 10 conference presentations and 10 poster presentations.

Among the major publications were:

- Tisdale EJ, Wojnar, M, & Sinz, EH. Developing Continuing Professional Education in the Health and Medical Professions Through Collaboration. *New Directions for Adult and Continuing Education*. 2016. 151:69-79.
- Ambardekar A, Singh D, Lockman JL, Rodgers DL, Hales RL, Gurnaney HG, Nathan A, & Deutsch ES. Pediatric Anesthesiology Fellow Education: Is a Simulation-Based Boot Camp Feasible and Valuable? *Pediatric Anesthesia*. 2016; 26(5): 481-487

Since first being founded as the Simulation Development and Cognitive Science Laboratory in 1992, the Clinical Simulation Center has had a robust research history with frequent publications in the peer-reviewed literature and presentations around the world. During the Center's Society for Simulation in Healthcare reaccreditation process in 2016, the Center achieved accreditation in Research.

At right, this table represents the cumulative academic output for Penn State simulation since its inception through 2016.

Publications	
Books and Book Chapters	14
Peer-reviewed Journal Articles	120
Peer-reviewed Journal Abstracts	21
Peer-reviewed Journal Editorials	1
Peer-reviewed Journal Letters	2
MedEd Portal	10
Other Publications	4
Presentations	
Conference Presentations	76
Conference Posters	99
External Grand Rounds	5
Webinars	1

Posters and presentations were made at national and international conferences during the year. Among the major conferences the Clinical Simulation Center and Penn State simulation faculty presented at were:

- International Meeting on Simulation in Healthcare (San Diego)
- International Pediatric Simulation Symposia and Workshops (Glasgow, Scotland)
- International Simulation Symposium (Buenos Aires, Argentina)
- Council on Resident Education in Obstetrics and Gynecology (CREOG) & Association of Professors of Gynecology and Obstetrics (APGO) Meeting (New Orleans)
- International Association of Medical Science Educators Meeting (Leiden, Netherlands)
- American Association for Respiratory Care Annual Conference (San Antonio)
- International Nursing Association for Clinical Simulation and Learning (INACSL) Conference (Dallas)
- World Congress of Anesthesia (Hong Kong)



Simulation Education and Research Fellowship

Two new individuals were enrolled in the Simulation Education and Research Fellowship program during 2016. The program has graduated two Fellows since its inception in 2014: Angel Diaz Sanchez, MD, and Susana Larbi Wumbee, MHP, MPA, BSN, RM, RN, FWACN.

Lidys Rivera, MD – Dr. Rivera was trained in Colombia as a general practice physician. She enrolled in the fellowship program to learn about simulation-based education and to improve her teaching abilities while also learning about the US healthcare system.



Hector Lopez, MD – Dr. Lopez is an Associate Professor of Medicine at the Penn State College of Medicine and leads the human structure program in the college. Dr. Lopez is spending part of the next year with the Clinical Simulation Center to learn how to effectively integrate simulation concepts into the anatomy curriculum.

Resuscitation Sciences Training Center



The Resuscitation Sciences Training Center (RSTC) increased its numbers trained for the fifth year in a row. In 2016, 6,511 learners received AHA training through the RSTC.

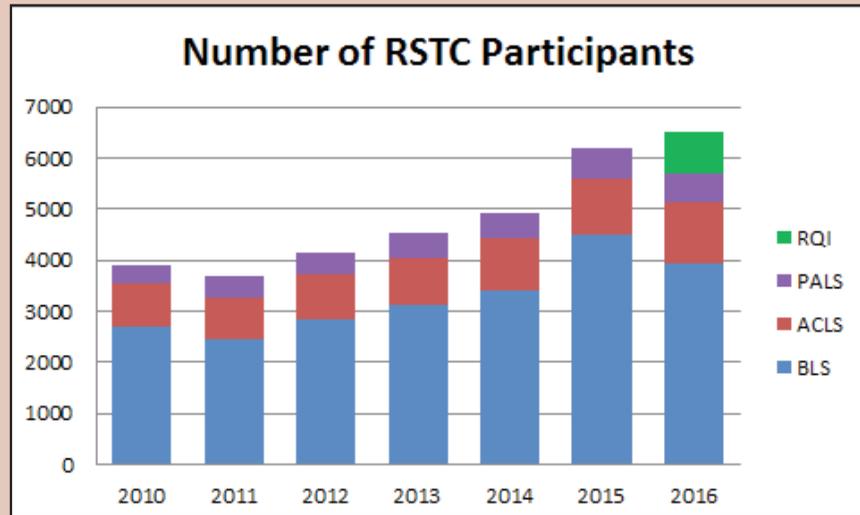
The training numbers included:

