



A Doctor's View of In-flight Medical Emergencies



By David J. Gibson, MD

"IS THERE A DOCTOR ON BOARD?" These are perhaps the six most dreaded words a doctor can hear while traveling on an aircraft. Inevitably, the announcement is preceded by a commotion somewhere on the airplane. Usually one or more earnest-looking people have congregated around an individual in some stage of distress.

I travel frequently on business, so I have had heard these words a half dozen times over the past several years.

Some of my colleagues have told me that they simply will not get involved in these uncontrolled situations. The risks, both personal and financial, are too great. As for me, I bought the whole deal when I became a doctor, for better or worse. My view is that I have a moral and ethical responsibility to act in these cases.

There is no legal requirement to assist a fellow passenger with emergency care while in-flight. No prosecutor, state or federal, will check the in-flight roster to see whether a physician was aboard. Still, it would be prudent to use the prefix "Mr." before your name when booking a flight if you do not want to become involved.

Here is the good news. In 70 percent of cases where a passenger falls ill on a US-registered aircraft, a healthcare professional has stepped forward to lend a hand. In 79 percent of cases, the diagnosis generated on board the aircraft matched that given at a hospital later.

The bad news: according to a CNN report, from 1997 to August 1999, at least 300 travelers on U.S. airlines died of cardiac arrest or other acute illnesses before reaching their destination.

Case Studies

Air travel can precipitate or contribute to medical problems in a number of ways, even in previously healthy travelers. The stress of getting to and through a modern airport may be considerable. A delay compounds any anxiety and may mean that too long is spent drinking at the bar; three fourths of medical emergencies occur while travelers are still on the ground

Following are two personal examples of how these stressful situations tend to unfold.

The first involved an American Airlines direct flight from Miami to Los Angeles. The aircraft was a wide body with five abreast in the center seating section. The flight was on final approach into LAX, probably near Redlands.

It was late at night, around 11 p.m., and I was not at my best given my east coast jet lag. The dreaded announcement seeking assistance came over the plane's PA system. When no one answered, I stepped into the aisle and was immediately directed to the galley in the tail section of the aft main cabin.

A middle-aged woman was on the floor, complaining of severe head pain, blurred vision and left outer thigh pain. The flight attendants indicated the woman had fallen while leaving the restroom. By now the plane was approaching downtown LA and one attendant was in an intense phone conversation with the flight deck.

I did a quick evaluation, more suited for a military triage setting than the classical Internal Medicine physical exam that I was trained to perform. There was no obvious evidence of external or internal injuries but the woman persisted in her complaints.

Westwood was now approaching on the starboard side of the aircraft.

At this point, the captain is flying the plane but I am in essence in command of the aircraft. The attendant engaged in intense phone discussions with the cockpit wants to know if the pilot should abort or proceed with landing.

I make the decision. The five people in the last row of the middle section are told, not asked, to move *immediately*. All comply. The plane is over Inglewood. The Forum's parking lots are full; the Lakers must be playing.

With the assistance of the attendants, we carefully hoist this woman into the just vacated seats and strap her in. I sit on the aisle seat and hold her legs. Not five seconds later, the tires screech as we hit the tarmac.

As we taxi to the gate, the passengers who have been watching this drama are told to stay in their seats and not get up under any circumstances. The doors open while emergency personnel accompanied by airport police flood onto the aircraft. The woman is placed onto a stretcher and removed. The other passengers are allowed to deplane and I am left with the attendants filling out reams of forms.

I never heard about the woman thereafter.

On a Southwest Airlines flight from Phoenix into Sacramento, the same scenario unfolds. The announcement seeking assistance is given. I wait, no one answers the call and I get up.

I am directed to the front of the aircraft. An elderly woman who had brought her own oxygen on the flight is now in obvious distress. The captain is standing in the forward galley intensely observing the commotion. The first responders, nurses and EMTs, elect to return to their seats, and I am alone with flight attendants and a woman who says she "cannot breathe."

I am given the onboard emergency kit while one attendant fills out the ubiquitous form. The kit contains a stethoscope and a sphygmomanometer. I find various oral medications including acetaminophen, antihistamines and prednisone in the emergency pack. The pack also includes injectable drugs including epinephrine with the appropriate syringes and needles needed for administration.

A quick examination shows a cyanotic-appearing elderly woman who is ineffectively moving air during both inspiration and expiration. She has a heart rate of 190 and her blood pressure is 160/60. She has a bag full of unmarked pills and onboard family members say she has a chronic lung condition.

Evidently, when this woman boarded the plane at Phoenix, she had no symptoms that would disqualify her from flying. However, at altitude, the situation is quite different. The drop in pressure (the cabin pressure is kept at the equivalent of 6,000-8,000 feet altitude) caused a 30 percent gas expansion with a resulting drop in oxygen pressure.

