

Crew member Training Impact on Airline Operations: A Focus on Health, Security and Overall Safety

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Disclosure

- ▲ Dr. Paulo M. Alves is a full-time employee of MedAire
- ▲ Quite a few potential conflict of interests in this presentation
 - MedAire is a commercial provider for ground-based support services
 - Dr. Alves is a frequent medical volunteer
- ▲ Opinions not necessarily represent the employer's position

Do we have a problem?

- ▲ Most frequent abnormal event affecting passengers
- ▲ Pax traffic is growing / challenging routes
- ▲ Most frequent reason for flight diversions for some major international airlines
 - 1 for every 1.30 million pax
- ▲ More deaths on board for medical reasons than aviation accidents
 - 1 for every 6.25 million pax
- ▲ No consistent change over the past 30 years
 - Training
 - Medical Kits
 - Equipment
- ▲ Airlines still heavily rely on the presence of a medical volunteer



Are medical events safety or security related?

- ▲ Flight diversions
- ▲ Overweight landing
- ▲ Weather
- ▲ Crew distraction



Resources Available

Flight Attendant

- Always present

Medical Volunteer

- Not always present
- Reliable?

Ground-based Medical Support (GBMS)

- Always present(*)

Medical Kit: Medications / Equipment / Assessment Tools

Timeline



- 1930 - Ellen Church
 - Pilot and nurse
 - Suggests hiring nurses to help some co-pilot functions
 - Screwdriver
 - Chewing gum
 - Trains timetable
 - Reassure the passenger
 - Job description:
 - had to be pretty, petite, single, graduate nurses, 21 to 26 years old, 100 to 120 lbs
 - First Aid Kits



Flight Attendants - Today



FAA Requirements

14 CFR – Part 121

- ▲ Flight attendants must receive training in first aid techniques that are relevant to their duties onboard an aircraft. This training includes but is not limited to:
1. **Basic first aid procedures:** Flight attendants are trained to provide immediate medical assistance in various situations, including assessing and stabilizing injured passengers, controlling bleeding, managing shock, and providing cardiopulmonary resuscitation (CPR) if necessary.
 2. **Use of onboard medical equipment:** Flight attendants are trained to use the medical equipment available onboard the aircraft, such as automated external defibrillators (AEDs), first aid kits, oxygen delivery systems, and other emergency medical supplies.
 3. **Medical emergencies management:** Flight attendants are taught to recognize and respond to common medical emergencies that may occur during flight, such as heart attacks, seizures, allergic reactions, and diabetic emergencies.
 4. **Communication and coordination with medical professionals:** Flight attendants are trained to effectively communicate with medical professionals on the ground, including flight physicians or medical personnel via telemedicine services, to seek guidance and assistance in managing in-flight medical emergencies.

