



# Airplane Emergencies: Is There a Doctor On Board?

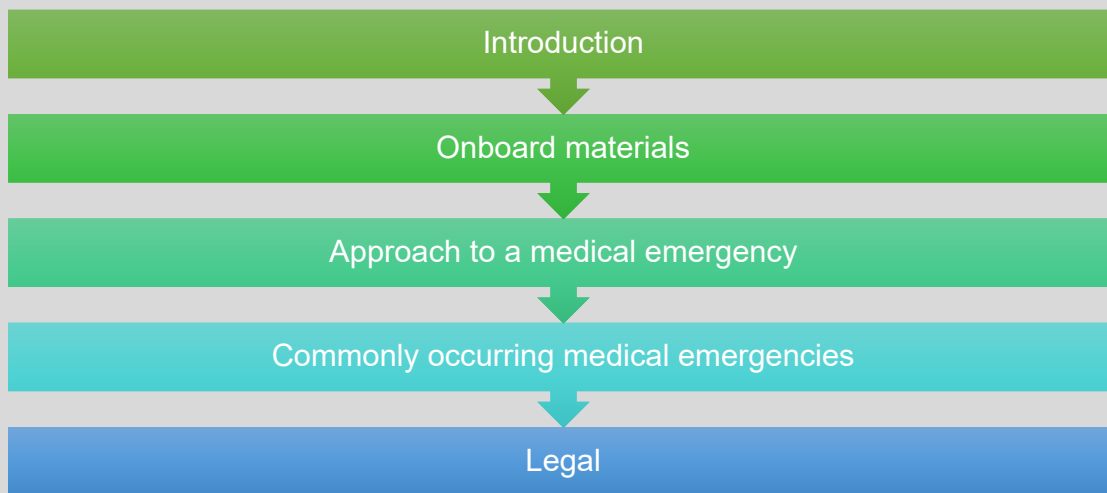
**Hilary Davenport Stroud, DO**  
*Assistant Professor Emergency Medicine*  
*Department of Emergency Medicine*  
*The Ohio State University Wexner Medical Center*

**MedNet21**  
Center for Continuing Medical Education

**THE OHIO STATE UNIVERSITY**  
WEXNER MEDICAL CENTER




# OBJECTIVES





## 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

**Federal Aviation Association (FAA)**

- Flights cannot take off if the medical kit or AED is missing

**Aerospace Medical Association (AsMa)**

- Air Transport Medical Committee
- Recommends certain medical items
- Only on American commercial flights