- 3,933 in Basic Life Support (BLS)
- 1,185 in Advanced Cardiovascular Life Support (ACLS)
- 580 in Pediatric Advanced Life Support (PALS)
- 813 enrolled in Resuscitation Quality Improvement (RQI) Program

217 AHA instructors maintain their certification through the RSTC. This includes:

- 164 BLS Instructors
- 77 ACLS Instructors
- 57 PALS Instructors

There has been five years of steady growth in the number of people engaged with RSTC programs at the Penn State Milton S. Hershey Medical Center. 2017 marked the introduction of the RQI system for Basic Life Support (BLS) certification which is why the BLS classroom course numbers for 2017 dropped.



Resuscitation Quality Improvement (RQI) Program Starts in 2016

In January of 2016, the RSTC introduced the American Heart Association (AHA) Resuscitation Quality Improvement (RQI) program for maintenance of CPR certification. This innovative program replaces traditional Basic Life Support (BLS) courses with short (10 minute) sessions every three months. These sessions are conducted on manikins that provide CPR coaching and track performance.

The RQI program has two main advantages. First, instead of taking several hours every two years away from the work site for refresher



training, participants can keep their certification active without having to leave the unit or dedicate a significant block of time to the renewal sessions.

Second, skill degradation over the traditional two year period is well established. By interacting with manikins every quarter, skill levels stay higher, leading to better prepared rescuers.

At the end of 2016 there were 813 individuals from 12 medical center departments enrolled in the program. The RSTC manages four RQI carts that are rotated between the departments.



Penn State Hershey Medical Center staff participated in "Superuser" training in January 2016. This training program provided detailed information on how staff need to interact with the RQI system.



Standardized Patient Program



The Standardized Patient (SP) Program continued to grow as it expanded into new areas for the use of SPs as simulators. With nearly 100 individuals aligned with the SP Program to portray patients, the program conducted 441 SP sessions in 2016, ranging from a single SP for a resident education session to 10 SPs for medical student OSCE (Objective Structured Clinical Evaluation) sessions.

One major new SP course this year was a customized OSCE session held as part of the Annual Meeting of the Pennsylvania Rheumatology Society. Residents from the state's rheumatology residency programs participated in the session with state-wide faculty reviewing the sessions and providing feedback.

Home Care Simulation Creates Challenges for Nursing Students

A new Penn State College of Nursing Program was started in 2016 that focused on home care. Because caring for someone in the home is so different than care in an acute setting, this simulation was designed to help better prepare



senior nursing students to meeting client needs in the home setting. This includes assessing the home environment, inclusion of potential family or other support persons in the client's care, cultural influences, resource identification, and providing significant client and family education.

Students interview an SP portraying a home health patient. To prepare for this simulation, the Clinical Simulation Center created a home environment in one of the simulation rooms, using props such as tables and lamps as well as indicators of poor health habits such as junk food and poorly organized medications.

Hospital-wide Disaster Simulation

The Clinical Simulation Center and the SP Program played key roles in a major hospital disaster drill conducted in July 2016. Simulating a bus crash with hazardous materials exposure, the SP Program coordinated make up and moulage for 57 patient actors, most of whom were part of the program's SP group with the rest from Penn State Nursing classes. The Center also supplied several pediatric simulators for the drill, each with a simulator operator to control simulator vital signs and responses.



Patients were triaged by Emergency Department staff and sent to treatment areas for care. Many of the patient actors were able to undergo decontamination, including a hazmat response team scrubbing and showering them in the medical center's decontamination tent.



Clockwise from top right, a pediatric simulator is presented to the triage team. An SP undergoes decontamination by medical center HAZMAT responders. SPs played many roles from ambulatory "walking wounded" to stretcher patients during the drill.



