

A close-up photograph of a doctor in a white lab coat and stethoscope. The doctor is leaning over a medical simulation mannequin, using a stethoscope to listen to its chest. The background is a blurred clinical setting.

Medical Simulation Center

Hands-on, high-level training in a controlled learning environment at a leading medical institution



Rhode Island Hospital
A Lifespan Partner

Advancing Medicine. Touching Lives.

The background of the page is a faded photograph of the Rhode Island Hospital Medical Simulation Center. The building is a large, modern structure with a prominent sign that reads "Rhode Island Hospital" and features a sunburst logo. In the foreground, there is a parking lot with several vehicles, including a white shuttle van labeled "SHUTTLE" and a white bus with a "Quit Smoking" advertisement. The overall scene is bright and clear, suggesting a sunny day.

The Rhode Island Hospital Medical Simulation Center

Simulated patient care training is an idea adapted from airline industry flight simulators, which have been used in pilot training for more than 50 years. Aviation studies and natural history have provided clear evidence that teamwork errors have been responsible for plane crashes and near misses. As a result of these studies, crew resource management team (CRM) training in realistic flight simulators is an annual mandatory requirement in the aviation industry.

Rhode Island Hospital and its Hasbro Children's Hospital became funded participants in a U.S. Department of Defense project to transfer the lessons learned from Army aviation to medical teams in emergency departments. MedTeams - a multi-center military and civilian project (1995-1999) - demonstrated the patient safety benefits of implementing a teamwork training curriculum in emergency medicine. The first phase of the study (needs analysis) demonstrated 43 percent of closed claims involved teamwork errors. The validation phase showed a reduction in medical errors by 26.5 percent after implementation of department wide teamwork training. Most recently, investigators at Rhode Island Hospital Medical Simulation Center have provided evidence that medical simulation training enhances didactic learning and improves team performance in the emergency department.

The MedTeams project was given impetus by the 1999 Institute of Medicine report, "To Err Is Human." The study revealed that between 44,000 and 98,000 hospitalized Americans died each year as the result of medical errors. Among the study's specific recommendations was one supporting medical simulation and teamwork training at all levels of medical education and for hospital based clinicians.

The Rhode Island Hospital Medical Simulation Center began operation in May 2002. The center, a custom-designed and built 3,000 square foot training and assessment facility, is the largest and best equipped adult and pediatric center in southern New England.

Our Mission

Our mission is to promote excellence in clinical care, advance patient safety initiatives and improve multidisciplinary team performance through broad application of high fidelity medical simulation.

Our Facilities

The Rhode Island Hospital Medical Simulation Center is composed of a simulation control room and simulator area, two trainee simulation-viewing areas, a conference room for audiovisual debriefings, storage and equipment rooms and an office suite.



The facility's main simulation room is more than 1,200 square feet. It was designed to be a flexible environment to accommodate multiple simultaneous simulations in emergency department, hospital ward or other critical care settings. The center

has been successfully conducting multi-patient pre-hospital and hospital-based training for graduate medical education and weapons of mass destruction event preparedness.

Most aspects of actual treatment areas and equipment are reproduced to help participants suspend disbelief. Advanced resuscitation equipment, medications, medical gases, overhead lights and computer imaging display capabilities are some of the elements incorporated into the design of the Simulation Center.

The Rhode Island Hospital Simulation Center's audiovisual system incorporates professional recording and editing capabilities to create educational materials for remote and off-line learning. Remote learning is

possible by conventional teleconferencing or by state-of-the-art Internet-2 multicasting video (requires additional equipment at destination). Teams or individuals alternate viewing and participating in single or multiple patient scenarios; these are followed by a video-based debriefing to facilitate discussion, evaluate performance and highlight educational objectives.

The center currently uses six SimMan™ (MPL/Laerdal) high fidelity manikins with fully computerized control and audiovisual interactive capability. Intubation and defibrillation-ready Laerdal ALS skill-trainer manikins are additionally available. A high-fidelity infant manikin and an enhanced video system were added in early 2005.



