

## **Interprofessional Fellowship in Clinical Simulation Education and Research**

### 1. Fellowship purpose

The Interprofessional Fellowship in Clinical Simulation Education and Research sponsored by the Penn State Hershey Medical Center Clinical Simulation Center is a non-clinical fellowship program designed to provide participants education and training in the practice of clinical simulation in an academic or clinical health care setting. As an interprofessional program, the program accepts health care providers from a variety of clinical backgrounds. The program contains a core curriculum for all participants and a customized curriculum based on the goals of the participant with potential focus areas of education, research, technical, or operations management.

The purpose of the fellowship is to develop expertise, knowledge, and leadership in the participant to independently deliver simulation-based education at the participant's intended post-fellowship organization.

The fellowship is a self-funded program open to any individual with an interest in health care simulation. While it is expected most participants will have a health care background, there are opportunities for non-clinicians to participate in order to prepare for the role of educator, researcher, technician, or operations manager.

The fellowship is available as a six-, nine- or 12-month program. It can be arranged as either a full-time program or a part-time program. The part-time program is only available as a 12-month option. Upon completion, participants will be presented with a completion certificate that details the hours of education in simulation from the Penn State Hershey Medical Center. The fellowship is not accredited by any professional society or board.

### 2. Background

Clinical patient simulation is a rapidly growing area of health care provider education and training. As a learning modality, it is used in undergraduate, graduate, and practicing clinician education for virtually all health care disciplines. Gaining insight into the most effective use of patient simulation is difficult for many health care educators, with many being reliant on on-the-job training, which may have many shortcomings. The Penn State Hershey Clinical Simulation Center is a high volume, interprofessional simulation center that provides an ideal environment for aspiring simulation educators and faculty to learn more about the practice of simulation and have the opportunity to transfer their learning to simulation activities.

a. History of the Penn State Hershey Clinical Simulation Center

The Simulation and Cognitive Science Laboratory at Penn State Milton S. Hershey Medical Center was founded in 1992, based on the belief that health care workers should practice in a simulated environment before performing patient care functions whenever possible. Initially supported by the Departments of Anesthesia, Nursing, and Surgery as well as industry sponsors and individual donations, it quickly developed into a nationally and internationally recognized center of excellence for medical education. Under the leadership of Dr. Bosseau Murray (Anesthesia) and Dr. Thomas Krummel (Surgery) the center was one of the first in the country to adopt simulation technology as a component of the educational curriculum.

Starting in July 2007, the Center was renamed the Penn State Milton S. Hershey Simulation Center and its administration transferred to the Office of Educational Affairs within the College of Medicine. Support from both the hospital and the medical school expanded in recognition of the growing role of the Clinical Simulation Center in health care education. This is also reflected in the fact that substantial financial support for and structural expansion of the Center is a major objective in the strategic plan for the institution. The Penn State Hershey Clinical Simulation Center moved to new 9,500 square foot space on January 20, 2010.

b. History of the Penn State College of Medicine and the Penn State Milton S. Hershey Medical Center

The Pennsylvania State University College of Medicine and the Penn State Milton S. Hershey Medical Center were founded in 1963, with a gift from the Milton S. Hershey Trust. The first Dean of the College of Medicine was appointed in the latter part of 1964. Planning occurred during the next two years, and ground was broken in February 1966 for “the Crescent”, as the original and architecturally distinctive buildings of the complex are known. The first class of 40 students was enrolled in 1967 and received the MD degree in 1971. Today the College of Medicine has an enrollment of over 600 medical students. The medical school opened a new regional campus in State College in 2011 and the new freestanding Children’s Hospital opened in January 2013. In the spring of 2013, a new physician assistant school opened and will utilize simulation training as part of the curriculum. Approximately 550 medical residents and fellows are part of the learning community on the Hershey campus. In addition, enrollment in continuing medical education exceeds 21,000 people a year. The full-time faculty is comprised of more than 900 members. Basic and clinical research to treat and cure major diseases is conducted at the College and Medical Center. Annually this research is supported by more than \$100 million in awards from federal, state, and private agencies, businesses, and individuals.

3. Program Description

a. Structure

The Fellowship is managed by the Penn State Hershey Clinical Simulation Center. The fellowship positions(s) report to the Interprofessional Fellowship in Clinical Simulation Education and Research program co-directors.

Administratively, the fellowship participant will be listed with the Department of Anesthesia; however, operationally the participant will report to the fellowship program co-directors.

The fellowship is a self-funded program with no stipend, salary, or wage. Participants are required to fund their own housing, meals, transportation, and other personal expenses. As available, some fellowship related expenses may be reimbursed by the Clinical Simulation Center, such as conference registration and travel, at the discretion of the co-directors.

Membership in the Society for Simulation in Healthcare is required during the fellowship, and registration for the Society will be paid for the Clinical Simulation Center. One additional relevant society or association membership will also be paid for during the fellowship period by the Center.

b. Curriculum

Each participant will have his or her own unique goals for participating in the program. Each participant's curriculum will be customized to meet those needs.

Upon application to the fellowship program, a needs assessment will be conducted by the program co-directors to create a custom curriculum for each applicant. This curriculum will be finalized upon acceptance and commitment of the participant to the program's duration and goals.