Community Service and Outreach



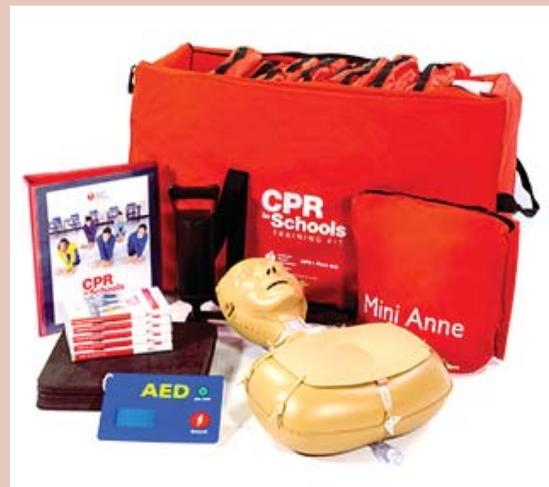
The Clinical Simulation Center continues to deliver services to the Hershey community in a variety of ways. The Center hosts formal programs for several area school systems in addition to providing informational tours for high school students looking at health professions careers. The Center also provides tours and interactive programs for many area service and community groups to better demonstrate how the health care system works.

At left, a Harrisburg High School student works with a simulator under the guidance of Simulation Fellow Susana Larbi Wumbee during a reception and tour hosting Harrisburg art students whose work was being shown in the Center.

RSTC Coordinates Continued Support for CPR in Schools Program

The RSTC is in its third year of support for the American Heart Association (AHA) CPR in Schools (CIS) program. In 2016, grants totaling \$31,470 from the Children's Miracle Network, I.O. Silver Foundation, and a Community Health Grant were received and will be dispersed in the coming year. The goal is to place 44 CIS kits in 22 different area schools in 2017. This will bring the total number of RSTC supported CIS schools to 34.

Each kit contains 10 inflatable manikins, kneeling pads, and teaching materials enabling a school nurse or teacher to provide hands-only CPR training in short, 30-minute sessions.



Clinical Simulation Center Supports Medical Center Safety Program

The Clinical Simulation Center was an active participant in the 2016 National Patient Safety Week activities on the Hershey Medical Center campus, the first event of its kind since the inception of the hospital's Patient Safety Department. An entire patient room, complete with audible monitors, headwall, pumps, and a patient, was constructed in the main hospital cafeteria. More than 100 participants scrutinized the simulated room to identify more than fifteen potential patient safety concerns and were entered in a drawing for hospital cafeteria gift cards.

One of the areas the Center was reaccredited by the Society for Simulation in Healthcare in 2016 was Systems Integration. The National Patient

Safety Week activities were just one example of how the Center participates in events to better align its activities with organizational goals.



Above, Medical Center staff examine the simulated patient room in the Rotunda Cafe looking for items that pose safety hazards as part of a National Patient Safety Week event.

Library Renovation Creates New Links with Simulation Center

The Harrell Health Sciences Library underwent an extensive renovation in 2016 that created new links with the Clinical Simulation Center. One link was physical as a new open staircase was installed connecting the Library to the Center. Both the Library and the Center sit at the crossroads of the Penn State Hershey



missions, connecting patient care, education, and research. The Library also has new capabilities including 3D printing and a new simple to use video studio that will make it easier to create blended learning programs. The Technology Innovation Sandbox features other hi-tech tools that have simulation uses.



Highlights



All three of the major simulation accrediting bodies conducted reviews, including site visits, during 2016 to review the Clinical Simulation Center for reaccreditation. The Society for Simulation in Healthcare (SSH) accredited the Center in Assessment, Research, Teaching, and Systems Integration. The research accreditation was new for this accreditation period and gives the Center full SSH accreditation. The American College of Surgeons reaccreditation report highlighted the Center's Simulation Instructor Course as a Best Practice. The American Society of Anesthesiologists also endorsed the Center, allowing for provision of the Maintenance of Certification in Anesthesia (MOCA) program.

As of 2016, the Penn State Hershey Clinical Simulation Center was one of four simulation centers in the country to hold accreditations from all three of these organizations.



