

# The Use of Medical Simulation To Train Health Care Providers To Practice In International Settings

Lawrence Proano, MD, DTMH, John Foggie, MD, and Robert Partridge, MD, MPH

**Increasing numbers of immigrants and** returned travelers use emergency departments for health care. Many physicians-in-training and other health care providers are interested in participating in health electives abroad, yet residency curricula inadequately address concepts in global health. **Advanced medical simulation (SIM)** artificially re-creates clinical experiences to prepare health care providers for actual clinical situations.<sup>1</sup>

At Rhode Island Hospital's Medical Simulation Center, the Emergency Medicine Faculty use SIM and standardized patient encounters to teach emergency medicine residents how to respond to various emergency conditions. The computer programming and high-fidelity manikins create very realistic clinical conditions, and allow residents in training to experience these situations in a controlled setting. Much like flight simulation in aviation, this technology enhances the performance of medical professionals and promotes patient safety.<sup>2</sup>

In addition to presenting core concepts in emergency medicine, the Emergency Medicine Faculty use SIM and standardized patient encounters to teach emergency medicine residents select topics in tropical medicine, public health, and decision-making in varied-resource settings.

Several Emergency Medicine faculty have interest and expertise in international health. These **International Emergency Medicine (IEM)** faculty have created numerous case scenarios based on global or tropical health topics, interspersed into the routine monthly residency simulation curriculum. Moulaged manikins and standardized "actor-patients" in immersive IEM clinical settings provide history and physical exam cues to learners during the clinical encounters. The immersive settings are made to be as realistic as possible. For example, we have set up a field tent, and engaged the services of a native born Kenyan to play the part of a pregnant patient who through an "interpreter" presented with a chief complaint of dizziness.



In all the simulations, at the outset of the case the learner does not know the nature of the diagnosis, clinical problems and procedures that may be required. Students approach simulated patients as actual clinical cases. Working with a "team" of providers, each student performs an evaluation, creates a working diagnosis, and develops a management plan for simulated patients. The underlying diagnoses of the actor-patients generally involve diseases uncommon in US emergency department settings, such as infectious disease in newly arrived immigrants.

Examples of recent simulations have included:

- "Tent-side" mobile clinic, East Africa: "Dizzy" pregnant patient [Hookworm].
- Rural health clinic, Southeast Asia: Infant with "altered mental status" [Dengue].
- Emergency Department, North America: Central American immigrant with "dyspnea" [Chagas].
- Emergency Department, North America: Returned traveler from East Africa with "fever" [Typhoid].

The non-Emergency Department limited-resource international settings are achieved with tent setups, rustic settings and props, and through the use of actors as patients from appropriate geographic settings. As might be expected in a real setting, the actor-patients in these scenarios will give more limited responses to history taking. The resources available to the learners are similarly limited. Post-scenario videotaped debriefings address unique elements of IEM, including resource limitations, language barriers, and cultural differences.

Emergency Medicine Residents regularly report that IEM SIM cases fill a deficit in the standard emergency medicine curricula. Students appreciate the sessions' emphasis on comprehensive travel histories, and widening differential diagnoses. Students learn how to approach language barriers, cultural differences and other issues unique to the immigrant patient. These simulations also encourage interest in international electives.

Simulation appears promising in preparing residents and other health care providers to incorporate global health topics during their careers in the United States and abroad.

## REFERENCES

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Lawrence Proano, MD, DTMH, is Clinical Associate Professor of Emergency Medicine, Department of Emergency Medicine, Division of International Emergency Medicine.

John Foggie, MD, is Clinical Assistant Professor of Emergency Medicine, Department of Emergency Medicine, Division of International Emergency Medicine.

Robert Partridge, MD, MPH, is Adjunct Associate Professor of Emergency Medicine, Department of Emergency Medicine, Division of International Emergency Medicine.

All are at the Warren Alpert Medical School of Brown University/Rhode Island Hospital.

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#### CORRESPONDENCE

Lawrence Proano, MD, DTMH  
Rhode Island Hospital  
593 Eddy St, Claverick 201  
Providence RI 02903  
Phone: (401) 444-5826  
e-mail: lproano@lifespan.org

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## UEMF's Fellowship In International Emergency Medicine

Lawrence Proano, MD, DTMH, and Robert Partridge, MD, MPH

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**Part of the Department of Emergency Medicine** at the Warren Alpert Medical School at Brown University, the **University Emergency Medicine Foundation (UEMF)** is comprised of almost 80 faculty members who provide care to the Emergency Departments at Rhode Island Hospital, The Miriam Hospital, and Hasbro Children's Hospital.

In addition to their clinical role, the faculty serve as teachers for the Emergency Medicine Residency Program and the Pediatric Emergency Medicine Fellowship. There is considerable depth of expertise in the group in various emergency medicine subspecialties, including pediatric emergency medicine, toxicology, ultrasound, prehospital care, disaster, geriatrics, and **international emergency medicine (IEM)**.

The Foundation sponsors and conducts several subspecialty post graduate fellowships in these areas. Among these is a two-year Fellowship in International Emergency Medicine. The Foundation accepted its initial fellow in 2005. Applicants are selected from accredited emergency medicine residencies in the US and Canada. The program requires all entering Fellows to complete a **Master's Degree in Public Health (MPH)** at Brown University.

The goal of the Fellowship is to produce an individual who possesses the skills to pursue a several potential career pathways within the broad field of IEM. After completion of the Fellowship, the individual should be competent in prac-

ticing clinical emergency medicine in international settings with variable medical resources, teaching IEM, performing research involving IEM, and familiar with administrative issues in the field. Fellows accomplish these goals over 24 months, with some portion of their time spent in hospital emergency departments affiliated with Brown University.

#### CORE CONTENT OBJECTIVES FOR THE IEM FELLOWSHIP

During training, the Fellows learn the principles of IEM, and the options for a career in this field. Training includes:

- ❖ Acquisition of an MPH degree from Brown University, with a focus on some aspect of international studies relating to IEM
- ❖ Opportunity for diploma certification in tropical medicine from the Royal College of Surgeons in Ireland. Successful candidates receive a **Diploma in Tropical Medicine (DTM)**, an internationally recognized certificate.
- ❖ Opportunity for a one-month course in **Humanitarian Emergencies in Large Populations (HELP)**, offered by Johns Hopkins University.

#### Areas of study during the IEM Fellowship

As part of the MPH, Fellows pursue at least one major academic project for

each of two years out of the country, involving one of the following:

- Research
- Quality improvement
- Injury Prevention
- Subspecialty areas within emergency medicine
- Development of trauma systems, protocols and policies
- Education and training of emergency physicians, residents, medical students, medical officers in various countries, mid-level providers, nurses, and prehospital personnel
- Development of emergency medical service systems

During both Fellowship years, the Fellow spends approximately 16 hours weekly in one of the UEMF Emergency Departments providing clinical care. Fellows begin a two-year Masters of Public Health degree program at Brown Medical School in which they focus on acquiring public health concepts that are specifically applicable to international studies. First-year Fellows participate in a seminar series on research design, epidemiology and biostatistics. They begin participating in an ongoing research project that is in-keeping with the goals of the Fellowship and MPH Programs. Submission of a report or pilot study for publication is the desired goal for the first year.

During the second Fellowship year, Fellows complete research