

Airplane Emergencies: Is There a Doctor On Board?

Hilary Davenport Stroud, DO
*Assistant Professor Emergency Medicine
Department of Emergency Medicine
The Ohio State University Wexner Medical Center*

MedNet21
Center for Continuing Medical Education

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER



OBJECTIVES

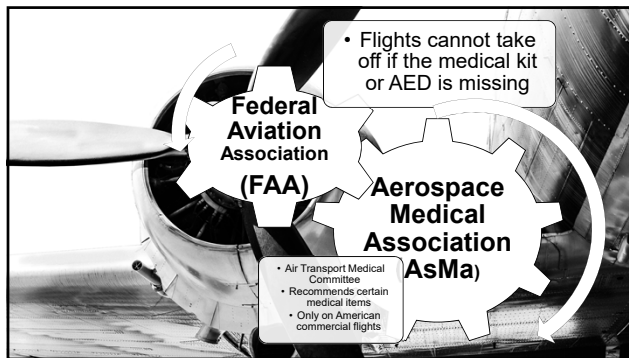
- Introduction
- Onboard materials
- Approach to a medical emergency
- Commonly occurring medical emergencies
- Legal






IN-FLIGHT EMERGENCIES

- 1 in 604 flights
- 44,000 worldwide annually
- BLS trained employees

Flight Attendants	BLS Trained Every 2 years
Automatic External Defibrillator (AED)	A plane 75,000 lbs. or more must have an AED
International Air Transit Association (IATA)	Does not regulate the contents of the medical kit Centers are staffed with physicians



 <p>Assessment</p> <ul style="list-style-type: none"> • Blood pressure cuff • Stethoscope • Gloves • Masks • Thermometer 	 <p>Airway and Breathing</p> <ul style="list-style-type: none"> • Oral airways • BVM (3 sizes) • CPR masks (3 sizes) 	 <p>IV access</p> <ul style="list-style-type: none"> • IV kit • 500 cc of NS • Needles/syringes • Tubing • Tourniquet • Tape • Antiseptic wipes
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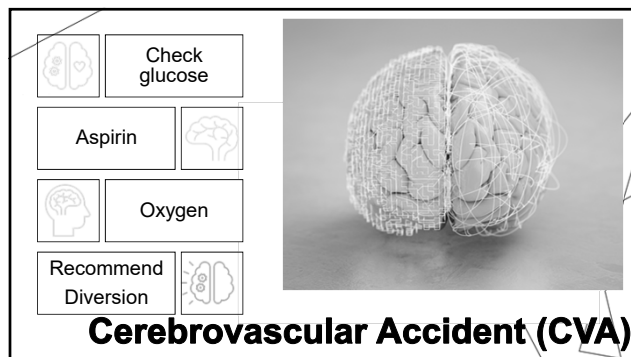
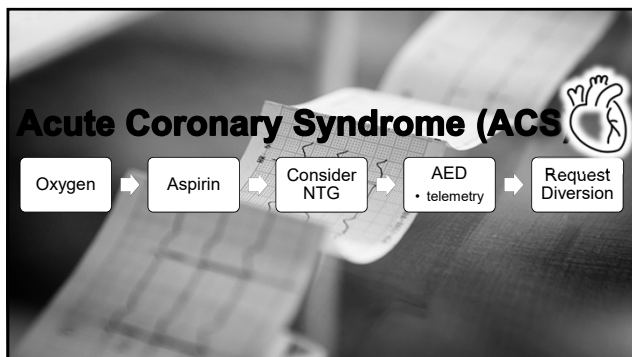
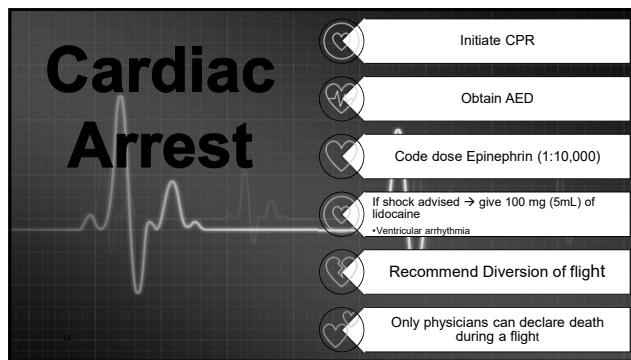
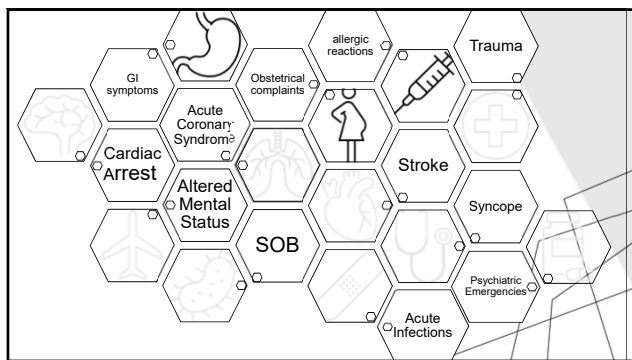
Medications