# ONBOARD SUPPLIES



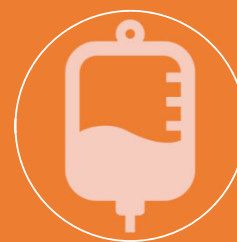
## Assessment

- Blood pressure cuff
- Stethoscope
- Gloves
- Masks
- Thermometer



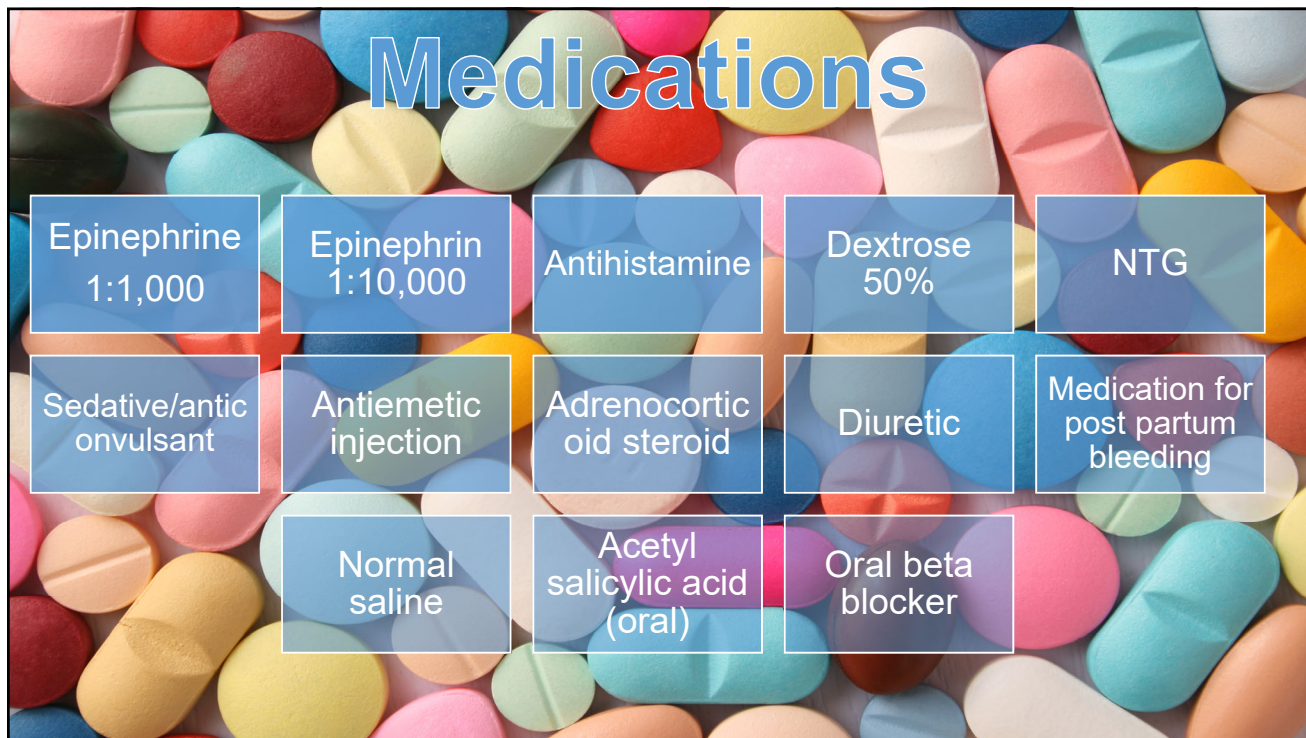
## Airway and Breathing



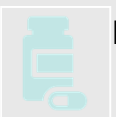
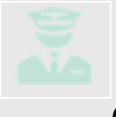
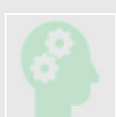




- Oral airways
- BVM (3 sizes)
- CPR masks (3 sizes)



## IV access

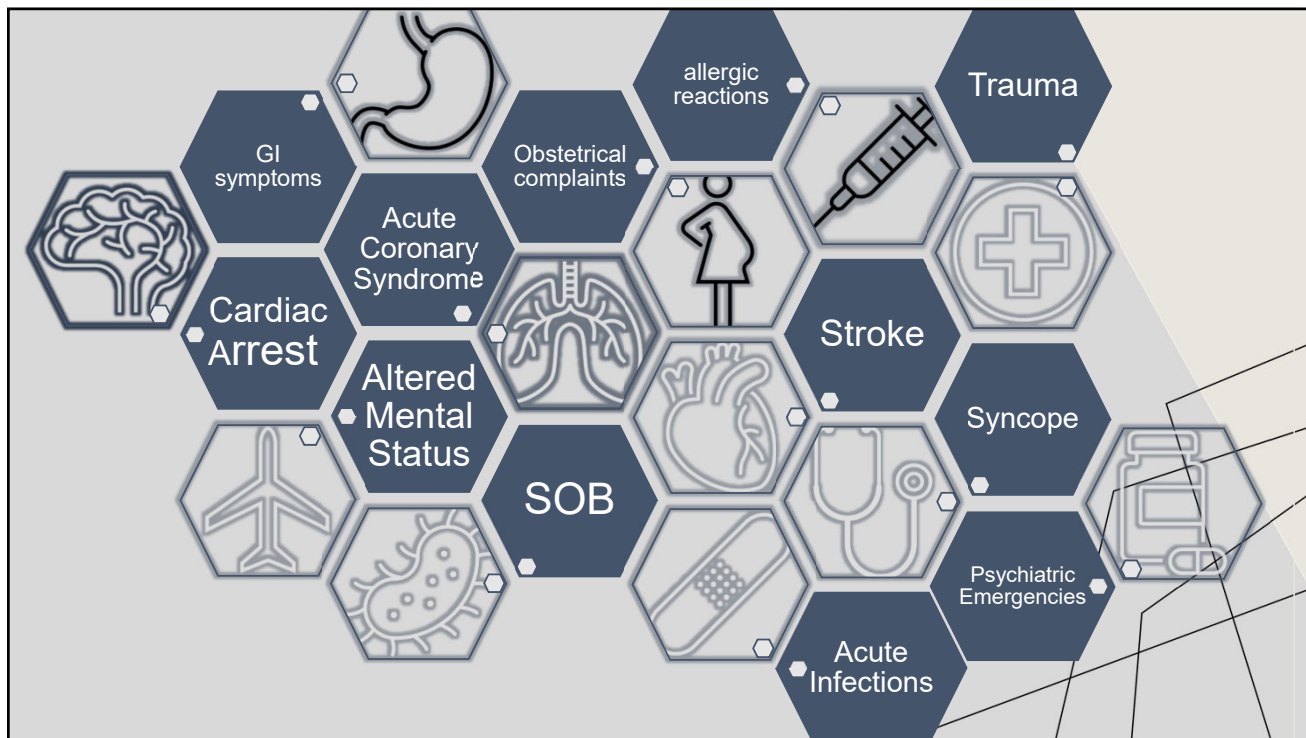
- IV kit
- 500 cc of NS
- Needles/syringes
- Tubing
- Tourniquet
- Tape
- Antiseptic wipes



