IN-FLIGHT MEDICAL EMERGENCIES

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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
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 events.
- 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%)
- Respiratory Event (10%)
- Gastrointestinal (15%)
- Cardiovascular (7%)
- Neurological (5%)
- 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
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

- 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”
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