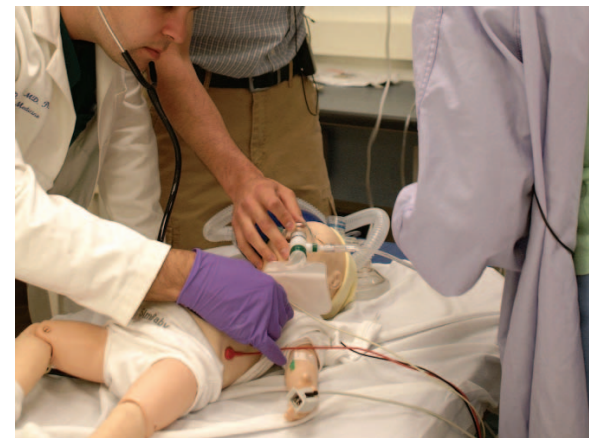
SimMan™ is a reproduction of an average-size adult patient and includes realistic weight distribution and joint articulation. Designed for use as a tool to teach cognitive and critical thinking pathways and psychomotor skills, SimMan™ has been adapted for use in teamwork training scenarios to study and enhance teamwork behaviors.

SimMan™'s features:

- Integrated speakers allow for vocalization and sound effects for patient interaction
- Realistic heart, lung and bowel sounds
- A dynamically adjustable airway and pulmonary mechanics
- Carotid, femoral, brachial and radial pulses provide appropriate absent, weak or normal pulses matching systolic pressures
- Chest compression/CPR-compatible and detection-enabled
- A pulse oximeter finger probe; the display will show the SpO₂ feedback once the probe is placed on the manikin's finger
- An articulated blood pressure arm and articulated multi-venous IV training arm with simulated blood concentrate and IV set-up, providing the ability to obtain realistic flashback upon venous entry, to practice fluid infusion and to push medications
- Allows invasive interventions such as needle and tube thoracostomy and surgical cricothyroidotomy
- Intramuscular and subcutaneous injections can be administered in the deltoid, gluteal and thigh areas
- Interchangeable male and female genitalia and connectors for use in urinary catheterization procedures



SimMan™



SimBaby™

SimBaby™ represents a six-month-old infant, and is designed to prepare trainees for the challenges of pediatric airway management and other emergency medical and critical care scenarios specific to infants.

SimBaby™'s features:

- Spontaneous respirations, with visible chest excursion, controllable rate, depth, regularity and work of breathing
- Normal and abnormal breath sounds, including wheezing, rales and stridor
- A dynamically adjustable airway which supports endotracheal intubation, bag-mask ventilation, laryngeal mask airway placement, tongue swelling and simulation of an unable to intubate scenario
- Allows invasive procedures such as intraosseous needle insertion, as well as needle and tube thoracostomy placement for pneumothorax
- Radial, brachial and femoral pulses which are synchronous with the ECG and match systolic blood pressure
- Supports CPR, defibrillation and electrical cardioversion
- Multiple IV training sites, with simulated flashback upon cannulation and the ability to administer medications
- Vocalizations, including grunting, coughing and crying
- Vital signs, including HR, RR, BP and oxygen saturation, are displayed on a realistic appearing monitor screen at patient bedside

Training Programs

The potential applications of medical simulation are expanding dramatically as research demonstrates the value of this unique training tool. The appeal of reproducible enactments embodying critical, stressful real-life situations, while eliminating the risk of harm to patients or staff, is clear in our increasingly patient-safety-conscious medical community:

- Simulation can be used to improve clinical decision-making and psychomotor skills (e.g., airway management, trauma resuscitation).
- Simulation reduces medical error through improved teamwork.
- Scenarios can be created to expose medical professionals to known error-producing conditions or to rare but critical clinical situations that may require specialized training.
- Educators can ensure a reproducible curriculum for all trainees.
- Training can be conducted in a setting that minimizes time pressures present in the clinical environment.

Selected Course Offerings Include:

Teamwork Training: MedTeams™

The Rhode Island Hospital Medical Simulation Center has the exclusive license to teach simulation-based MedTeams™ in New England.