Each participant will complete a core curriculum. This portion of the curriculum represents key knowledge and skills that are expected of all patient simulation practitioners. An additional portion of the curriculum will represent the participant's area of focus.

*Core Curriculum* (General outline)

- History of patient simulation
- The value of simulation as a learning modality
- Simulation typology and terminology
- Simulation environments
- Simulation roles
- Theoretical foundations of simulation-based education
- Legal and ethical issues
- Course/Scenario development

- Debriefing
- Evaluating effectiveness
- Conducting research in simulation
- Simulation resources

#### Focus areas (General outline)

#### *Education*

- Simulations for specialties
  - Nursing (Undergraduate)
  - Nursing (Professional)
  - Medical Students
  - Resident/Fellow Education
    - Emergency Medicine
    - Critical Care
    - Pediatrics
    - Anesthesia
    - Surgery
    - Psychiatry
    - Orthopedics
    - ENT
    - Obstetrics
    - Other Specialties
  - Continuing Medical Education
  - Respiratory Care
  - Pre-Hospital Care (EMS)
  - Other Allied Health Care
- Interprofessional education
- Course/Scenario development (Advanced)
  - Needs assessment
  - Creating instructional goals and objectives
  - Learner analysis
  - Task analysis
  - Selecting the right simulation modality
  - Building the course and/or scenario
- Theoretical foundations of simulation-based education (Advanced)
- Debriefing (Advanced)
- Using video for debriefing
- Evaluating effectiveness (Advanced)
- Assessment
  - Formative

- Summative
  - Creating assessment criteria
  - Validity and reliability in assessment instruments
- Training assessors
- Evaluating assessors
- Creating simulation instructors
- Giving feedback
- Process improvement
- Orientation of faculty
- Educational research

### *Operations Management*

- Creating a mission and vision
- Simulation center oversight and leadership
- Building a strategic plan
- Simulation center design
- Simulation center operations
  - Staffing
    - Recruiting
    - Training
    - Evaluating
    - Ongoing development
  - Budget
    - Capital
    - Operating
  - Policies and procedures
    - Learner confidentiality
    - Physical and psychological safety
    - Quality Improvement processes
    - Segregation of simulation equipment
    - Storage and maintenance of equipment and supplies
    - Prioritizing use of simulation resources
    - Video security
    - Data security (including research data)
    - Educational program reviews
    - Faculty evaluation
- Calculating return on investment
- Equipment procurement
- Equipment management
- Supply inventory
- Scheduling

- Data management
- Reporting metrics
- Creating links within the organization

#### *Research*

- Conducting simulation-based research
  - Educational methods research
  - Clinical research
- Evaluating research
- Research methods
- Research ethics (Complete CITI Certification)
- IRB processes
- Data acquisition with simulation

#### *Technical*

- Simulator operations (fluency in Gaumard, Laerdal, and CAE Healthcare systems)
  - Set-up/Tear down
  - Operating
  - Programming
  - Maintenance
  - Troubleshooting
- Video recording
- Building or improvising your own simulators
- Moulage
- Working with clients
- Building scenarios based on learning objectives
- Technical resources

The fellowship also offers participants the option of a generalized program of study that includes the Core and select parts of each focus area.

Specific objectives will be developed in consultation with fellowship program co-directors.

Bi-weekly update meetings are required with one of the program co-director to evaluate progress towards objectives and milestones.

Each participant will be required to submit a portfolio showing how learning objectives were met. Examples of potential portfolio products include:

- Fully developed simulation-based training program
- Programmed simulation scenario

- Simulation center policy and procedures
- Video-recorded examples of conducting a simulation
- Video-recorded examples of conducting a debriefing
- Instructor Course completion certificate
- Conference abstract or poster presentation
- Conference workshop or other presentation
- Submission of manuscript to peer-reviewed journal
- CITI certification
- Participation in Journal Club

c. Application Requirements

Interested applicants should complete the application available on the Clinical Simulation Center website.

This is an interprofessional fellowship program and is open to all health care disciplines and specialties. Additionally, non-clinicians with professional interests in patient simulation such as educators, researchers, or operations personnel are also eligible. However, a basic understanding of medical terminology and healthcare practices is required.

The only application requirement is a minimum of a four year degree such as a BS or BA.

d. Program Co-directors

There are two co-directors for the fellowship program:

Elizabeth H. Sinz, MD, FCCM  
 Associate Dean of Clinical Simulation  
 Director of Patient Safety Simulation  
 Professor of Anesthesiology and Neurosurgery  
 Penn State College of Medicine

And,

David L. Rodgers, EdD, EMT-P, NRP, FAHA  
 Manager, Clinical Simulation Center and Resuscitation Sciences Training Center  
 Penn State Hershey Medical Center  
 Affiliate Assistant Professor of Adult Education  
 Penn State University – Harrisburg

Dr. Sinz has served as the director of the Clinical Simulation Center since 2007. She is a past president of the Society for Simulation in Healthcare, the largest international patient simulation organization. She has widely published about simulation in peer-reviewed publications and book chapters. She is an associate editor of Simulation in Healthcare, The Journal of the Society for Simulation in Healthcare.

Dr. Rodgers joined the Clinical Simulation Center in 2013 after serving in a variety of simulation profession roles including educator, director, and independent consultant. He holds a doctorate in education with an emphasis on curriculum and instruction. He is also a National Registered Paramedic.