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

**COMMON MEDICAL EMERGENCIES**

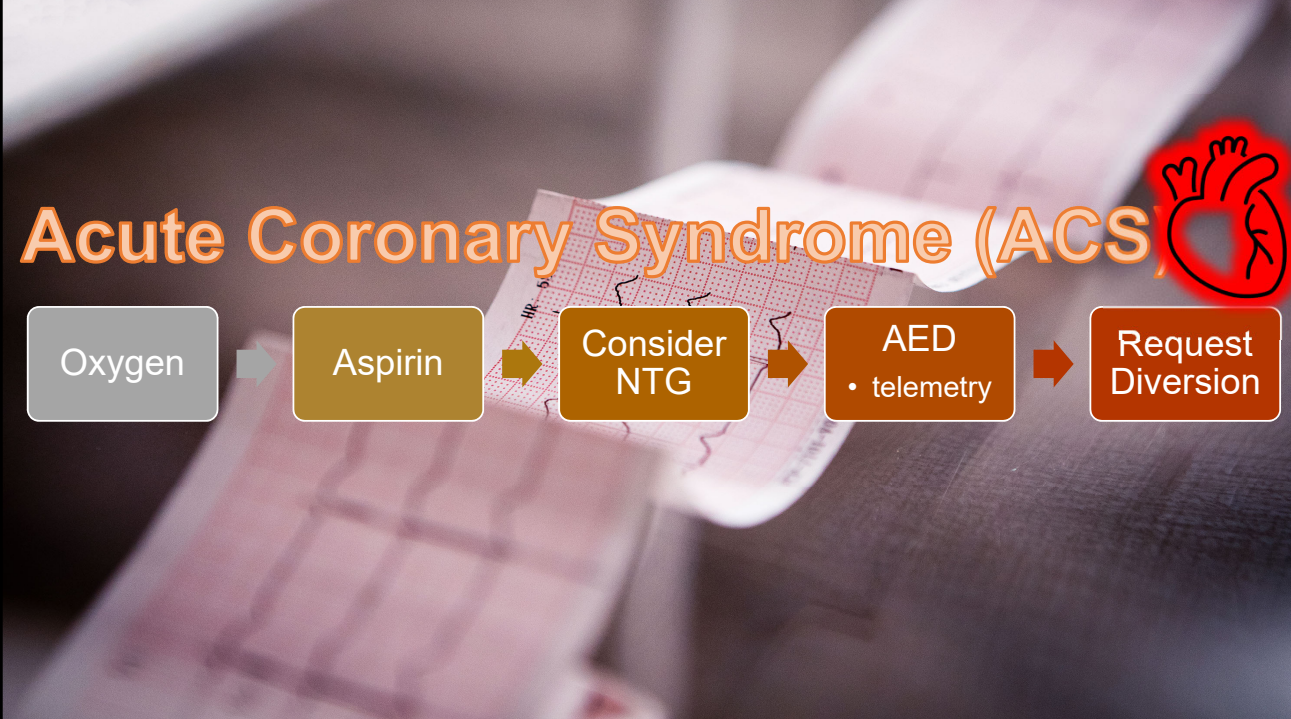




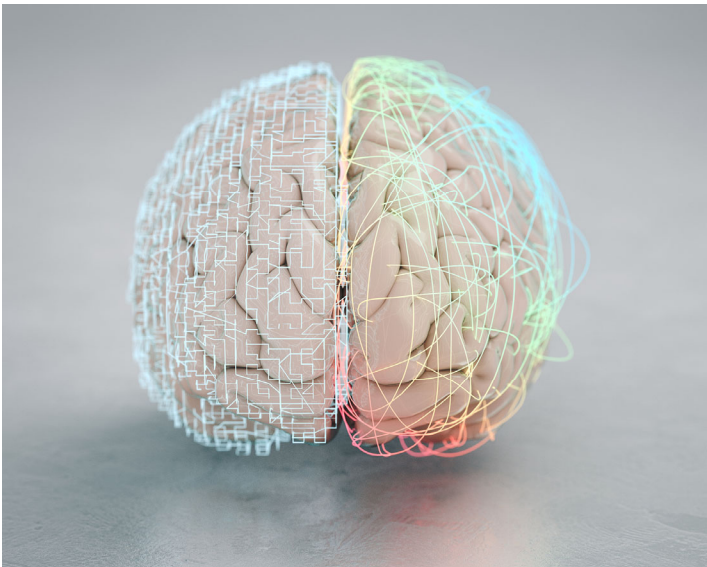
# Cardiac Arrest

- Initiate CPR
- Obtain AED
- Code dose Epinephrin (1:10,000)
- If shock advised → give 100 mg (5mL) of lidocaine
  - Ventricular arrhythmia
- Recommend Diversion of flight
- Only physicians can declare death during a flight

# Acute Coronary Syndrome (ACS)



Oxygen → Aspirin → Consider NTG → AED • telemetry → Request Diversion



Check glucose

Aspirin

Oxygen

Recommend Diversion

## Cerebrovascular Accident (CVA)



# Syncope

- Lay patient down
  - in the galley
  - supine with legs elevated
- Measure BP and pulse
- Provide Oxygen
- Assess for hypoglycemia
- Administer fluids
  - oral or IV
- Assess for Neurological Deficits
- Recommend diversion if the patient does not regain consciousness