I am told Southwest has a direct connection to an emergency room in Phoenix. Within seconds, I am connected to an ER physician under contract with the airline and available

to physicians facing in-flight emergencies. We briefly discuss the case. We agree that the elderly women's clinical status is precarious. The call to divert the aircraft in-flight is mine to make.

I give the captain, now immediately behind me, my opinion that the plane should be on the ground as soon as possible. The captain returns to the flight deck. The intercom crackles with the usual landing instructions for the passengers. Within minutes, we are on the deck in Reno.

The elderly woman is met by emergency personnel and transported to the hospital. The door is closed; we taxi out to the runway and take off again. Shortly thereafter, the plane arrives at Sacramento, its intended destination. I am left with the usual multiple forms to fill out.

Observations

Having answered the call to render assistance on American Airlines, United Airlines and Southwest Airlines, I have a few observations about these companies.

During these episodes, only Southwest Airlines had the air to ground link with another physician who was immediately available for consultation. It gets very lonely at 30,000 feet when you are working in a completely uncontrolled environment. Having access to another physician who can render a second opinion was of great value to me.

I was not surprised when Southwest alone took the time to say thank you for my willingness to get involved. In five separate incidents in which I rendered assistance to a fellow passenger, only Southwest took the time to send a thank you letter following each incident. In addition, each letter contained a free round trip ticket, which was not necessary but was appreciated, to anywhere Southwest flies. In addition, each year I get a letter greeting on my birthday from Southwest. In my experience, the little things tell you the most about an organization or a company.

What to expect on a flight

Chances of physicians facing similar emergencies will increase in future flights. In the US alone, there are 13 to 33 in-flight medical problems occurring each day. Worldwide, as many as 350 in-flight medical problems occur each day.

Time zone changes and altered meal times can result in insulin dependent diabetics becoming hypoglycemic. Passengers on other strict drug regimens, such as for epilepsy, may also have problems, especially if they have packed their medication in their checked baggage. Restricted space in most seats encourages musculoskeletal aches and venous stasis.

Older, less healthy, passengers often fly considerable distances, and they expect that the airlines will look after them should problems arise. Similarly, people with known illnesses or disability expect not to be discriminated against. They assume that special facilities will be provided to make their journeys possible.

The increasing average age of travelers and the reality that people are becoming so comfortable with air travel that they attempt trips with disregard for existing medical conditions (like the dyspnic patient off-loaded in Reno) is another factor that guarantees that in-flight emergencies will only increase.

In addition, as the size of future aircraft increases, the statistical risk increases that one of the passengers will need urgent in-flight medical help. For example, the new A380s can carry twice the number of passengers (at least 550) of current in-service airliners. In addition, intercontinental flights of 16 hours duration or more are becoming commonplace.

Onboard medications and equipment that will be available to you. The Federal

Aviation Administration issued final rules on airline emergency equipment in 2001. These rules require that airline medical kits include antihistamines, aspirin and inhalers; defibrillators must be on all domestic and international flights.

Minimum standard supplies within the on board medical kit will include: a sphygmomanometer, stethoscope, three sizes of oral airways, syringes, needles, 50 percent dextrose injection, epinephrine, diphenhydramine, nitroglycerine tablets, basic instructions for use of the drugs in the kit, and protective gloves.

Additional supplies for airplanes with a payload capacity of more than 7,500 pounds includes: automatic external defibrillator, non-narcotic analgesics, oral antihistamine, aspirin, atropine, bronchodilator inhaler, lidocaine, saline solution, intravenous administration kit with connectors, self-inflating manual resuscitation device and cardiopulmonary resuscitation masks.

The on-board defibrillator now in use can physically withstand in-flight environmental demands, such as vibration and variations in temperature and altitude. They do not electronically interfere with, and are not affected by, the airplane's instruments.

In July 1997, American Airlines became the first U.S. airline to carry automatic external defibrillators and the third internationally, after Britain's Virgin Atlantic and Australia's Qantas Airlines. American put defibrillators on its planes that fly over-water routes to Europe, Japan, the Caribbean, Central and South America, and some domestic destinations.

The level of medical training the flight crew will have. The *raison d'être* of the flight attendant is passenger safety. The role of flight attendant as a provider of in-flight medical assistance has a long and distinguished history.

In the late 1920s, Boeing Air Transport, one of the four predecessors of United Airlines, hired Ellen Church, a registered nurse as the first female crew member for a commercial airline. Boeing Air Transport was extremely conscious of the public's fear of flying during the airlines' formative period and airline officials needed to promote in-flight service with an image of stability, safety and comfort to the traveling public.