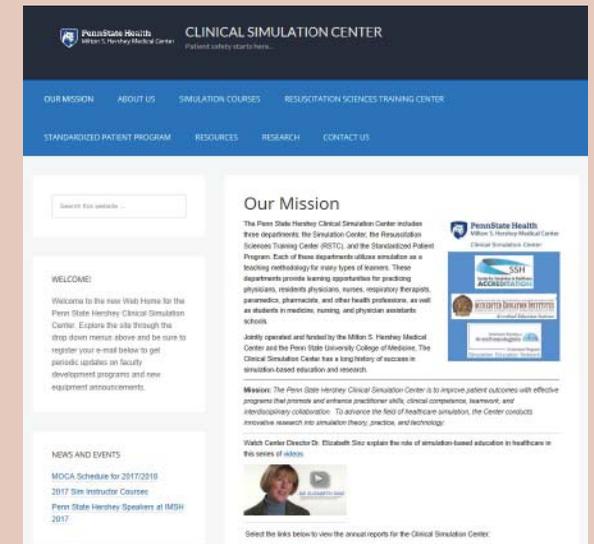
New Clinical Simulation Center Website Goes Live Online

Reorganization of the health system's Internet presence allowed for the Clinical Simulation Center to unveil a new web site. The new site includes features not previously available such as a continuing education calendar, a blog-style communication tool for updating faculty on new equipment and faculty development programs, a more refined search capability, and greatly expanded content.

The new site –

<https://sites.psu.edu/hersheysimulation/>

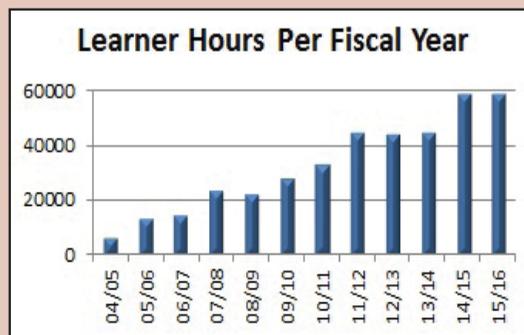
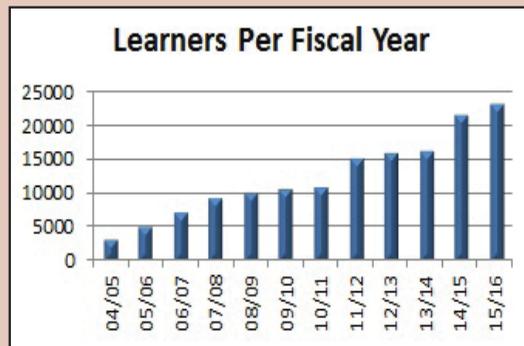
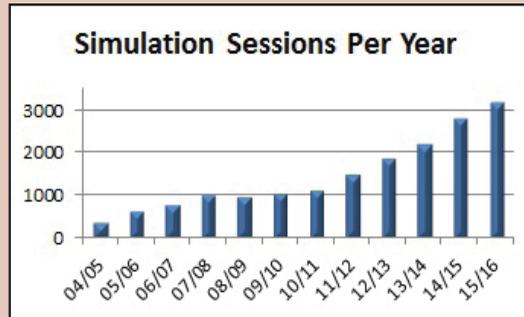
has sections devoted to all the departments in the Center including the Resuscitation Sciences Training Center and the Standardized Patient Program.



Recognitions and Milestones

- Director Elizabeth Sinz MD, MEd, FCCM, FSSH, earned a Master's in Education (MEd) from Penn State University. She also was elected a Fellow of the Society for Simulation in Healthcare (FSSH).
- Simulation faculty Kelly Karpa, PhD, RPh, received the 2016 Excellence in Education Research Award as part of the College of Medicine Research Recognition Program. She was also named Assistant Dean of Interprofessional Education.
- Center cofounder W. Bosseau Murray, MBChB, MD, assumed the role of Research Director in the Clinical Simulation Center.
- During 2016, the Clinical Simulation Center was awarded and completed a major external contract to design and implement a national standard simulation instructor course for the Veterans Administration health system through the VA's national SIMLearn Simulation Center in Orlando.