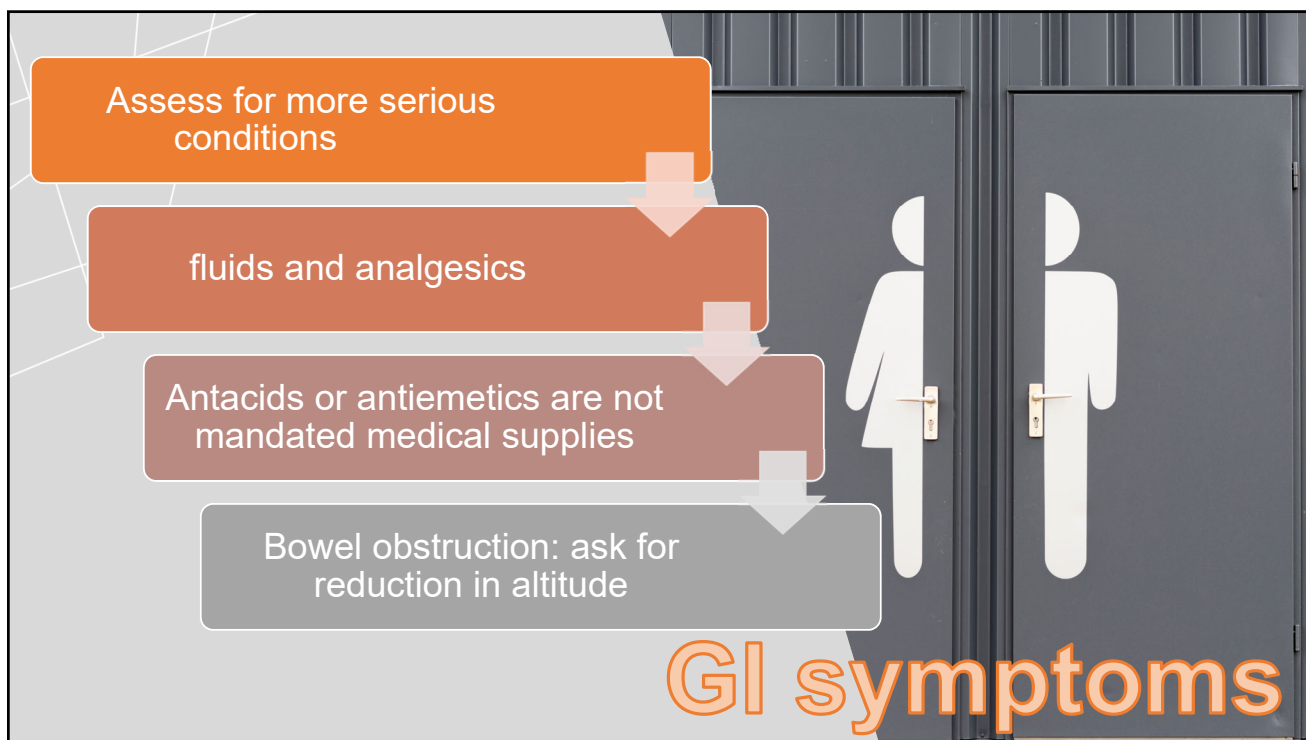
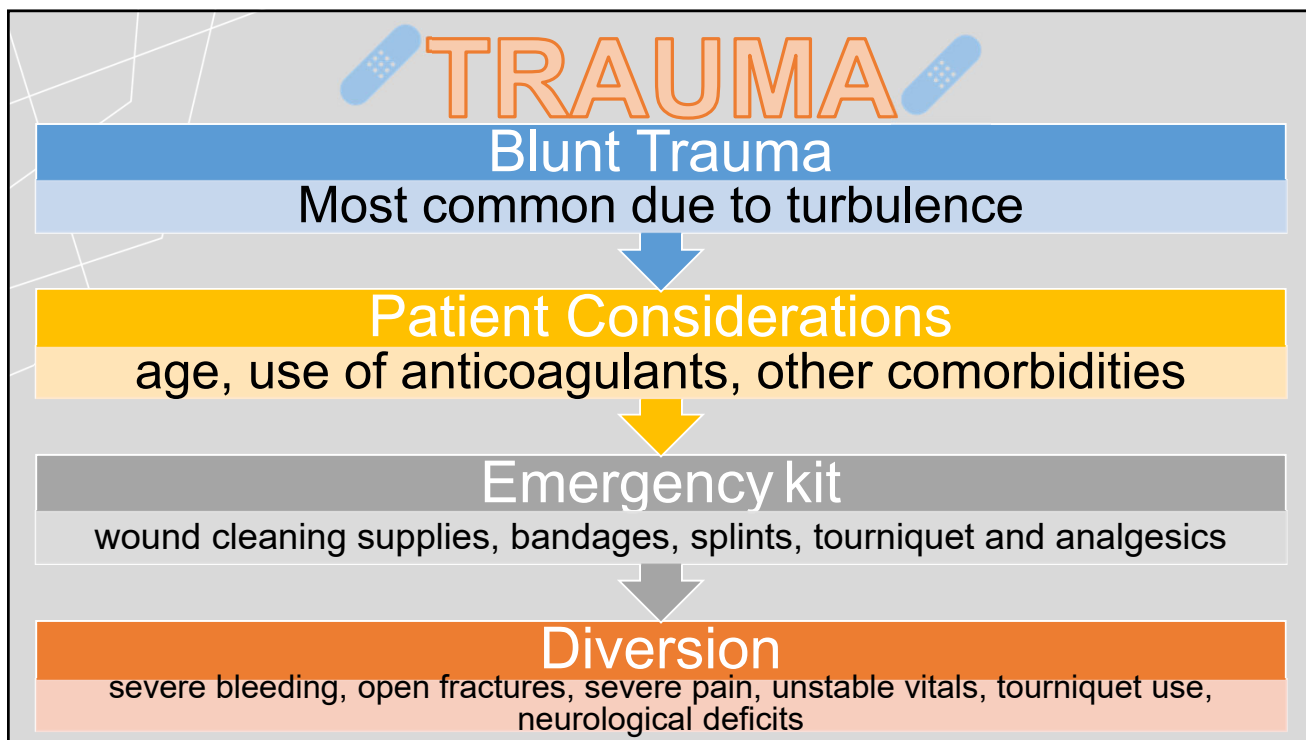
37.4% of medical emergencies