Ms. Church believed that it was essential to have registered nurses to help passengers with the discomforts of flying and medical emergencies. The first eight women hired were required to be registered nurses. In fact, until World War II, most major U.S. airline companies required flight attendant applicants to be graduate nurses who had completed a three-year training course in an accredited hospital and practiced the profession for one year. In 1941, with the entry of the United States into World War II, airlines dropped their nursing requirements because nursing skills were in demand for the war effort.

Currently, the FAA requires every newly hired flight attendant to receive programmed safety instruction. First aid training is included in this instruction. In a 1998 survey of the American Flight Association's (AFA) safety and health representatives, it was reported that each carrier's flight attendant training was different.

According to testimony by Patricia Friend, the President of AFA before the House Transportation and Infrastructure Committee in 2000, the AFA believes that, overall, flight attendants do not receive adequate training in the most basic first aid, in order to manage a medical emergency in the cabin. During initial training, some of AFA's members receive first aid instruction lasting less than 30 minutes, while others receive up to a few hours. Following this training, flight attendants receive additional first aid instruction every few years.

On average, about a third of flight attendants deal with a minor medical emergency every few months, a third work flights where a passenger has a medical emergency once or twice per year, and the other third go years at a time without any incident. Some airlines give Red Cross CPR certification, while others only provide training without certification.

Air to ground links for consultation. The Southwest flight mentioned above had MedLink, the emergency service branch of MedAire, on board. MedAire's MedLink Emergency Tele-medicine Center is located in the emergency facilities of a Level 1 Trauma Center in Phoenix, Arizona. MedLink enables the onboard physician to consult with an on-ground specialist physician during a medical emergency at any time, almost anywhere in the world, either by satellite or radio. It is generally possible to monitor a patient's heartbeat and transmit pictures and other diagnostic data.

Published data from British Airways shows that in 2004 BA carried 35.7 million passengers and made contact with MedLink on 2,362 occasions. Based on in-flight conditions, a diversion was completed in 47 of these cases.

Conditions you will likely confront: MedAire summarized more than 8,500 medical calls managed last year in the company's MedLink Emergency Telemedicine Center. Among those calls, the top in-flight medical categories were:

- Vasovagal 21.4%
- Gastrointestinal 14.4%
- Cardiac 12.2%
- Respiratory 11%
- Neurological 9.7%

In 13 percent of serious medical problems that develop on board, the aircraft is diverted for an emergency landing.

The reality that the aircraft is a moving platform cannot be overlooked. For example, in 1997, one passenger was killed and 110 injured when a Boeing 747 suddenly dropped 1,000 ft on a flight from Japan to Honolulu.

Legal liability for the doctor. British Airways says it indemnifies doctors who answer emergency calls from malpractice suits that may be brought by litigious passengers.

Currently, all 50 states have some form of Good Samaritan legislation. But which legislation covers a physician who is flying? The Aviation Medical Assistance Act, passed by Congress in 1998, "...limits non-employee passenger liability for providing assistance during an in-flight medical event unless the assistance is grossly negligent, or is willful misconduct." To date, no physician has been sued successfully for rendering assistance during in-flight emergencies.

If you need to divert a flight. The commonest reasons for diversion are cardiac incidents (28 percent), neurological problems (20 percent), and food poisoning (20 percent). Other causes include uncontrollable pain or bleeding, major injury with shock, impending birth, and an uncontrollable mental disturbance.

The chance that you will lose your patient. Various figures are reported for in-flight deaths, in the range of one death per 1.5-4.7 billion passenger miles flown. There is a suspicion, however, that death rates are underreported because of bad publicity and, as on the ground, the patient will sometimes not be declared dead until arrival at hospital.

Conclusion

Despite all the disillusionment that has crept into the practice of medicine, I still believe that being a physician is one of the highest callings a human being can enjoy. Even though few say thank you (except for Southwest Airlines), you are exposed to unknown legal liability and the paperwork requirements disrupt your travel schedule; the opportunity to render aid to another human being is eminently rewarding.

I am no longer able to relax on a flight. Alcohol is not an option. Multiple airlines send me books of coupons for free drinks each month. I give them to friends. At any moment, you can be called upon to render lifesaving aid to a fellow passenger. You may be asked

to decide whether a flight should be diverted and an emergency landing initiated.

In short, it is great to have the privilege of being a doctor.

djgibson@winfirst.com

Sierra Sacramento Valley Medical Society
5380 Elvas Avenue #100 • Sacramento, CA 95819
916.452.2671 PH • 916.452.2690 FX • Email: info@ssvms.org

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