

IN-FLIGHT MEDICAL EMERGENCIES

AMA House of Delegates I-19

San Diego, CA

18 Nov 2019



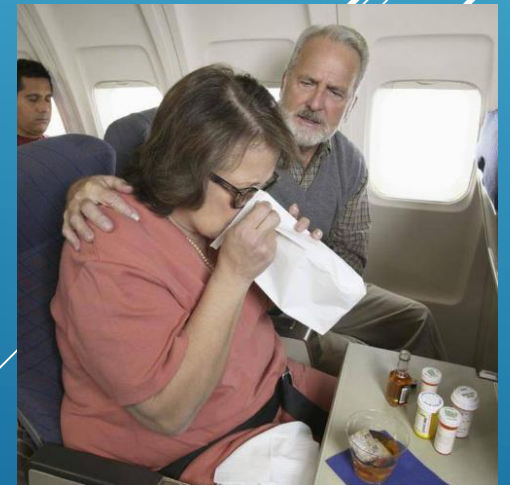
ENVIRONMENT

- ▶ The aviation environment is not the normal environment that we practice medicine to include most of our support science/data.
 - ▶ Not normobaric causing gas expansion issues
 - ▶ Not normobaric decreasing the partial pressure of oxygen
 - ▶ Variable temperature and humidity
 - ▶ Is noisy and vibrating
 - ▶ Has space and time constraints
 - ▶ Whether I've had my first drink or not



EPIDEMIOLOGY

- ▶ In-flight medical events include a variety of events from mild headaches to death.
 - ▶ Crew have basic first-aid protocols and training which manage most
 - ▶ Most medical events only require aircrew first-aid or counseling
 - ▶ Rate of medical events – 1 per 604
 - ▶ Rate of events resulting in divert – about 4%
 - ▶ Death - 0.31 cases per million passengers
- ▶ Most common medical complaints
 - ▶ Syncope/Near Syncope (33%)
 - ▶ Gastrointestinal (15%)
 - ▶ Neurological (5%)
 - ▶ Respiratory Event (10%)
 - ▶ Cardiovascular (7%)
 - ▶ Trauma (5%)



RESPONSE

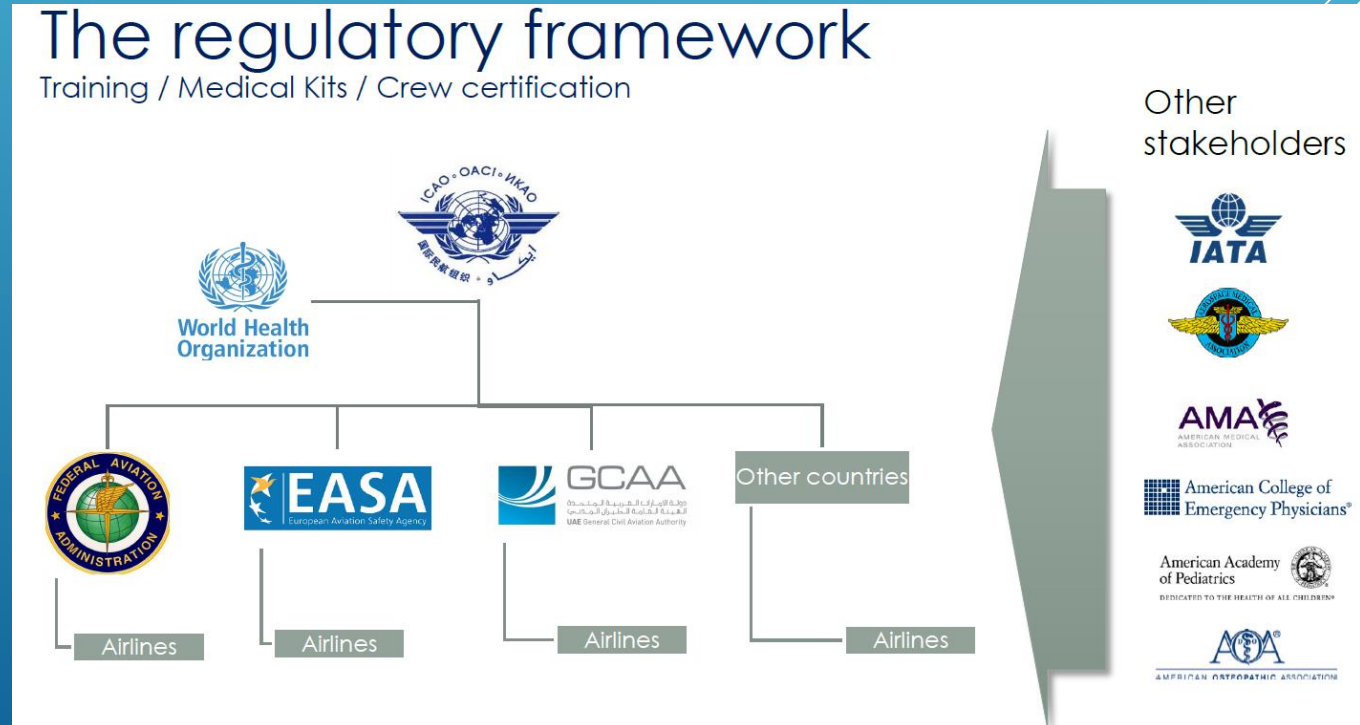
- ▶ The captain is in charge
- ▶ Airline Kit
- ▶ Other support options
- ▶ Remember the limits of the environment
- ▶ Common decision points for specific situations