Decreased altitude arterial oxygen tension at

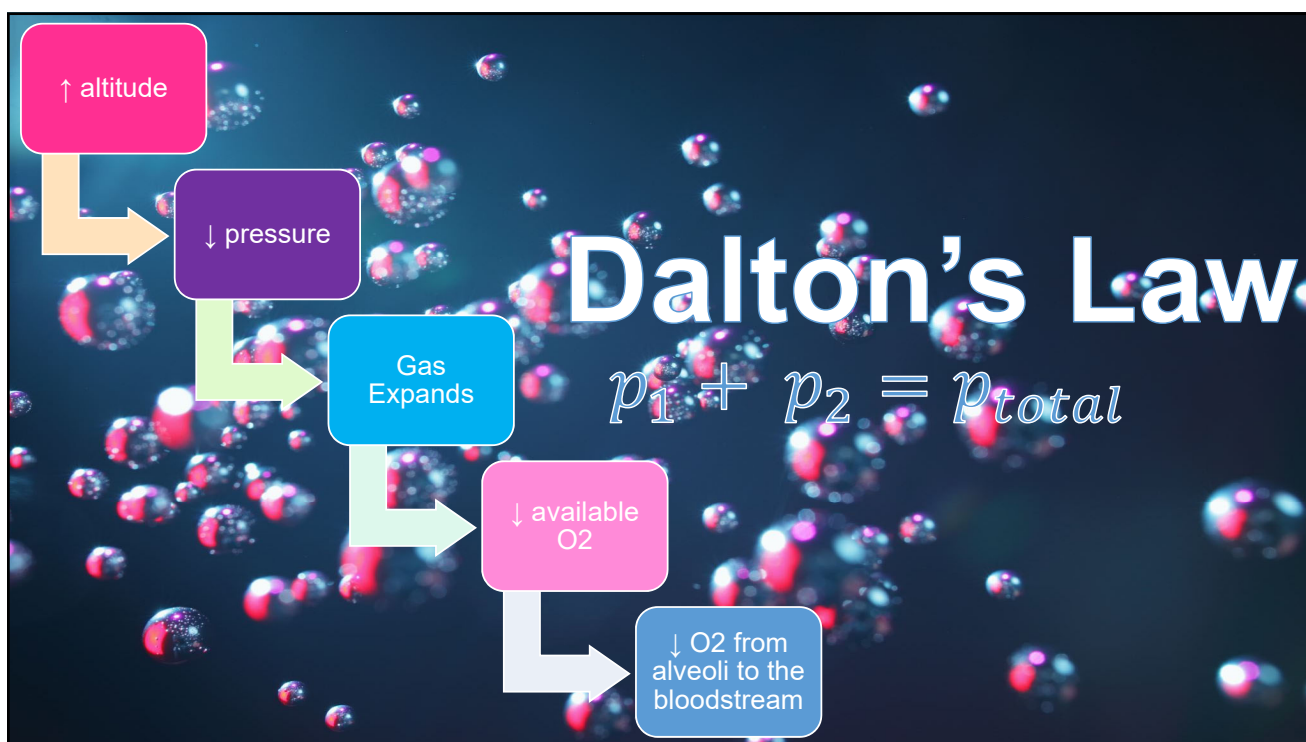
Arid Environment