Advanced Airway Management

This course initially was developed for emergency medicine residents and fellows and currently is used to teach physicians the principles of emergency airway management. Through hands-on training, participants

learn basic and advanced airway skills such as bag-mask ventilation, endotracheal intubation and fiberoptic intubation. With high fidelity simulation, participants develop the skills to handle a variety of difficult airway problems including the need for rescue ventilation devices such as the combitube and LMA. The airway course **has enhanced the proficiency and confidence of our providers as well as patient safety surrounding airway management.**

Disaster Preparedness Training (hospital based and Emergency Medical Systems)


Nuclear, biologic, and chemical (NBC) incident training for hospital-based and Emergency Medical Systems personnel in Rhode Island is offered through

simulation-based training for emergency preparedness (STEP) courses. Sponsored by the Rhode Island Department of Health through funding from Health Resources and Services Administration (HRSA), this course prepares participants for weapons of mass destruction incidents. The course also has been adapted for training members of the Providence Fire Department.



Pediatric Acute Airway Management and Teamwork Training

The goal of this training is to improve the quality and safety of care provided to critically ill children. This training initially was developed for residents and is currently used to teach physicians skilled airway and crisis management during acute care situations. The Simulation Center provides the appropriate milieu in which to accomplish this goal by allowing trainees to practice lifesaving resuscitation and teamwork skills in a realistic, stressful environment before they are called



upon to do so for an actual child. Such training also enhances the procedural, diagnostic and decision-making skills required to ensure patient safety and improve patient outcomes.

Pediatric Office Emergencies Course

This CME course is designed for community physicians and nurses caring for children. Participants review and then practice initial management of common pediatric office emergencies such as severe asthma, seizures and others. Another goal is to offer guidance in assembling a useful, realistic and inexpensive code cart. The simulation center utilizes its state-of-the-art manikins and pediatric faculty to offer a unique educational experience for pediatric providers.

About Rhode Island Hospital

Rhode Island Hospital is a private, 719-bed, not-for-profit acute care hospital and academic medical center. Founded in 1863, Rhode Island Hospital is the largest hospital in Rhode Island and is the only level I trauma center in southeastern New England. The hospital provides a full range of diagnostic and therapeutic services to patients, with particular expertise in cardiology, oncology, neurosciences, orthopedics and pediatrics. Rhode Island Hospital is a major teaching hospital for Brown Medical School.

Hasbro Children's Hospital, the pediatric division of Rhode Island Hospital, is the premier pediatric facility for southeastern New England. Home to the region's first fetal surgery program, the hospital has the area's only pediatric intensive care unit and emergency department for children. Hasbro physicians specialize in pediatric cancer and cardiac programs, and the hospital's surgical units are designed specifically for patients ranging in age

from newborn to 18 years. Each year, the hospital cares for more than 6,000 inpatients, 63,000 outpatients and an additional 42,000 patients in its pediatric emergency department.

Our Location

The Rhode Island Hospital Medical Simulation Center is situated in the restored Jewelry District of historic Providence. High quality hotels, restaurants and shopping are located nearby. The center is housed in the hospital's Coro Center, located at One Hoppin Street. Ample parking is available in an attached parking garage.

For more information, or to take a virtual tour, visit www.rihsimctr.org.

Our Faculty

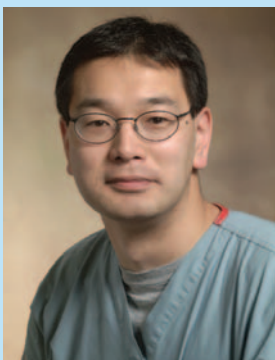
ADULT SIMULATION



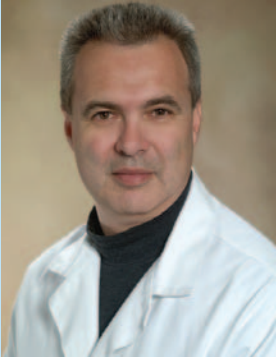
Marc Shapiro, MD, executive director of the Medical Simulation Center, graduated from Tufts University School of Medicine in 1989 and completed his emergency medicine residency at the University of Cincinnati Medical Center in 1993. Shapiro is an associate professor of emergency medicine at Brown University and attending physician in emergency medicine in the Postgraduate Training Program in Emergency Medicine. His areas of research include emergency department utilization, geriatric trauma, simulator-based teamwork training (MedTeams™) and patient safety. He has served as chairman of the Rhode Island Hospital patient safety committee, is a member of the Society for Academic Emergency Medicine Patient Safety Task Force, and recently completed a multi-year grant to develop a “Center for Safety in Emergency Care.”