The doctor passenger

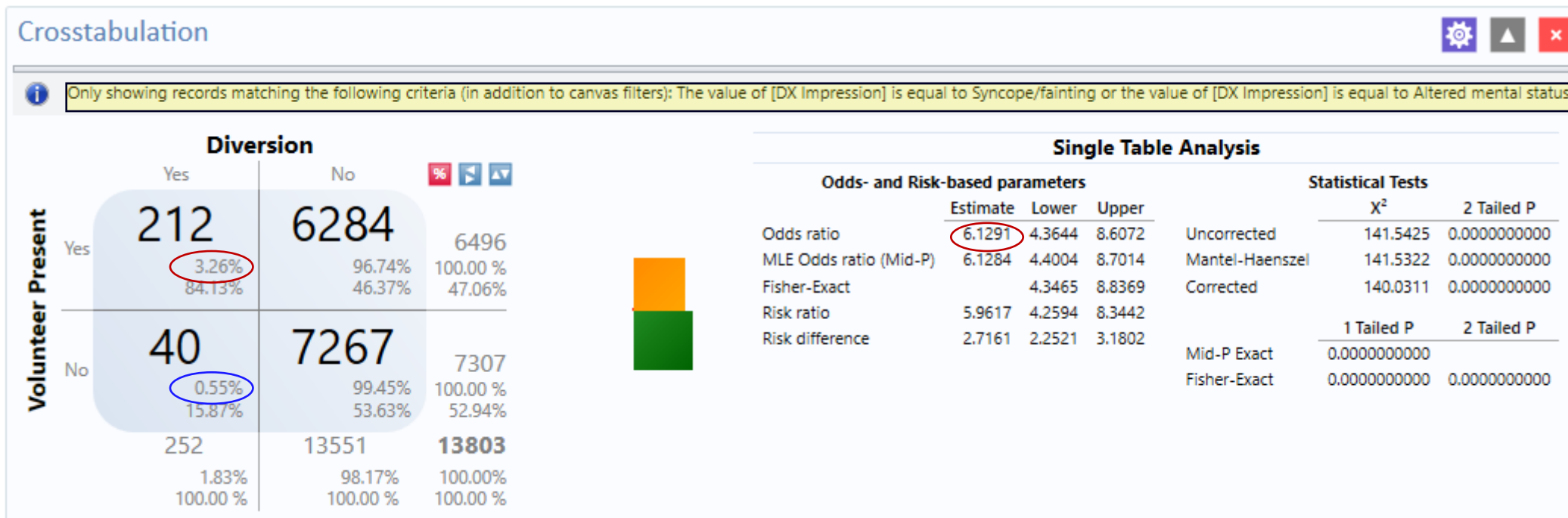
University of Illinois survey 2014 *



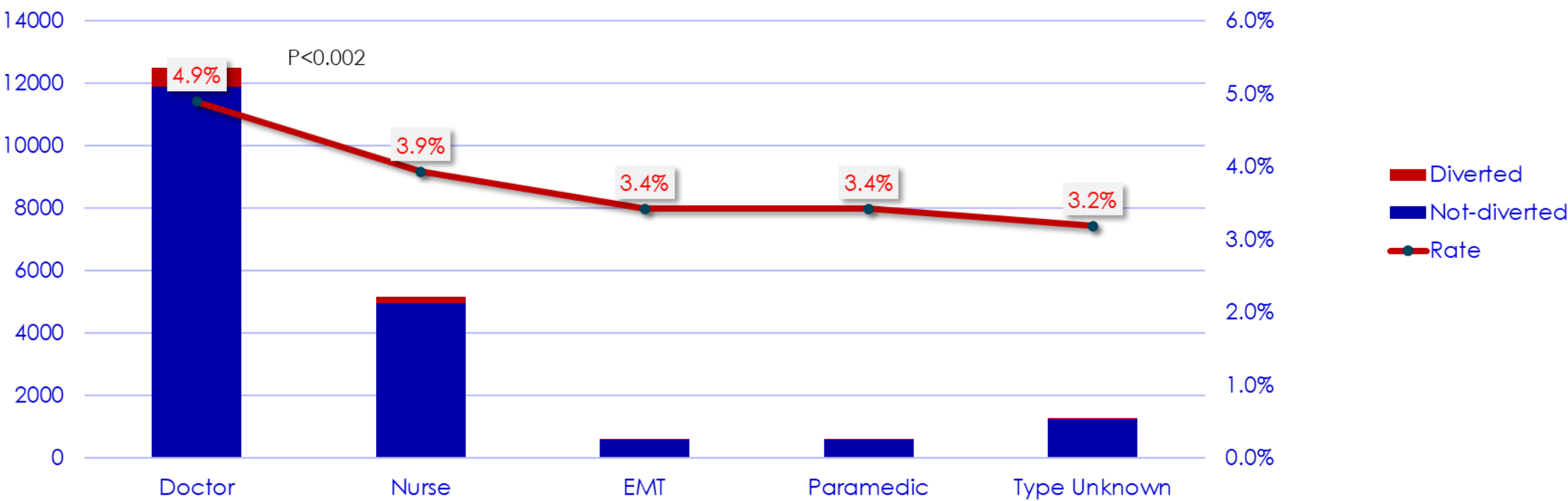
- ▶ Never faced the situation (57.7%) or only once before (21.1%)
- ▶ Doesn't handle emergencies often (62.3%)
- ▶ Is not familiar with the EMK (81.2%)
- ▶ Doesn't know the correct cruising cabin altitude (61.6%)
- ▶ Not familiar or comfortable with AEDs (46%)