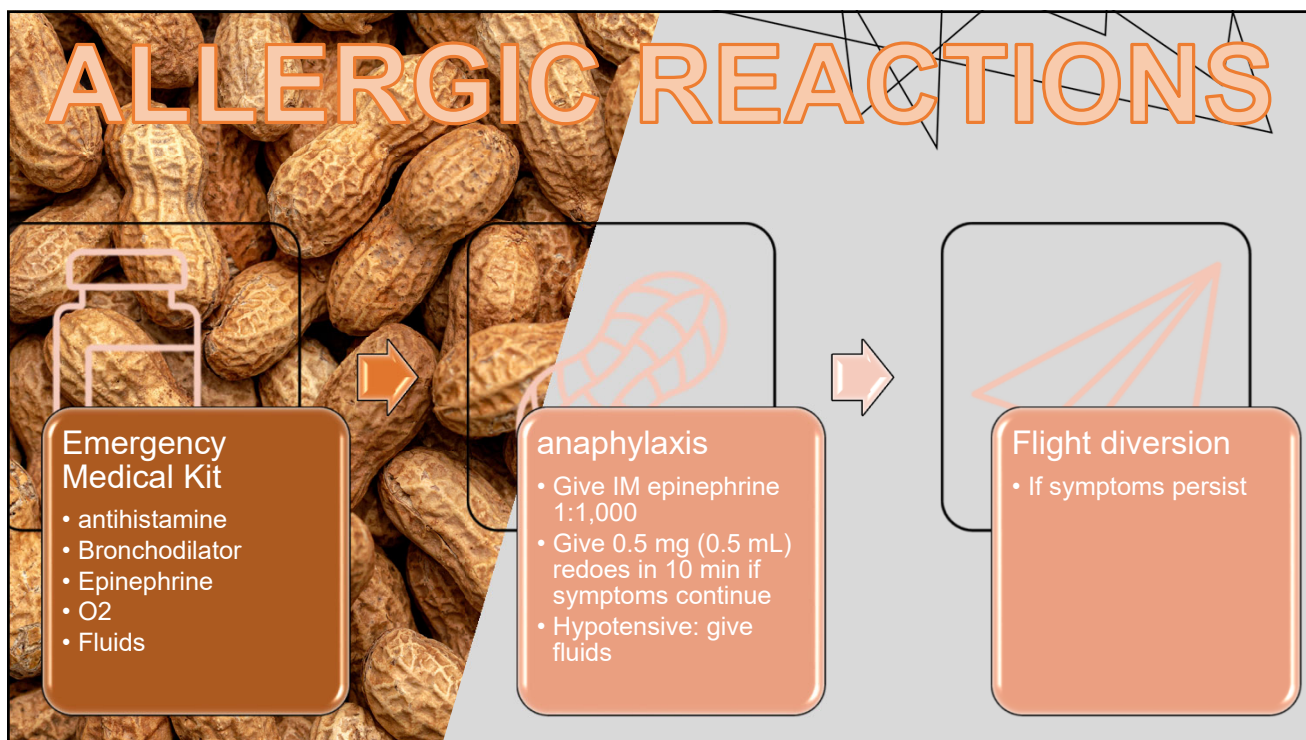
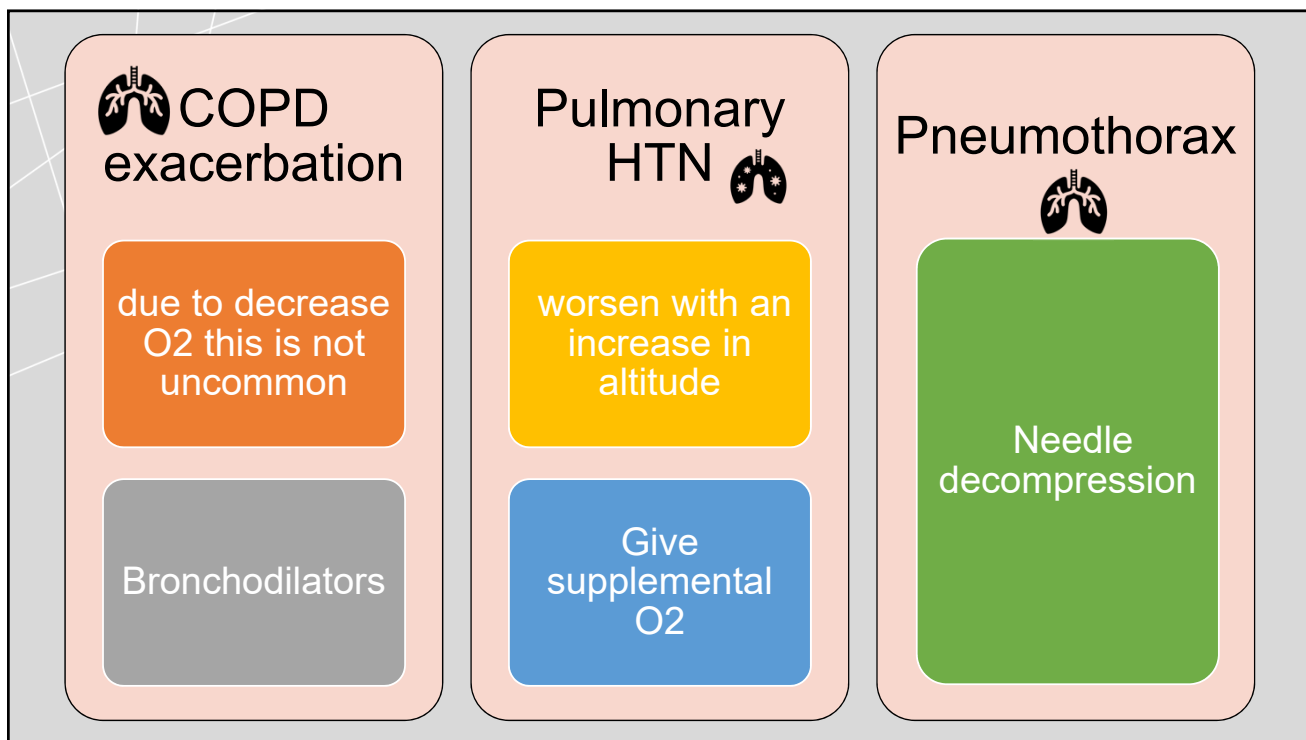
## OTHER CAUSES OF ALTERED MENTAL STATUS

