

# Handling **In-Flight** Medical Emergencies



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Every year, more than 500 million Americans travel by air in the U.S. (1) Medical emergencies aboard aircrafts are inevitable, and an estimated one per 10–40,000 passengers will experience one. (2) With commercial air traffic increasing, these emergencies are expected to become more frequent as the percentage of older people increases. (3) Although flight attendants are required to undergo initial and recurrent training on aviation medicine, first aid, CPR and automated external defibrillator (AED) usage every 12–24 months, EMTs, paramedics and other medical professionals can still provide valuable assessment and treatment to passengers who become ill in flight. (4,5) EMS providers should be aware of the legal protections afforded to them as Good Samaritans of the sky, along with equipment and technologies aboard aircrafts that will assist in providing patient care.

All EMS providers know that state Good Samaritan laws protect them legally while providing assistance off duty and in good faith. In 1998, these protections were expanded to medical professionals in the sky providing in-flight emergency care, with the enactment of the Aviation Medical Assistance Act by Congress.

The act specifically protects state-qualified EMTs and paramedics, along with physicians, nurses and physician assistants. (6) It states, “An individual shall not be liable for damages in any action brought in a Federal or State court arising out of the acts or omissions of the individual in providing

or attempting to provide assistance in the case of an in-flight medical emergency unless the individual, while rendering such assistance, is guilty of gross negligence or willful misconduct.”

The Aviation Medical Assistance Act also mandates U.S. commercial air carriers that have at least one flight attendant be equipped with an AED, along with an emergency medical kit (EMK). (8,9,10) Other national aviation regulators, such as the European Aviation Safety Agency (EASA), still don’t mandate that European commercial aircraft be equipped with AEDs. (11,12,13,14) (Pending amendments to the EASA regulations that are currently in the rulemaking process are expected to change this.)

Fortunately, a significant number of airlines exceed national regulatory requirements. For example, the U.K.-based carrier Virgin Atlantic



equipped their aircrafts with AEDs as early as 1990, despite no law requiring AEDs be carried on British aircraft. (15) American Airlines had the distinction of being the first airline in the U.S. to equip its fleet with AEDs in 1997, along with the first documented domestic in-flight cardiac arrest save in 1998. (16) **Medical Equipment Available on Board** EMS providers may be surprised at what medical equipment is available to them on a commercial aircraft. Providers on commercial flights with at least one flight attendant can expect to find a first aid kit, portable oxygen bottles, an AED and an EMK on board. The contents and quantity of equipment is regulated carefully by the Federal Aviation Administration. As such, the equipment carried by different air carriers is fairly universal.

Although the first aid kit contains only basic equipment, such as bandages and splints, the EMK, which was envisioned by the FAA to be more of a doctor’s kit, provides a considerable range of emergency pharmaceuticals and devices that most EMT-Intermediates and paramedics would be familiar with. These items include a stethoscope; blood pressure cuff; bag-mask resuscitator (one required, child/infant optional); oral airways (three sizes required); nitroglycerin (at least 10 tablets); aspirin (at least four tablets); albuterol (one metered-dose inhaler required); dextrose 50% (at least 25 grams); injectable 1:1000 epinephrine for an allergic reaction (at least 2 mg); oral antihistamines (at least four tablets); IV antihistamines (at least two ampoules) and cardiac resuscitation drugs, including

IV 1:10,000 epinephrine (at least 2 mg total), atropine (at least 1 mg total) and lidocaine (at least 200mg total). Five-hundred milliliters of normal saline, an IV drip set and a variety of needles and syringes are also to be equipped.

However, much of these advanced devices and drugs not required to be in the EMK are reserved for air carriers travelling on intercontinental flights. The EMS provider in most aircraft medical emergencies may quickly realize the limitations of the medical equipment provided on board.



## Limitations of Equipment & Alterations to Care

The biggest challenge is the tight space in which a patient may be located, particularly in such areas as coach or lavatories. Aircraft in the U.S. with 60 or more seats are required to carry an on-board wheelchair, which is designed to allow access into the aisles and lavatory. (24) Some airlines carry mobility aids, such as transfer slings for short moves, but this equipment isn’t mandated aboard aircrafts.