(*) Chatfield E, Bond WF, McCay B, Thibeault C, Alves PM, Squillante M, Timpe J, Cook CJ, Bertino RE. Cross-sectional survey of physicians on providing volunteer care for in-flight medical events. *Aerospace Medicine and Human Performance*. 2017;88(9):876-879.

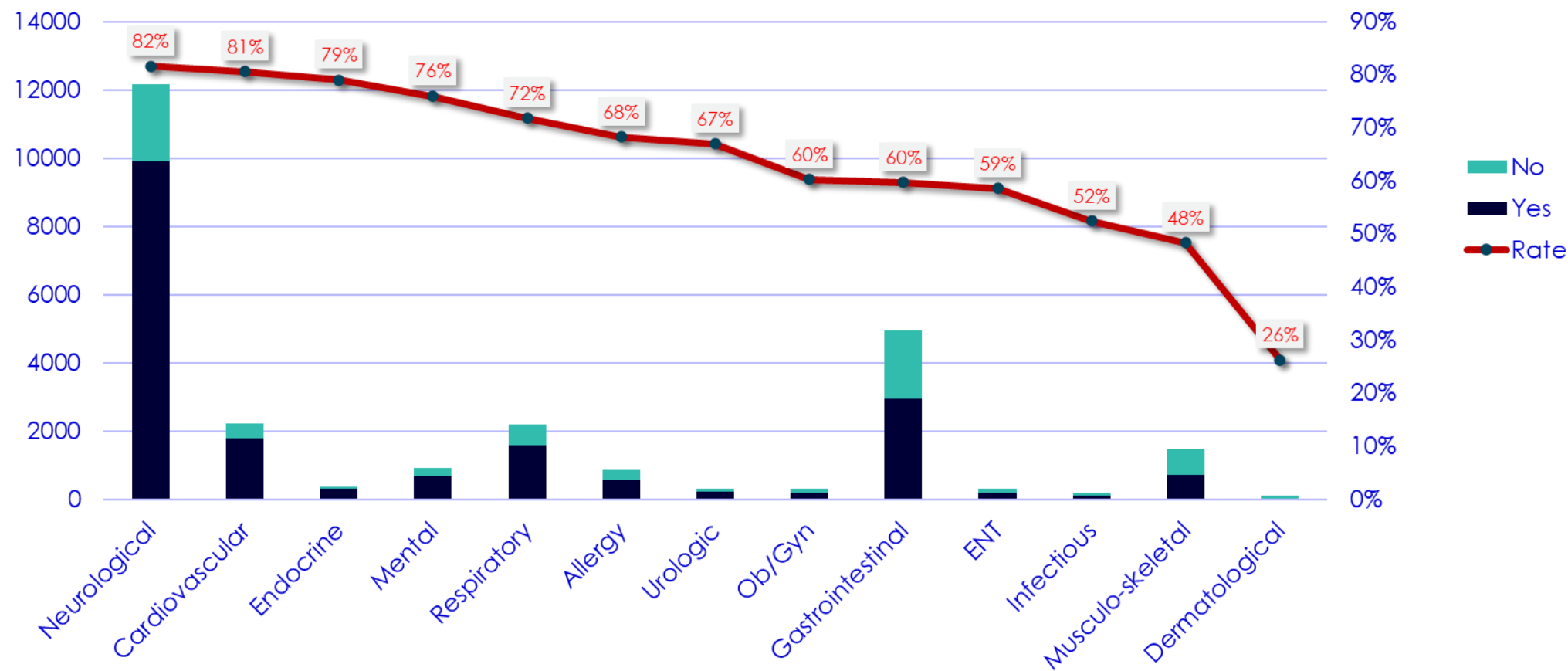
Medical Volunteer and Diversion Syncope cases only