|  |   |   |   |
|--|---|---|---|
| <p><b>Seizures/post-ictal</b></p> <p>5.8% of emergencies</p> <p>Air travel can lower the seizure threshold</p> <p>Leave patient in seat and surround with blankets</p> | <p><b>Hyper/hypoglycemia</b></p> <p>1.6% of emergencies</p> <p>May need to ask for a glucometer</p> | <p><b>Opioid Overdose</b></p> <p>Narcan</p> <p>Provide oxygen</p> | <p><b>Diversion/immediate landing</b></p> <p>Unless a reversible cause is found</p> |
|--|---|---|---|





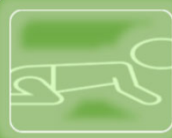
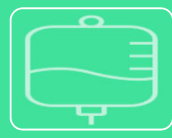

|   |  |   |
|---|--|---|
| 12% of emergencies  | Large differential                       | <h2>Shortness of breath</h2>  |
| Cabin pressurized equivalent altitude of 6,000-9,000 feet               | Resting O2 sat <92% travel with extra O2 |   |
| <p>Dalton's Law</p> <p>Partial pressure of arterial oxygen: 60 mmHg</p> | Descent to lower altitude/Diversion      |   |

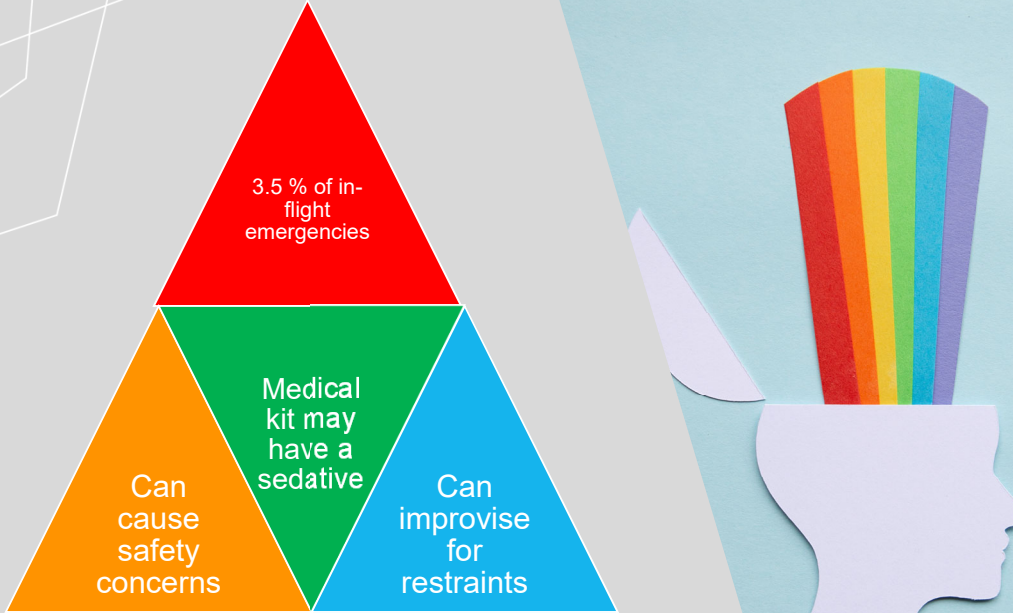




**Obstetrical Emergencies**



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



3.5 % of in-flight emergencies

Can cause safety concerns

Medical kit may have a sedative

Can improvise for restraints

# Psychiatric Emergencies

# 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 19

- 