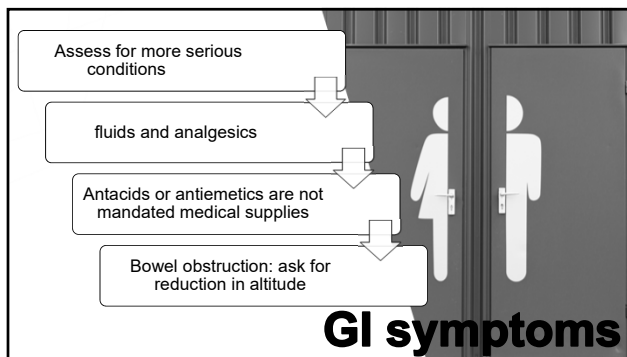
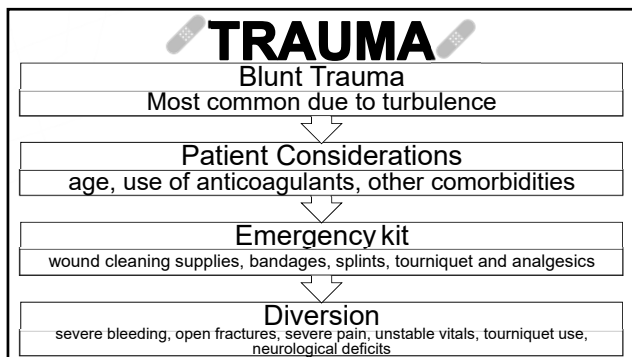
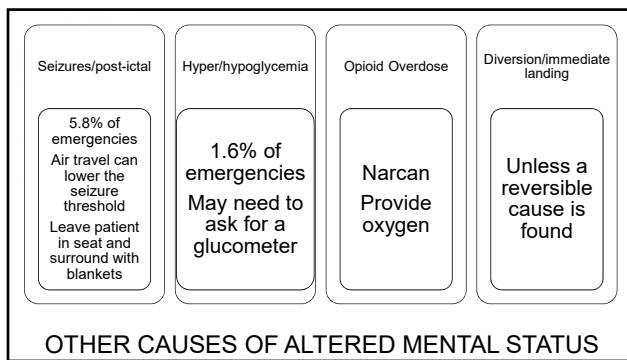
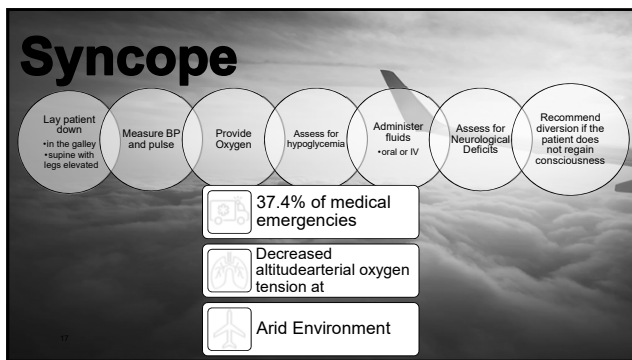
Epinephrine 1:1,000	Epinephrin 1:10,000	Antihistamine	Dextrose 50%	NTG
Sedative/anti- convulsant	Antiemetic injection	Adrenocortic oid steroid	Diuretic	Medication for post partum bleeding
	Normal saline	Acetyl salicylic acid (oral)	Oral beta blocker	




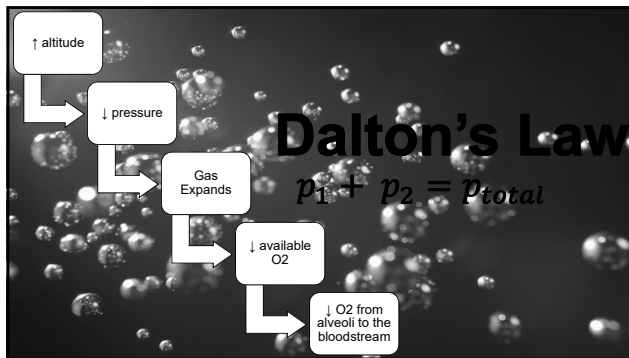
INTRODUCE YOURSELF	TREAT IN THE SEAT WHEN POSSIBLE
DOCUMENT FINDINGS AND TREATMENTS ADMINISTERED	COMMUNICATE AND COORDINATE WITH FLIGHT CREW AND GROUND RESOURCES
DO NOT PRACTICE BEYOND YOUR EXPERTISE	REQUEST AN EMERGENCY MEDICAL KIT
USE A TRANSLATOR IF NECESSARY	