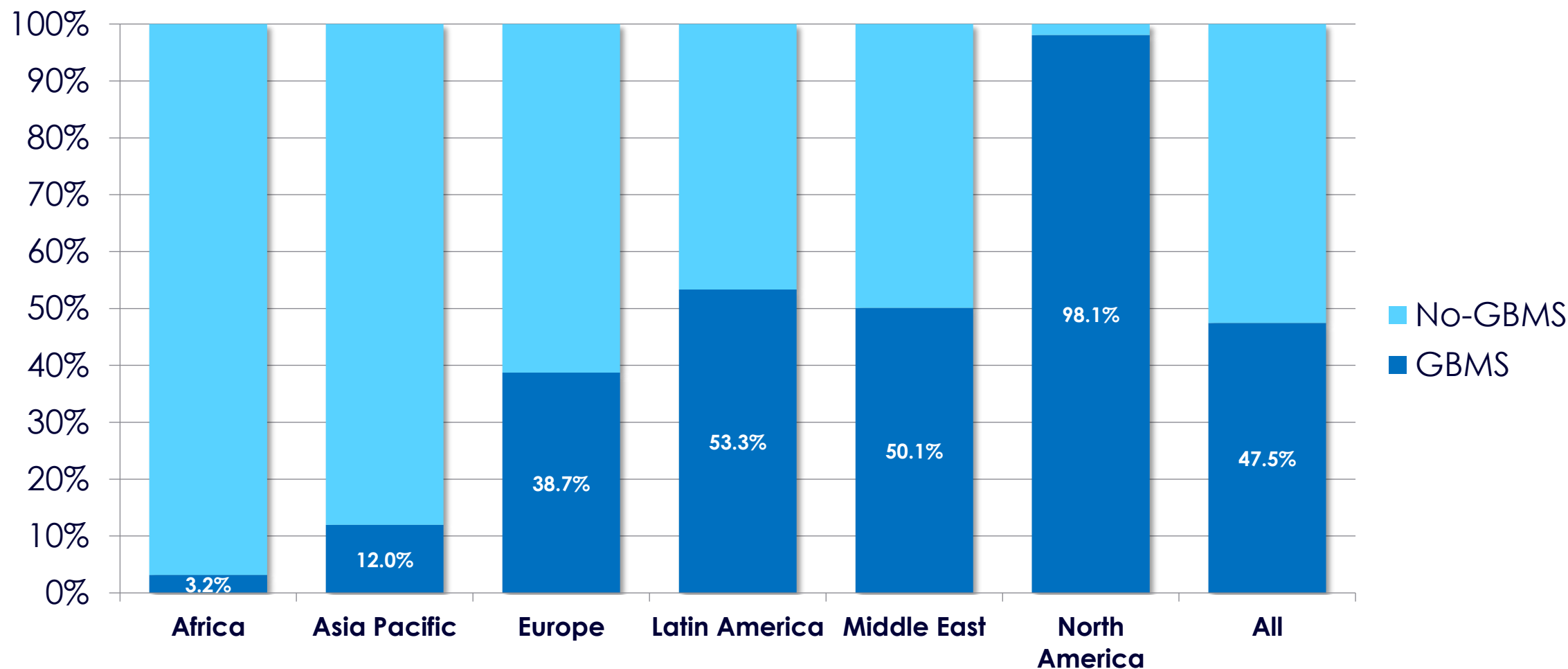
Diversion and Type of Medical Volunteer



How often a medical volunteer is available when needed?



Pax Coverage % by GBMS per Region



Improving Assessment

Flight attendants are taught to recognize and respond to common medical emergencies that may occur during flight, such as heart attacks, seizures, allergic reactions, and diabetic emergencies.