Gregory Jay, MD, PhD, is an associate professor of medicine and engineering at Brown University and a faculty member in the Center for Bioengineering. He is also an attending physician in emergency medicine and is the research director in the Brown Medical School Postgraduate Training Program in Emergency Medicine. Jay has published widely on topics in applied biomedical engineering and was a co-principal investigator of the MedTeams™ Project. He has served on the Patient Safety Task Force for both the Society for Academic Emergency Medicine and the American College of Emergency Physicians. Jay was formerly a flight surgeon in the Air National Guard, where he both developed and participated in crew resource management and weapons of mass destruction training.



Leo Kobayashi, MD, co-director of operations, graduated from Brown Medical School and completed his emergency medicine residency at Brigham and Women’s Hospital/ Massachusetts General Hospital in 2002. He is an assistant professor of emergency medicine at Brown Medical School. Kobayashi is an active educator in Brown Medical School and its Postgraduate Training Program in Emergency Medicine. His research focuses on advanced medical simulation, its validation as an educational methodology and application to disaster medicine education/training. He has significant experience in medical simulation from his teaching duties at Harvard Medical School. He has helped in developing the concept of multiple patient simulations for emergency care and disaster response.



Kenneth Williams, MD, graduated from medical school at the University of Massachusetts and completed his residency at the University of Pittsburgh in 1987. His primary interests are EMS and informatics. He has published a variety of articles and textbook chapters, and is active in several organizations, including positions as president of Rhode Island ACEP, president of the Air Medical Physician Association, physician medical consultant to the Rhode Island Department of Health EMS Division and RI-I DMAT senior medical officer and USCG liaison. He is principal investigator of the Rhode Island Disaster Initiative, a multi-year EMS disaster care research project.



Selim Suner, MD, FACEP, is the commander of the Rhode Island Disaster Medical Assistance Team, a disaster response asset of FEMA and the Department of Homeland Security. Suner received his medical degree from Brown University and completed his residency training in emergency medicine at Rhode Island Hospital after receiving a master of science degree in biomedical engineering from Brown University. He is currently an attending physician at Rhode Island Hospital in the department of emergency medicine. Suner also chairs the emergency preparedness committee at Rhode Island Hospital and is involved with statewide disaster preparedness on multiple committees. Suner teaches emergency preparedness at Brown Medical School and has lectured worldwide on topics related to disaster medicine. He is a principal investigator for the Rhode Island Disaster Initiative and currently is an associate editor for a textbook on disaster medicine. He has also published broadly on disaster preparedness related topics. Suner conducts research at Brown University related to neuroscience and bio-medical engineering. He jointly holds a patent for non-invasive determination of blood components with Gregory Jay, MD, PhD.



Brian Clyne, MD, is an assistant professor of emergency medicine at Brown Medical School. He attended both Dartmouth and Brown medical schools, earning his medical degree from Brown in 1997. He trained in emergency medicine at the University of Maryland/Shock Trauma where he was chief resident in 2000. Since returning to Brown, Clyne has developed an airway management course and is an active member of the Simulation Center faculty. He has served as director of medical student education for emergency medicine and has recently been appointed residency director for Brown emergency medicine residency.



Elizabeth Sutton, MD, is an assistant professor of emergency medicine at Brown Medical School where she teaches medical students and residents. She is a graduate of Georgetown University School of Medicine and completed her residency training in emergency medicine at Baystate Medical Center. Sutton is a member of the Rhode Island Disaster Medical Assistance Team. She has special interests in postgraduate education, disaster medicine and wilderness medicine. She is currently doing research in high-fidelity simulation in medical education, in simulation-based teamwork training and excellence in women's health education.



Deborah Gutman, MD, MPH, is the assistant residency director for the Brown University program in emergency medicine. Gutman received her medical degree from Brown University in 1999 and completed her residency training in emergency medicine at Rhode Island Hospital in 2003. She received her MPH with a dual concentration in health law and ethics and social and behavioral sciences at the Boston University School of Public Health in 1997. She is currently an attending physician at Rhode Island Hospital. Her research interests are in postgraduate medical education, medical decision-making and resident evaluation. In particular, she is interested in developing new and innovative methods for competency evaluation.