Should a patient need to be placed supine, such as in a cardiac arrest situation, flight attendants are typically trained to use able-bodied passengers to assist in manually moving the patient into the aisle or the galley area where the patient can be more easily managed. Flight attendants are also specially trained on how to open a locked lavatory door if a passenger becomes unconscious inside.

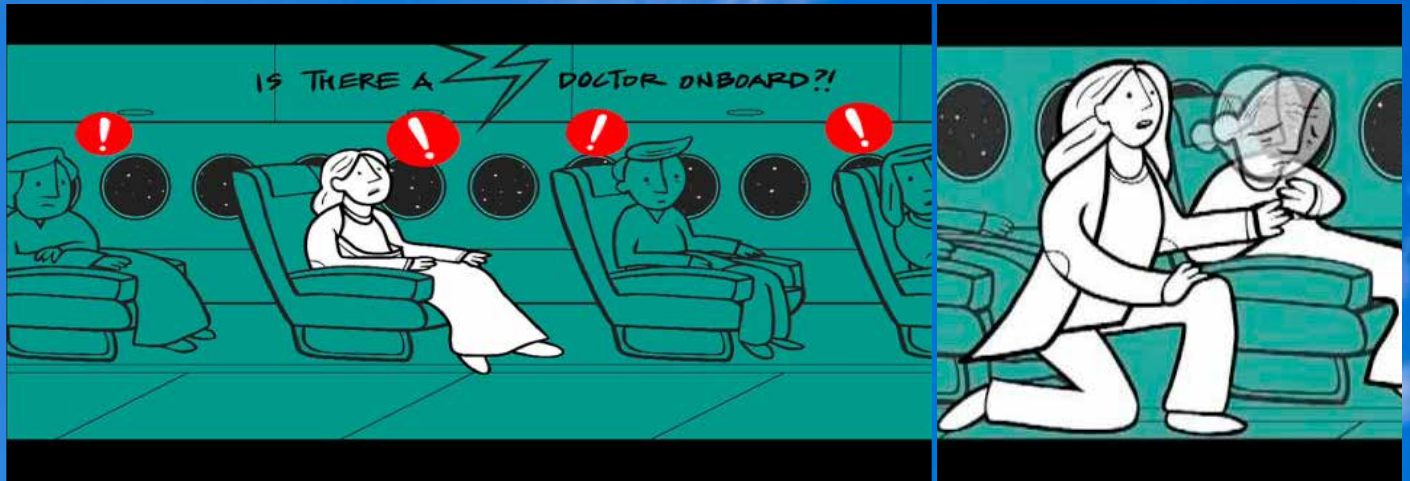
Here are some equipment challenges that EMS providers may face, some of which are the result of peculiarities with Federal Aviation

## Regulations:

- During patient assessment and evaluation, auscultation in an aircraft using a stethoscope can be difficult due to ambient engine noise and instead require that systolic blood pressure be palpated.
- Aviation portable oxygen bottles (POBs)







generally have only one of two fixed settings: “low flow” (2 lpm) and “high flow” (4 lpm) for first aid purposes and decompression emergencies, which is far lower than what is normally used in EMS settings. Even more unusual, oxygen tubing for the bag-valve mask resuscitations aren’t required to be compatible with these on-board oxygen bottles.

- The AEDs on board aren’t required to have ECG screen even though ACLS medications are provided; without an ECG screen, it may be more difficult for the EMS provider to determine which cardiac resuscitation algorithm and drug to use during a prolonged cardiac arrest. If an AED does have an ECG screen, it’s typically limited to a leads II/paddles view.

- Glucometers aren’t mandated in EMKs, despite the requirement to have dextrose 50%, which may make it difficult to identify hypoglycemic

emergencies. These limitations may require creative thinking by the EMS provider, such as consulting the ground-based physician for ACLS medication orders, or, for example, using the public announcement system to ask if any passenger on board the aircraft would be willing to share their personal glucometer for the medical emergency

**Conclusion**

Despite being in a pressurized metal container at 30,000 feet, U.S. commercial aircraft have well-trained crews with considerable equipment the EMT and paramedic can utilize in a medical emergency. EMS providers are well suited to being first responders of in-flight emergencies because the creativity and innovation they use every day at work will assist in providing appropriate patient care.