▲ Vital signs

- Heart rate
- Blood pressure
- Temperature
- Pulse oximetry

▲ Blood glucose

▲ EKG



Improving Resources and Equipment

Flight attendants are trained to use the medical equipment available onboard the aircraft, such as automated external defibrillators (AEDs), first aid kits, oxygen delivery systems, and other emergency medical supplies.

- ▲ Oral dissolving medication
 - Ondansetron
 - Nitroglycerin
 - Analgesics (buprenorphine)
- ▲ Auto-injector
 - Epinephrine
 - Midazolam
 - Naloxone
 - Glucagon
- ▲ Nasal spray
 - Naloxone
 - Epinephrine
 - Glucagon



Improving Assessment and Communication

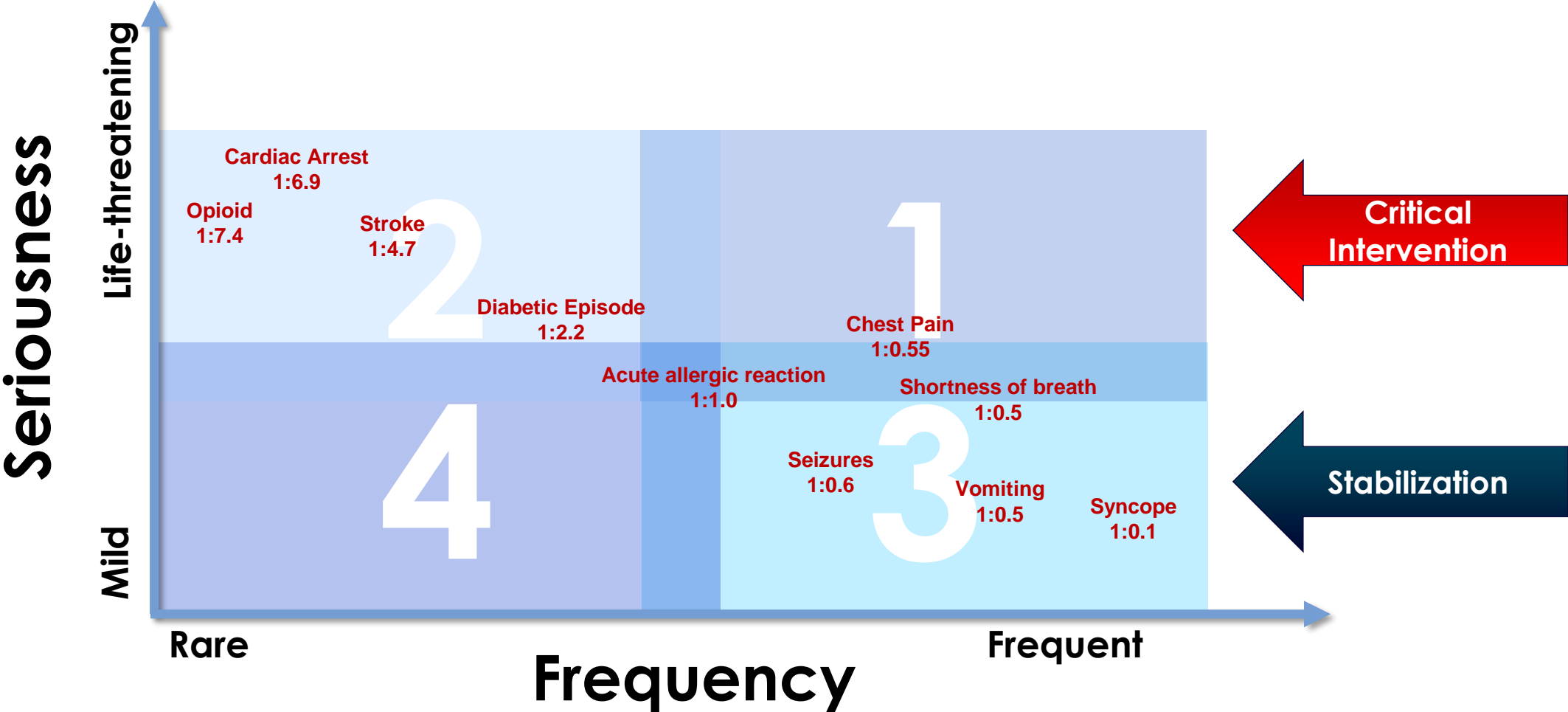
Flight attendants are trained to effectively communicate with medical professionals on the ground, including flight physicians or medical personnel via telemedicine services