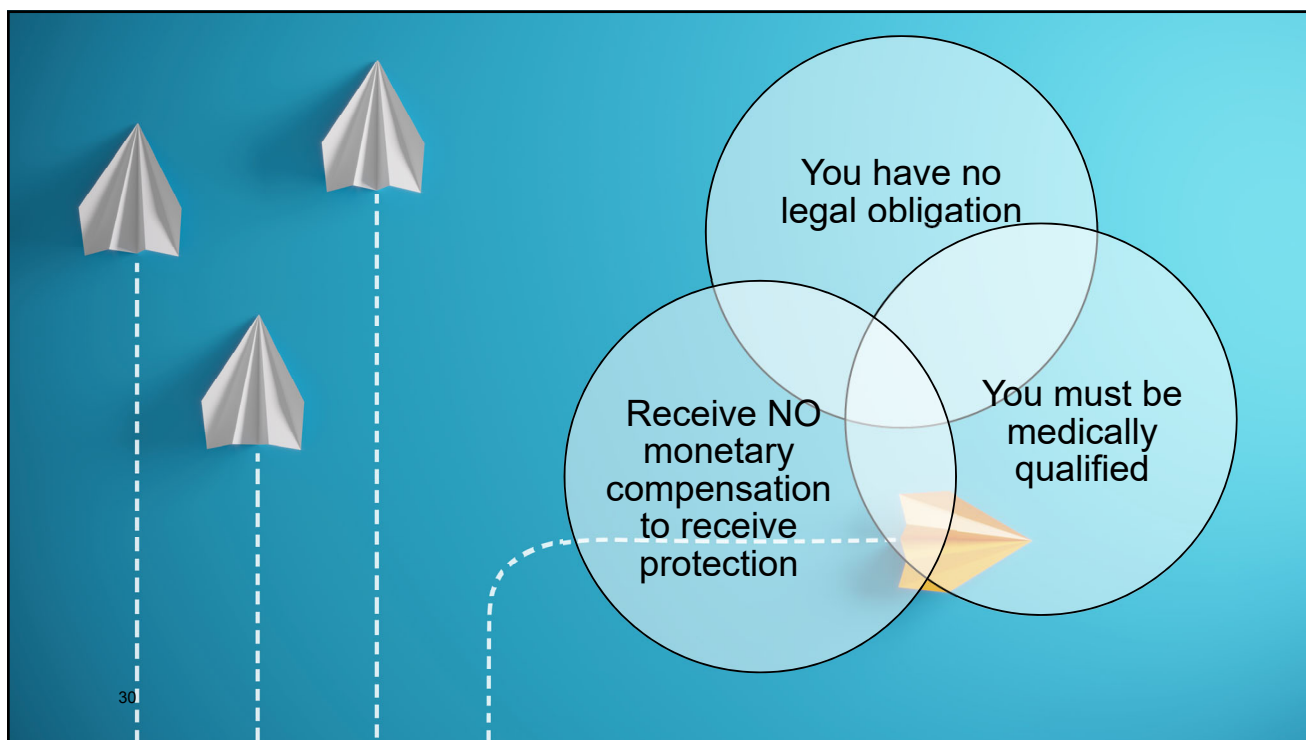
only applies in medical emergencies  
 Protections are not provided for non-emergencies
- 

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



## What Should I do If I respond?

Obtain Airline medical incident form

Document assessment and interventions administered

You should request a copy for personal records

hand over care to on-ground medical staff once the plane lands

## Flight Diversion

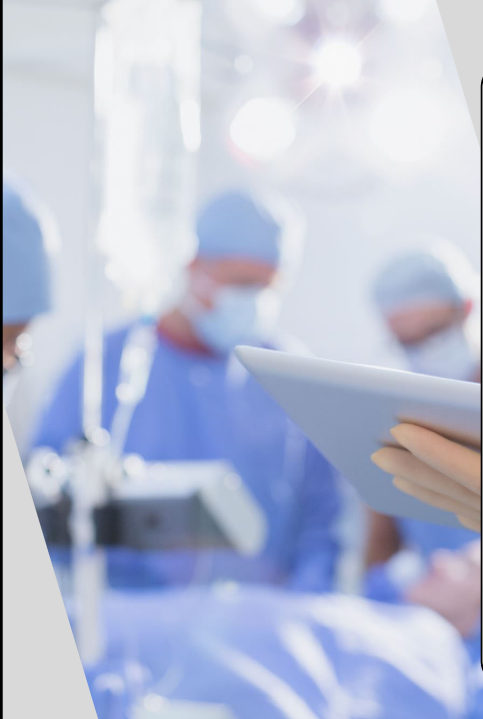
Can recommend diversion if patient's condition is unstable

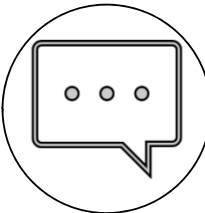
Diversion is Expensive  
\$3,000-  
\$100,000


Diversion is made in consultation with ground-based medical expertise


The pilot makes the final decision regarding diversion



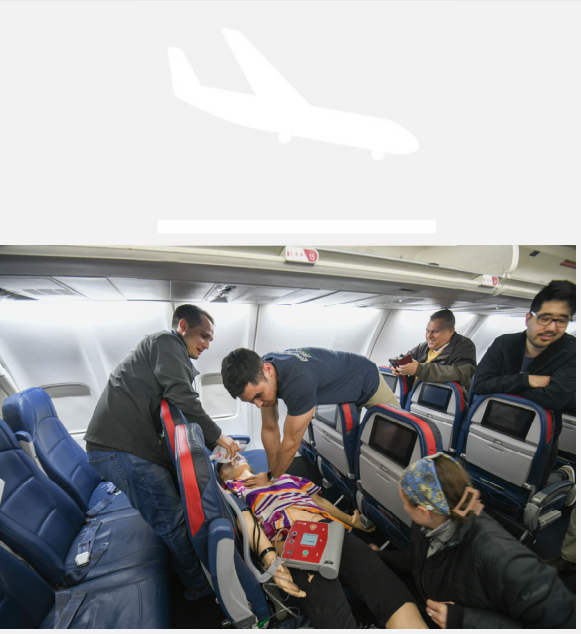



  
Introduce yourself, state level of training and specialty

  
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://escholarship.org/uc/item/3706n3px>
- 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://escholarship.org/uc/item/4w6771v6>
- Kommor 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/NEJMra1409213
- 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, 2019:293-304. doi:10.1007/978-3-030-22445-5\_29