RESPONSE - AIRLINE KITS

- ▶ What/Who defines the content of the onboard kit
 - ▶ International Civil Aviation Organization (ICAO)
 - ▶ Standards and Recommended Practices (SARP)
 - ▶ National bodies (signatures) reps implement – such as the FAA in the US
 - ▶ Contributing/Supporting organizations
 - ▶ International/Airline Variance

- ▶ Basic components
 - ▶ First Aid Kits
 - ▶ Emergency Medical Kits
 - ▶ Universal Precaution Kits



RESPONSE - AIRLINE KITS – FIRST AID MED KIT

- Antiseptic swabs (10/packs)
- Bandage adhesive strips
- Bandage, gauze 7.5 cm x 4.5 cm
- Bandage Triangular 100cm folded and safety pins
- Dressing, Burn 10 cm x 10 cm
- Dressing, compress, sterile 7.5 cm x 12 cm approximately
- Dressing, gauze, sterile 10.4 cm x 10.4 cm approximately
- Adhesive tape, 2.5 cm standard roll
- Skin closure strips
- Hand cleanser or cleaning towelettes
- Pad with shield or tape for eye
- Scissors, 10 cm (if permitted by applicable regulations)
- Adhesive tape, surgical 1.2 cm x 4.6 m
- Tweezers, splinter
- Disposable gloves (several pairs)
- Thermometer (non-mercury)
- Resuscitation mask with one-way valve
- First-aid manual
- Incident record form



RESPONSE - AIRLINE KITS – EMERGENCY MED KIT 1

- Sphygmomanometer (electronic preferred)
- Stethoscope
- Airways, oropharyngeal (appropriate range of sizes)
- Syringes (appropriate range of sizes)
- Needles (appropriate range of sizes)
- Intravenous catheters (appropriate range of sizes)
- System for delivering intravenous fluids
- Antiseptic wipes
- Venous tourniquet
- Sharp disposal box
- Gloves (disposable)
- Urinary catheter with sterile lubricating gel
- Sponge gauze
- Tape adhesive
- Surgical mask
- Emergency tracheal catheter (or large gauge intravenous cannula)
- Umbilical cord clamp
- Thermometer (non-mercury)
- Torch (flashlight) and batteries
- Bag-valve mask
- Basic life support cards



RESPONSE - AIRLINE KITS – EMERGENCY MED KIT 2

- ❑ Epinephrine 1:1000
- ❑ Epinephrine 1:10000 (can be a dilution of epinephrine 1:1000)
- ❑ Antihistamine injectable
- ❑ Anti-psychotic drug (e.g., haloperidol)
- ❑ Dextrose, 50% injectable, 50 ml (single dose ampule or equivalent)
- ❑ Nitroglycerin tablets or spray
- ❑ Major analgesic inj. or oral
- ❑ Sedative anticonvulsant inj.
- ❑ Antiemetic inj. or oral dissolvable (e.g. ondansetron)
- ❑ Bronchial dilator inhaler with disposable collapsible spacer
- ❑ Atropine inj.
- ❑ Adrenocortical steroid inj. or similar oral absorption equivalent
- ❑ Diuretic inj.
- ❑ Sodium Chloride 0.9% (1000 ml recommended)
- ❑ Acetyl salicylic acid (aspirin) for oral use
- ❑ Oral beta blocker



RESPONSE - AIRLINE KITS – UNIVERSAL PRECAUTIONS KIT

- ❑ Dry powder that can convert small liquid spill into a granulated gel
- ❑ Germicidal disinfectant for surface cleaning
- ❑ Skin wipes
- ❑ Face/eye mask (separate or combined)
- ❑ Gloves (disposable)
- ❑ Impermeable full length long sleeved gown that fastens at the back
- ❑ Large absorbent towel
- ❑ Pick-up scoop with scraper
- ❑ Bio-hazard disposal waste bag
- ❑ Instructions



What's missing?