The image displays four sequential screenshots of the MedAire mobile application interface, demonstrating the workflow for assessing and communicating medical information. Each screen features a dark blue background with orange and white text and buttons.

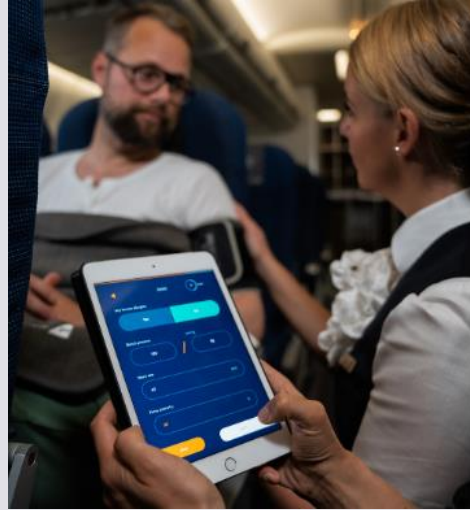
- Screen 1:** Shows a list of symptoms to select. The top bar indicates "DEMO" and "0 mins". The symptoms listed are: Fainted, Stroke / Altered mental state, Seizure, Shortness of breath, Suspected Infectious Disease, Vomiting, and Other. A "CALL" button is at the bottom.
- Screen 2:** Shows the "What is their temperature?" screen. The top bar indicates "DEMO" and "1 mins". The temperature is set to 38°C. Below, there are sections for "How long ago did the symptoms start?" with "Days" (0-5) and "Hours" (0-3) selectors. A "WARNING" message states: "Symptoms recorded fulfil criteria for reportable disease". A "CALL" button and a "NEXT" button are at the bottom.
- Screen 3:** Shows the "Additional signs & symptoms" screen. The top bar indicates "DEMO" and "1 mins". The list includes: Skin rash, Difficulty breathing, Persistent cough, Decreased consciousness, Bleeding, Persistent diarrhea, Persistent vomiting, and Headache with stiff neck. A "WARNING" message is at the bottom. A "CALL" button and a "NEXT" button are at the bottom.
- Screen 4:** Shows the "IMMEDIATE ACTIONS" screen. The top bar indicates "DEMO" and "1 mins". The actions listed are: Ensure personal protection, Provide mask to pax if coughing, Move other passengers (Away from pax to other seats if possible), and PA for medical volunteer. A "WARNING" message is at the bottom. A "CALL" button and a "NEXT" button are at the bottom.

Risk Matrix

2022 Data from US carriers



The Medical CRM Environment



It is time to Change!!!!

Data-based Approach

- ▲ Medical volunteers are often present on board (80%)
 - Not comfortable in dealing with events outside their realms
 - Presence associated with more diversions
 - Primarily another passengers
 - Not truly needed in the majority of cases
 - Very helpful if working as a team
- ▲ Most international airlines contract with GBMS
 - Maximize assessment tools
 - Maximize communication
 - Therapeutic resources appropriate for level of flight attendant training
 - Interaction with the medical volunteer
- ▲ Flight attendants must be in charge of the situation

A blurred background image of a doctor in a white lab coat and pink tie, holding a stethoscope to their chest.

But... do we really need to change?

- 'The measure of intelligence is the ability to change' -Albert Einstein
- "To improve is to change; to be perfect is to change often." - Winston Churchill
- "Change before you have to." - Jack Welch

Thank you!! Questions?