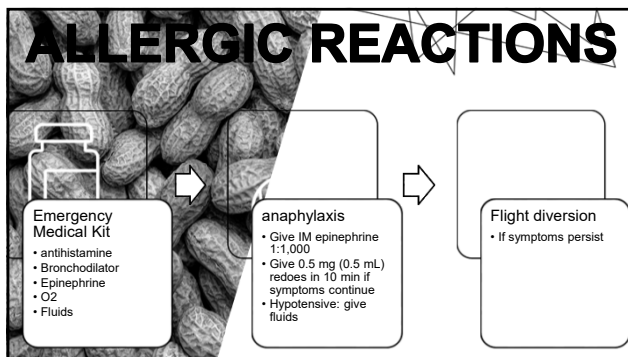


12% of emergencies	Large differential	
Cabin pressurized equivalent altitude of 6,000-9,000 feet	Resting O2 sat <92% travel with extra O2	
Dalton's Law Partial pressure of arterial oxygen: 60 mmHg	Descent to lower altitude/Diversion	



 COPD exacerbation due to decrease O2 this is not uncommon Bronchodilators	Pulmonary HTN  worsen with an increase in altitude Give supplemental O2	Pneumothorax  Needle decompression
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ALLERGIC REACTIONS



Emergency Medical Kit

- antihistamine
- Bronchodilator
- Epinephrine
- O2
- Fluids

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anaphylaxis


- Give IM epinephrine 1:1,000
- Give 0.5 mg (0.5 mL) redoses in 10 min if symptoms continue
- Hypotensive: give fluids





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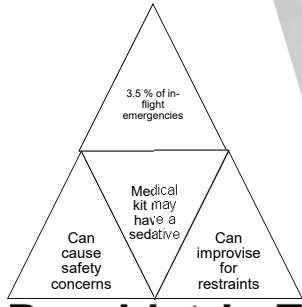
Flight diversion

- If symptoms persist

Obstetrical Emergencies

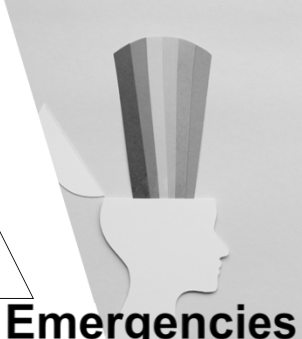


-  Prepare yourself and any assistants (flight attendants)
-  Prepare for neonatal resuscitation
 - blankets, oxygen
-  Post partum bleeding
 - IV access, Fluid, bandages, packing material
-  Flight Diversion

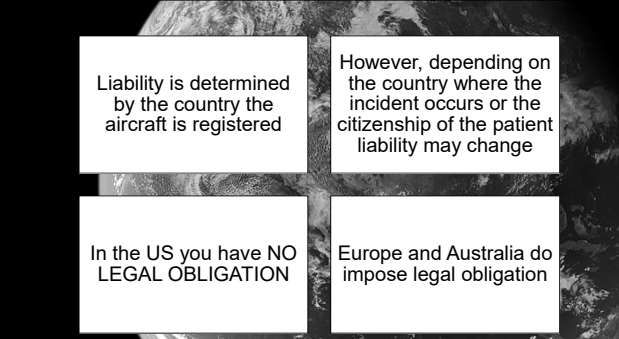


Psychiatric Emergencies

- 3.5 % of in-flight emergencies
- Medical kit may have a sedative
- Can cause safety concerns
- Can improvise for restraints