Airway management

- Supraglottic
- ETT

Auto-injector

Anti-convulsant

Antiemetic

Naloxone

Pulse oximeter

Electronic BP cuff

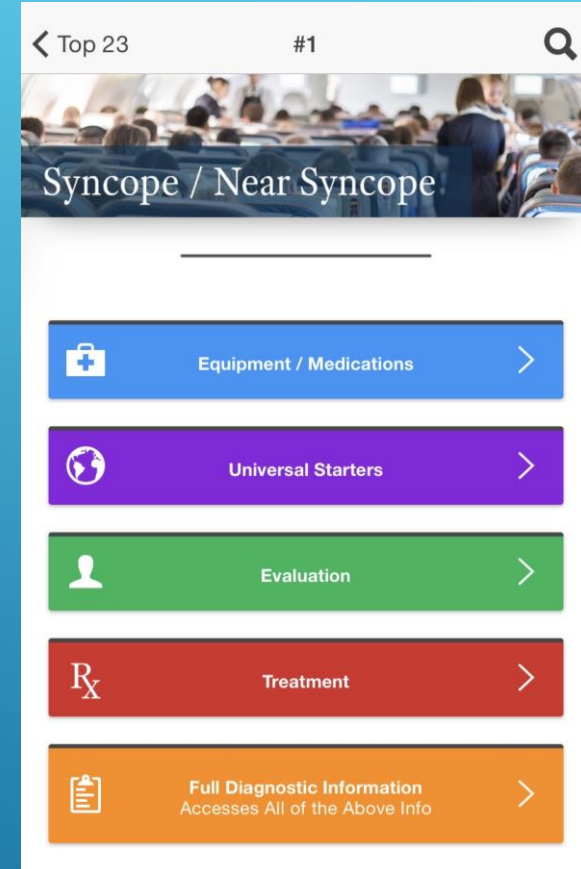
Glucometer

EKG



RESPONSE – OTHER SUPPORT OPTIONS

- ▶ Background information
 - ▶ Aerospace Medical Association – www.asma.org
 - ▶ American College of Emergency Physicians – www.acep.org
- ▶ Smart Phone Application
 - ▶ airRx
- ▶ Ground Support Company
 - ▶ Varies based upon airline contract
 - ▶ Medical skills/experience but other key information like divert options




RESPONSE – ENVIRONMENTAL LIMITS

- ▶ Space
- ▶ Exam difficulties - Noise/Vibration
- ▶ Performance of medical devices
- ▶ Creativity
 - ▶ What other equipment might other passengers or you have
 - ▶ Facilities like “How to hang a IV bag”



RESPONSE – COMMON CONDITION SUPPORT - 1

- ▶ Syncope/Near Syncope (33%) –
 - ▶ Assessment clues for Vasovagal, Cardiac, Pulmonary, Stroke, or Hypoglycemic
 - ▶ Usable inflight options include positioning, IV, and glucose
 - ▶ Cardiovascular (7%) –
 - ▶ Gather good history for likely discussion with medical ground station
 - ▶ Inflight support limited to ASA, nitro and oxygen
 - ▶ Gastrointestinal (15%) -
 - ▶ Define extent, timing, bleeding, and location/quality of pain
 - ▶ Inflight support include IV and a variety of meds for symptoms
- 

RESPONSE – COMMON CONDITION SUPPORT - 2

- ▶ Respiratory (10%) –
 - ▶ Note disease history, activities (such as diving or travel), and baseline support needs
 - ▶ Epi and Albuterol as appropriate; oxygen available, but limited at 4L/min
 - ▶ If not improving then likely need to discuss with ground support
- ▶ Trauma (5%) -
 - ▶ Normally limited to bleeding and/or minor fractures
- ▶ Obstetrics (1%) –
 - ▶ Active labor, severe vaginal bleeding, or severe abdominal pain in the gravid patient should be addressed with available ground support

OTHER KEY ISSUES

- ▶ Pre-travel/Post-therapy counseling – fitness to fly
- ▶ Liability
 - ▶ No international law – defined by individual countries
 - ▶ No physician has been sued; however a few airlines have
 - ▶ Some airlines have a form that accepts responsibility
- ▶ Documentation – keep a copy for yourself, if possible
- ▶ Death and/or DNR
- ▶ Treating a pilot in your practice



QUESTIONS

