# College News

Abou-madi > Bowser Award > 10Schimenti > robin > Kraus > Rescue Dog

## Criticalist pioneers veterinary use of simulator technology

Most veterinarians would agree that trial and error has its place in clinical training. But not in the emergency room. When it comes to administering urgent care to stabilize an emergency case, there simply is no room for mistakes. One false move and a life can be lost. How can students be taught to handle real-time emergencies without endangering a critical patient's well being?

That was the need that Dr. Dan Fletcher, Assistant Professor of Emergency and Critical Care, set out to fill in designing a sophisticated "rescue dog" mannequin and software program—the first of its kind in veterinary medicine.

"I present lectures on shock and resuscitation to DVM students in the fall of their third year," said Fletcher. "But when those students are confronted with a real-life crisis setting in clinics, they often freeze up like deer in the headlights." The simulator provides a safe environment to make mistakes, and, even more importantly, to learn from experience, he added.

The system is based on a reverse-engineered human model that Fletcher adapted for canine use in collaboration with renowned Cornell robotics expert Dr. Hod Lipson, Associate Professor of Mechanical Engineering.

Multiple embedded speakers and actuators within the canine mannequin emit heart and lung sounds, and create pulses that can be palpated. A balloon within the chest cavity simulates chest excursions to mimic spontaneous breathing. All of these features are driven by software that is programmable and adjustable in real time. Simulated system monitors report on vital indicators such as ECG, pulse oximetry, and blood pressure. The mannequin can also be intubated for positive pressure ventilation, with a realistic airway that accommodates an endotracheal tube or ambu bag. Clinicians can also deliver chest compressions.

The use of simulator technology is already well established in human medical education. In fact, the Society for Simulation in Health Care, or SSIH, was founded in 2004, and now boasts a membership of over 2,000.

Fletcher worked with his colleagues in the Emergency & Critical Care section of the Cornell University Hospital for Animals to develop teaching scenarios for the simulator. After each scenario is played out with the mannequin, the student group reviews a videotape of what transpired. A trained facilitator then leads a discussion, and students draw conclusions about what they could have done differently. According to Fletcher, these debriefing sessions are where the real learning occurs.

Fletcher hopes to develop continuing education programs based on the software. He is currently working with LVT team leaders Andrea Battaglia and Deb Watrous to create training simulations for veterinary technicians.

According to Fletcher, recent research in psychology demonstrates that experiential learning is more effective than lectures for adult learners. “It’s important to understand that this is a bona fide teaching modality,” said Fletcher. “In fact, this is how adults learn best.”

This project was funded, in part, by the Faculty Innovation in Teaching Program, Office of the Provost, Cornell University.