Achieving Objectives



The Clinical Simulation Center supports a wide range of interprofessional and multidisciplinary simulation-based education and training opportunities to learners from throughout the Penn State Hershey community. 122 different courses conducted simulation sessions in the Center in Fiscal Year 2016.

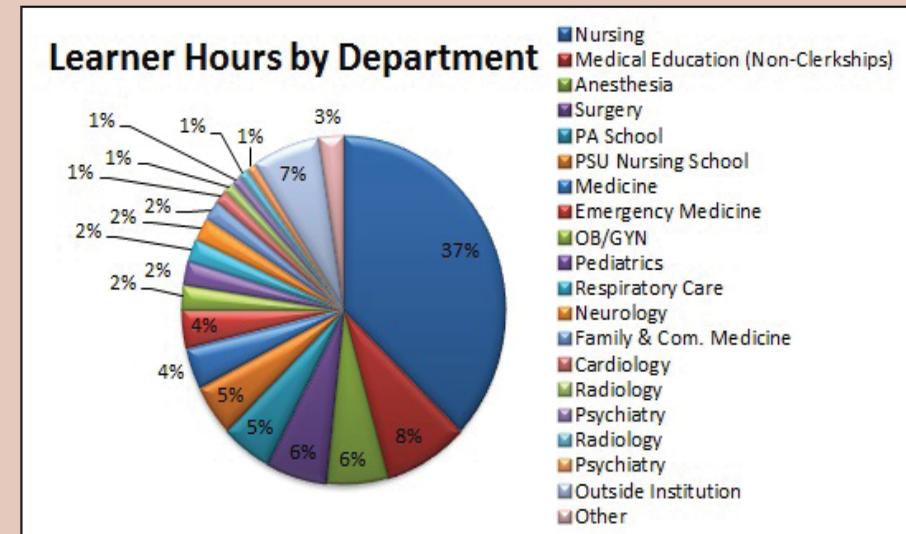
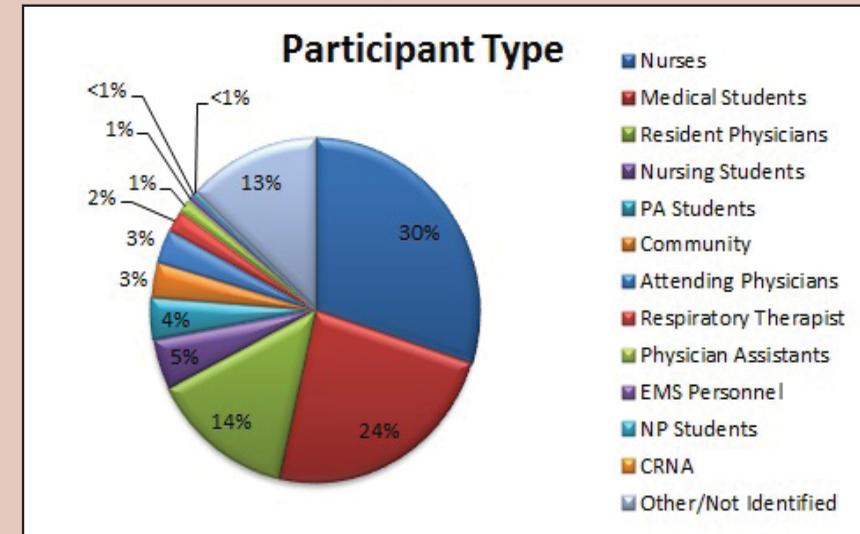
Fiscal Year 2016 statistics:

- 3,194 Sessions
- 23,100 Learners
- 58,520 Contact Hours

The total number of Center room hours dedicated to simulation-based education was 21,018.

Growth of Center activities has increased significantly since the Center moved into its current facility. Since moving into the current facility in January 2010, the Center has experienced:

- 181% increase in number of sessions per year
- 111% increase in learners per year
- 74% increase in contact hours per year



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The Center is located on the second floor of the Penn State College of Medicine building, directly above the George T. Harrell Library.

To explore opportunities to support the Clinical Simulation Center, contact the University Development office at 717-531-8497 or email to givinginquiries@hmc.psu.edu.

The Clinical Simulation Center offers external consultation services and educational programming performed at the client's location. See our web site for more information.