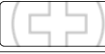




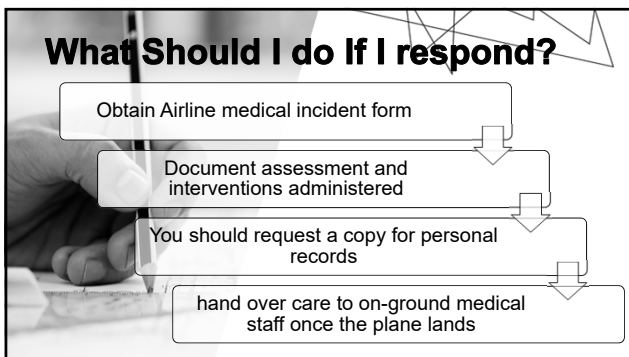
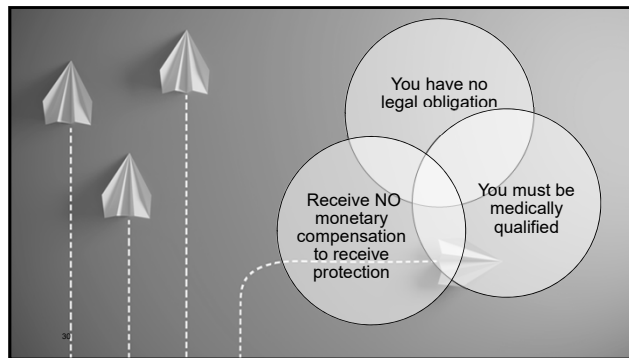
But what are the Rules?



- Liability is determined by the country the aircraft is registered
- However, depending on the country where the incident occurs or the citizenship of the patient liability may change
- In the US you have NO LEGAL OBLIGATION
- Europe and Australia do impose legal obligation

AVIATION MEDICAL ASSISTANCE ACT 18

-  only applies in medical emergencies
Protections are not provided for non-emergencies
-  providers do NOT have to be asked to aid in receiving protection
-  protected if the pilot does not follow recommendations for diversion
providers do NOT have legal authority over the plane or its crew
-  does not make providers responsible if a patient is harmed due to the failure of the airline to have appropriate medical supplies available
-  providers are not absolved of their legal duties simply because they use resources provided by the airline - NO GROSS Negligence



Flight Diversion

Can recommend diversion if patient's condition is unstable

Diversions are Expensive \$3,000-\$100,000

Diversions are made in consultation with ground-based medical expertise

The pilot makes the final decision regarding diversion

Introduce yourself, state level of training and specialty

This will determine who will be in the lead role

Ex: neonatologist should defer to ED physician due to the situation being beyond a scope of training

Who should lead?
If there are multiple volunteers

IS THERE A DOCTOR ON BOARD?

RESOURCES

- Ch 12. Subspecialty: Flight. Ch 12. Subspecialty: Flight EMRA. Accessed November 3, 2024. <https://www.emra.org/books/emra-ems-essentials/chapter-12-flight/#--text=Dalton's%20Law%3A%20As%20altitude%20increases,has%20decreased%20to%20110%20mmHg>
- Chandra, A., & Conry, S. (2013). In-flight Medical Emergencies. *Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health*, 14(5). <http://dx.doi.org/10.5811/westjem.2013.4.16052> Retrieved from <https://scholarship.org/uc/item/3706n30x>
- Katzer, R. J., Duong, D., Weber, M., Memmer, A., & Buchanan, I. (2014). Management of In-Flight Medical Emergencies: Are Senior Medical Students Prepared to Respond to this Community Need? *Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health*, 15(7). <http://dx.doi.org/10.5811/westjem.2014.9.22569> Retrieved from <https://scholarship.org/uc/item/4w6771v6>
- Komnor MB, Miller KN, Powell TL, et al. A first-class simulation: In-situ in-flight medical emergencies curriculum for emergency medicine residents aboard a commercial airliner. *Cureus*. Published online April 14, 2023. doi:10.7759/cureus.37562
- Libretexts. Dalton's law (law of partial pressures). Chemistry LibreTexts. January 30, 2023. Accessed November 3, 2024. [https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_\(Physical_and_Theoretical_Chemistry\)/Physical_Properties_of_Matter/States_of_Matter/Properties_of_Gases/Gas_Laws/Dalton's_Law_\(Law_of_Partial_Pressures\)](https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Physical_Properties_of_Matter/States_of_Matter/Properties_of_Gases/Gas_Laws/Dalton's_Law_(Law_of_Partial_Pressures)).
- Nable JV et al. In-Flight Medical Emergencies during Commercial Travel. *N Engl J Med* 2015;373:939-945. DOI: 10.1056/NEJra1409213
- Peterson DC, Martin-Gill C, Guyette FX, et al. Outcomes of medical emergencies on commercial airline flights. *The New England journal of medicine*. May 30, 2013. Accessed November 3, 2024. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3740959/>
- Ross E, San Miguel CE. In-flight emergencies: Medical mile high club. *Case Studies in Emergency Medicine*. Published online November 15, 2019;295-304. doi:10.1007/978-3-030-22445-5_29