Interdisciplinary Collaboration with Nursing, Medicine, Health Sciences and the broader University Community

Dr. Mitchell Morrison
Mr. Andrew Walton

Introductions

- Mitch Morrison: Associate Dean, Associate Professor
  - Accreditation
  - Research
  - Student Services
  - AVIA 300 Aviation Safety
- Andrew Walton: Director of Safety, Adjunct Professor
  - Safety program management
  - NGAFID, NTSB panelist
  - AVIA 312 Aviation Safety Programs, AVIA 409 Safety Management Systems, AVIA 419 Aviation Safety Data Analysis

2020 Drill Plans

- Spring exercise to build partnership with County partners among:
  - LU academic community
  - LUPD
  - Airport stakeholders
- Outlying field mishap
- Review interorganizational communication
  - Review Aeronautic School response plan
  - Integrate existing relationships and build upon them
- Fall exercise with School of Aeronautics student leadership


RESCUE
ARFF


150 commuter


FIRE
RESCUE

Nursing and aviation students practice crisis response skills in simulated plane crash event

October 31, 2019 : Logan Smith/Liberty News Service

For the third consecutive year, Liberty University's School of Aeronautics and School of Nursing collaborated on a crisis simulation drill to replicate a real-life airshow disaster and the necessary emergency response protocols.

On Tuesday, Oct. 29, roughly a dozen student victims — coated with injury prosthetic makeup — lay scattered on a runway at Lynchburg Regional Airport, each with predetermined injuries and conditions. The back story to the simulated event was that a plane had made a faulty landing in the middle of a crowd of spectators.

Student participants engage in the emergency simulation at the Lynchburg Regional Airport

School of Nursing crisis students performed triage and first response, community health nursing students acted as members of the American Red Cross, assisting with family notification and emergency disaster relief, and aviation students determined severity and prepared media responses.

"Though this was a simulation, it really helps to see upfront and personal what could happen and how you would need to respond," said Jonathan Acree, an aviation administration student specializing in safety management. "This simulation is definitely something I can take with me in a job interview … (and prove) that I have been through drills and through different emergency planning."

Simulated crash scene gives students hands-on training

November 9, 2018 : By Tobi Walsh Laukaitis/Liberty University News Service

Calls for help echoed across the runway at the Lynchburg Regional Airport on Thursday as Liberty University students from the School of Aeronautics and the School of Nursing rushed to the scene of a simulated plane crash.

The drill was aimed at giving students real-world experience. This is the second year the two schools have participated.

In the scenario, which was part of the Aviation 409: Safety Management Systems class as well as the Community Health and Crisis Nursing classes, a small prop plane crashed into a crowd of people attending an airshow. Students played the roles of airport representatives, first responders, Red Cross representatives, and victims.

"It's a really good experience for our students," said Andrew Walton, Liberty Aeronautics' director of safety. "It's a way for them to take what they learned in the classroom and apply it to a real-life situation."

Walton said it's also a chance for students to adapt to changes in a fluid situation like a crash.

"Adapting is always part of the drill," he said. "Sometimes things don't go according to plan, but that's why it's important for our students to be prepared to respond in a dynamic environment and be prepared if

Aeronautics, nursing students collaborate on disaster drill

April 21, 2017 : By Drew Menard/Liberty University News Service

A siren blared at Lynchburg Regional Airport late Thursday morning, prompting a group of Liberty University School of Nursing students to rush across a field just off the tarmac and assess the condition of about a dozen students acting as victims of a simulated plane crash.

A simulated plane crash at Lynchburg Regional Airport gave aeronautics and nursing students the opportunity to test their mettle in the field. (Photos by Leah Seavers)

In a command center at the nearby School of Aeronautics, students worked with dispatchers to unravel strings of information, sorting out the facts of the case from misinformation and to communicate accordingly to personnel on the field. The fictional scenario involved a small plane crashing into a group of spectators.

At the scene — where victims, applied with realistic-looking injuries, sprawled around a parked single-engine aircraft — aeronautics students implemented their crisis management plan, as nursing students posing as Red Cross volunteers offered support to classmates serving as first-responders. Medical supplies, including bandages, neck braces, and stretchers, were utilized with careful haste. Patients determined to be OK were whisked off to a Red Cross canopy tent to receive emotional support. An LU Shepherd (a member of Liberty's Spiritual Development staff) was on hand to offer crisis counseling tips.

