

## Critical Care Transport Training: New Strides in Simulating the Austere Environment

### Role of Critical Care Transport

- The use of medical aircraft has doubled in the last decade
- Increase in natural disasters equals need for more emergency response teams globally
- Health care costs drive community hospitals to consolidate costly services of advanced technological interventions available at only large academic medical centers
- Critical care transport teams must be trained in effective communication, situational awareness, decision making, stress management, and resource management

### Training Challenges

- Training individuals to manage the dynamic needs of patients in unstructured, uncertain, and often unforgiving environments.
- Need to consider the physiological effects associated with air medical transport environments due to altitude related complications: Hypoxia, barometric pressure, thermal changes, dehydration, noise/vibration, gravitational forces, third spacing.
- For training to be effective, extrinsic variables of noise, light limitations, vibration, time constraints, mission progression, and electronic communication through head sets need to be included

### Need for Transport Simulations

- In situ experience can be logistically difficult and infrequent
- Simulation training of flight teams in rescue helicopters is still deficient worldwide because of the high cost to acquire, adapt, install, and service the necessary equipment.
- Need for personnel to train within the confines of the helicopter
- Essential to couple phases of flight with clinical patient scenario
- Simulations help to standardize training that may otherwise take years to learn due to of the inconsistency in real-life experiences.



### Simulating the Austere Environment

- Simulation setting is varied based on the season, terrain, weather, and location including semi-permissive environments requiring increased security measures. Fully equipped FAA interior.
- Simulation technology allows faculty to input any two coordinates in the world and with rear projection system, students visualize the flight through the Lexan windows.
- Simulator base allows for an 11 ° pitch and roll, simulating vibration, movement and all phases of flight.
- Scenarios are mapped to correspond with each course in the ACNP Flight Subspecialty MSN Nursing Program.



**Over \$600,000 in Improvements Funded by Industry Leaders:  
Redbird Flight Simulations, Austin, TX: Jerry Gregoire  
Hartzell Propeller, Piqua, OH: Joe Brown**

### Building the Simulator: Nine Month Process



Stripping & Prepping the Interior.



Fuselage Mounted to Simulator Base



Body Work and Paint

### Current and Future Projects

- Frances Payne Bolton School of Nursing: International Flight Summit: From Tidal Waves to Terrorism: Models of Care in Air Medical Transport Roles in Disaster Response
- International Flight Camp: Week long disaster preparedness
- Academic Exchange Partners: Aichi Medical University, Japan
- Laerdal Medical \$20,000 Special Project to standardize handoffs between critical care transport ancillary personnel, and first responders.
- FPB donated a Bell 430 Helicopter Fuselage to The National Center for Medical Readiness in Dayton, Ohio to partner on interprofessional training, research, grant development, and pre-deployment training.