PEDIATRIC SIMULATION



Frank Overly, MD, is co-director of operations and of pediatric simulation at the Rhode Island Hospital Medical Simulation Center. He received a bachelor of science in electrical engineering from Bucknell University and received his medical degree from the University of Rochester. He was a pediatric resident at the Children's Hospital of Pittsburgh and completed a fellowship in pediatric emergency medicine at Hasbro Children's Hospital. He is currently an attending physician in the pediatric emergency department at Hasbro Children's Hospital. Overly has published on a variety of subjects including pediatric sedation, asthma and orthopedics. His current research interests include medical education with high-fidelity simulation, procedural sedation and patient monitoring.



Stephanie Sudikoff, MD, is the co-director of pediatric simulation at the Rhode Island Hospital Medical Simulation Center. She is board certified in both pediatrics and pediatric critical care, having completed both residency and fellowship training at Yale University School of Medicine/Children's Hospital at Yale-New Haven. She is an attending pediatric intensivist in the pediatric ICU at Hasbro Children's Hospital and also serves as the medical director of the Pediatric Transport Service at the hospital. Sudikoff has been funded as the principal investigator for a grant to develop a simulation-based pediatric acute airway management and teamwork training program, which will become an integral part of the Brown pediatric residency educational curriculum.



Angela Anderson, MD, FAAP, is an associate professor of emergency medicine and pediatrics at Brown Medical School and an attending physician in the emergency department at Hasbro Children's Hospital. She received her medical degree from Case Western Reserve University School of Medicine in Cleveland, Ohio in 1985 and completed her residency in pediatrics at Yale Medical School in 1988. She completed fellowships in both pediatric emergency medicine and clinical toxicology and pharmacology at Harvard Medical School and Children's Hospital in Boston, Massachusetts in 1990. She is triple boarded in pediatrics, pediatric emergency medicine and clinical toxicology, and is a fellow of the AAP. She lectures throughout the country on clinical toxicology and pediatric emergencies.

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available

Susan Duffy, MD, is an attending physician in the emergency department at Hasbro Children's Hospital. She received her medical degree from Brown Medical School and completed her pediatric residency at Massachusetts General Hospital. She earned her master's in public health at Columbia University before returning to Providence, where she completed her fellowship in pediatric emergency medicine. She is an assistant professor of emergency medicine and pediatrics at Brown Medical School. She is the director of the Fast Track and Nurse Practitioner Programs at Hasbro Children's Hospital. Her fields of interest include medical education, child maltreatment and domestic violence.

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David G. Lindquist, MD, is the residency curriculum coordinator for the Medical Simulation Center, and the assistant director for medical student education in emergency medicine at Brown University. He received a bachelor's degree in neuroscience from Amherst College in 1990, his medical degree from the University of Vermont in 1999, and completed his emergency medicine residency at Rhode Island Hospital in 2003. He is an assistant professor of emergency medicine at Brown Medical School, and attending emergency physician at The Miriam Hospital and Rhode Island Hospital. His areas of interest include teamwork training, patient safety, and simulator-based medical education.

NURSING

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Linda Dykstra, RN, MSN, is a clinical nurse specialist for the adult emergency department, responsible for advancing emergency nursing practice both with new and established emergency department staff. She is a certified instructor in advanced cardiac life support, advanced burn life support, MedTeams™ and trauma nurse core curriculum. Dykstra has worked in nursing for 30 years, and has held associate director and director positions. She is a member of Sigma Theta Tau, the National Honor Society and has given multiple presentations both locally and nationally. She has twice served on the board of the Rhode Island State Nurses Association, as well as the Nursing Foundation of Rhode Island.



John Fedo, RN, MSN, is a clinical nursing educator at Rhode Island Hospital, specializing in hemodynamics in critical care, as well as training for clinical management. He is also on the adjunct nursing faculty at Salve Regina University in Newport. Fedo has worked in nursing for more than 25 years, and as a nurse manager in a variety of settings since 1995. He is certified in critical care nursing, in advanced cardiac life support and as a life support instructor. He has twice served as president of the Ocean State chapter of the American Association of Critical Care Nurses.