Research Project: Liberty University School of Osteopathic Medicine

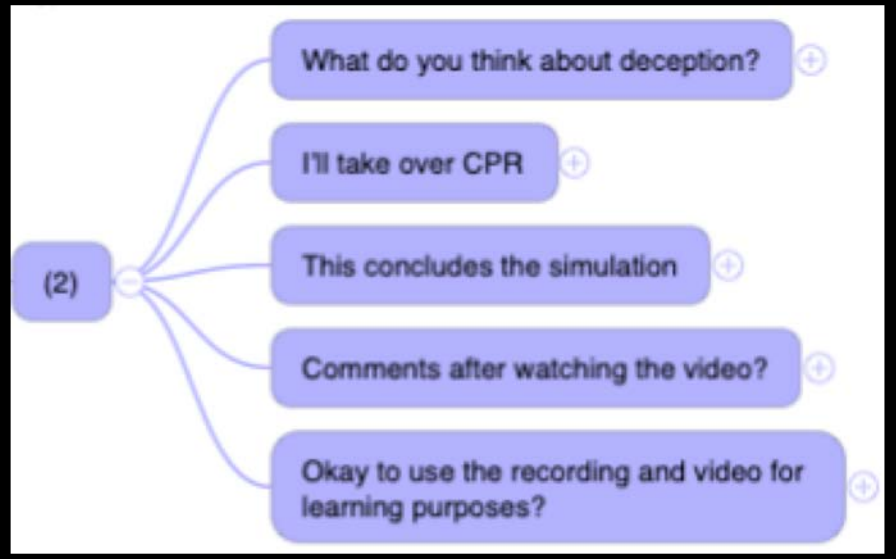
- Title: Error Recognition by Medical Students during Simulated Asystole: Teamwork and Assertiveness from Aviation
- Problem: Medical errors result in adverse clinical outcomes, and represent increased costs and additional care due to their consequences
- Design: We sought to determine if teamwork training utilized by the aviation industry can reduce medical errors in first-year medical students treating simulated asystole

Intervention Group - Briefing Highlights

- Effective Communication: CRM, other aviation methods
- Dr. Lucian Leape: Patient harm is the result of bad _____, not bad _____
- Role playing to **intervene** when wrong dose/site being used
  - CUS
  - SBAR

Qualitative Results

- Mind mapping and nVivo software to analyze qualitative data
- 21 interview transcripts – Aggregated into thematic clusters

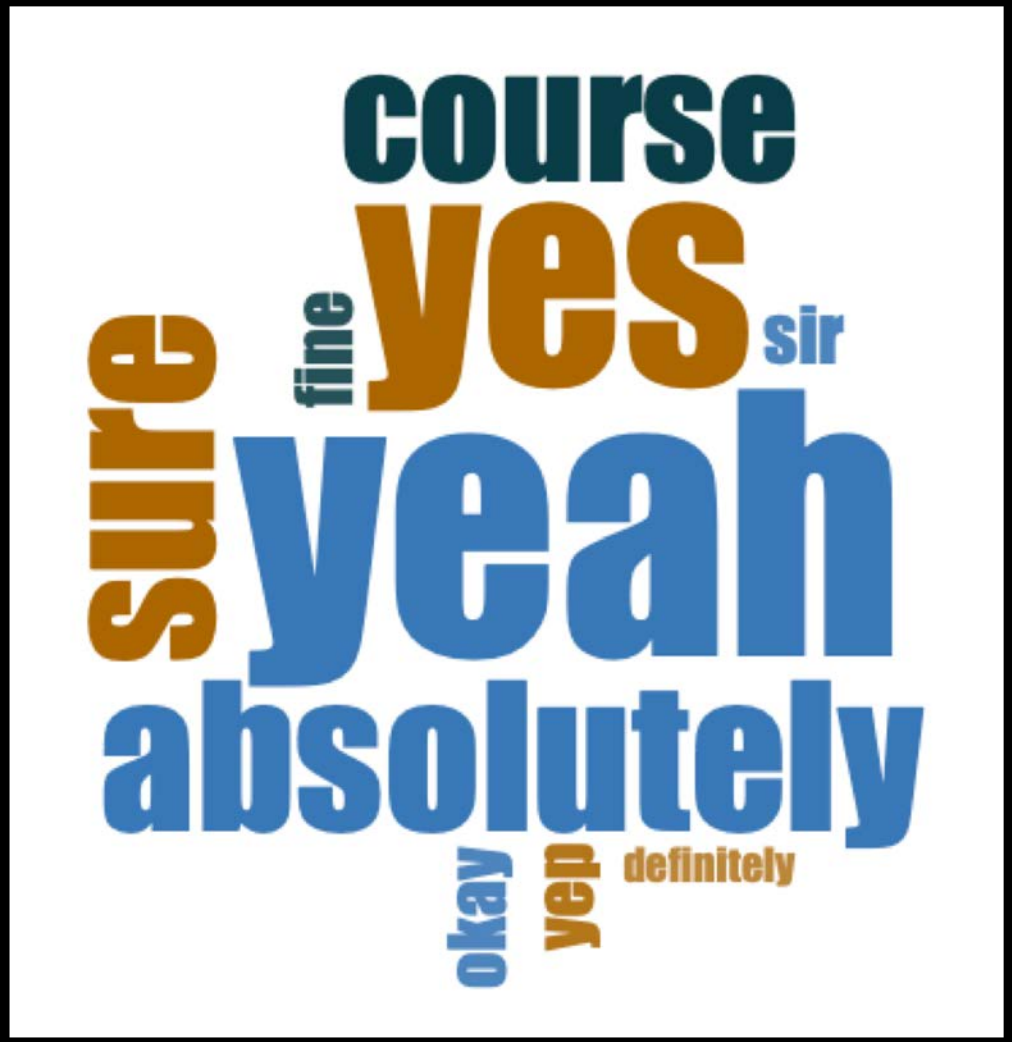


Thematic Clusters - Representative Quotes

- **Stress**
  - “I was more surprised at how long it took me to respond; it was just hard to focus under a lot of pressure.”
  - ”It took me a lot longer to tell him that we need to do it a little faster.”
- **Real-Life**
  - “I don’t know in a real-life situation what I should do, to be honest. I know what the right thing is, but I don’t know how to do it.”
  - ”I knew what I was doing was not effective, but I still was reluctant to do it.”
- **Speak Up**
  - “We can speak up, even with people in authority. Here’s how to do it. The method for how we speak up is extremely valuable.”
  - “I should have spoken up sooner.”

Use the video and recording?

- Everybody said yes
- Even a couple who had challenges speaking up



CPR Study: Conclusion and Summary

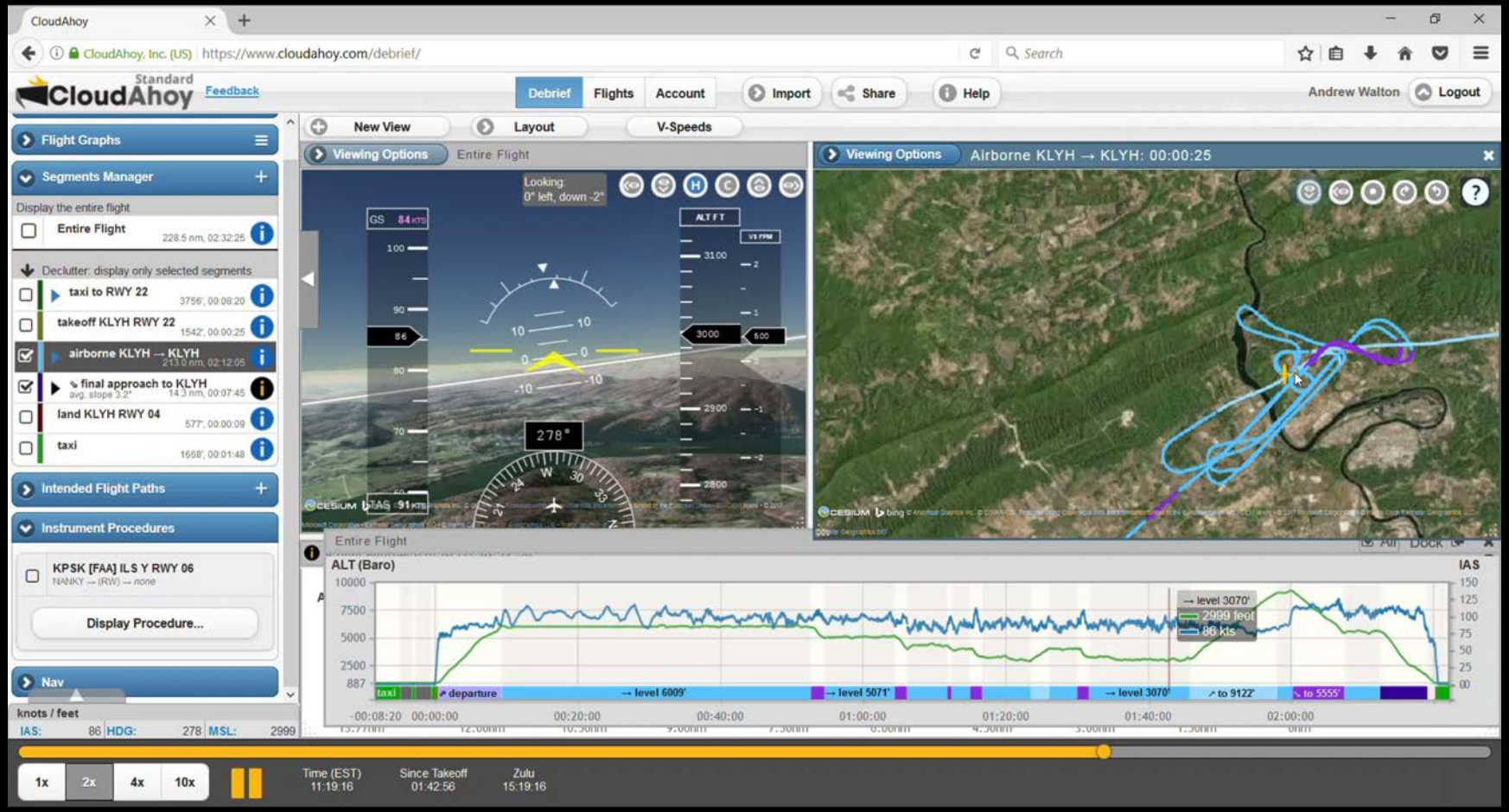
- Individuals who received teamwork training prior to the simulation responded quicker to incorrect CPR technique, thereby decreasing the amount of ineffective chest compressions from 15.86 to 9.56 seconds (p=0.11)
- More participants in the intervention group notified the physician of the error within a critical 10 second time frame (42% vs 30%)
- Themes from learning exercise
  - Stress
  - Real-Life
  - Speaking Up
- Move from teaching correct CPR to didactic teamwork methods during simulated high-stress intervention scenarios

Health Sciences Research

- Two graduate students conducting Master’s Thesis
- Eye Tracking
- Simulated Hypoxia
- Heart rate monitoring
- Deep breathing
- PA-28 Simulator with volunteer Instructor and Aeronautics students

Virginia Tech Mid-Atlantic Aviation Partnership

- UAS integration into the National Airspace System (NAS)
- Grants from energy consortium, FAA, and NASA
- Evaluation of emerging sense and avoid technologies
- Next steps: autonomous avoidance of manned aircraft


CloudAhoy
https://www.cloudahoy.com/debrief/
CloudAhoy Standard
Feedback
Debrief
Flights
Account
Import
Share
Help
Andrew Walton
Logout
New View
Layout
V-Speeds
Flight Graphs
Segments Manager
Display the entire flight
Entire Flight
228.5 nm, 02:32:25
Declutter: display only selected segments
taxi to RWY 22
3756', 00:08:20
takeoff KLYH RWY 22
1542', 00:00:25
airborne KLYH → KLYH
213.0 nm, 02:12:05
final approach to KLYH
avg. slope 3.2°
14.3 nm, 00:07:45
land KLYH RWY 04
577', 00:00:09
taxi
1668', 00:01:48
Intended Flight Paths
Instrument Procedures
KPSK [FAA] ILS Y RWY 06
NANKY → (RW) → none
Display Procedure...
Nav
knots / feet
IAS: 86 HDG: 278 MSL: 2999
Viewing Options
Entire Flight
Looking:
0° left, down -2°
GS 84 KTS
ALT FT
278°
TAS 91 KTS
Viewing Options
Airborne KLYH → KLYH: 00:00:25
Entire Flight
ALT (Baro)
IAS
→ level 3070'
2999 feet
86 kts
taxi
departure
→ level 6009'
→ level 5071'
→ level 3070'
↗ to 9122'
↘ to 5555'
1x
2x
4x
10x
Time (EST)
11:19:16
Since Takeoff
01:42:56
Zulu
15:19:16

Next Steps and Questions