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## Medical Kits ... How Effective?

*Improved cabin crew training and additional medication and medical equipment are needed, says the author, based upon results of a recent survey of medical emergencies experienced by air travelers.*

by

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The requirement for commercial transport aircraft in the United States to carry "doctors only" medical kits was established by the U.S. Federal Aviation Administration (FAA) August 1, 1986.

The present contents of the medical aid kit represent the best estimate by the FAA and its advisers of items that would be needed in the event of inflight medical emergencies. These kits contain:

- Stethoscope
- Sphygmomanometer
- Oropharyngeal airways, three sizes
- Sublingual nitroglycerin
- Needles/syringes to administer epinephrine, diphenhydramine and 50% dextrose

Generally, the contents of the kit are to be administered by or with the approval of a medical doctor (M.D.) or, with some carriers, a doctor of osteopathy (O.D.). No other personnel, medically trained or not, may authorize the use of the medical kit.

In connection with the rule, the FAA instructed its air carriers to gather information about all inflight openings of the kit, as well as details about inflight deaths and unscheduled landings.

For years aviation safety groups, members of the U.S.

Congress and cabin flight attendants complained that standard first aid kits carried aboard U.S. air carriers were inadequate to treat anything more than minor medical problems, as these kits generally contained little more than a few bandages and splints. Consumer groups, in particular, contended that the available equipment was "grossly inadequate" to handle a majority of the serious inflight medical problems air travelers may develop.

### Background

At the time of regulation implementation, the FAA estimated that 21 deaths occurred from natural causes during U.S. commercial flights each year, most of them involving the elderly. Reports from 48 U.S. commercial carriers to the FAA indicated that more than 1,100 inflight medical emergencies occurred between August 1986 and July 1987. A report in the *Journal of the American Medical Association* referred to 577 inflight deaths between 1977 and 1984.

With the adoption of the rule governing medical kits, U.S. air carriers are now at relatively the same level with respect to medical aid kit standards as several non-U.S. operators, including Scandinavian Airlines System (SAS), Air France, and British Airways.

U.S. airlines in the past opposed the upgrading of inflight medical kits, contending that it would be prefer-

able to divert an aircraft in the event of such an emergency, notify ground personnel of the medical problem on board and land at the nearest airport where paramedics and/or doctors would be waiting.

In response to this argument, it was cited that the time required for such an emergency landing could be excessive, considering the distance to an airport capable of accommodating the particular aircraft involved, such as a wide-body type, weather conditions and the availability of proper medical assistance upon arrival.

## Recent Survey

In light of the aforementioned rulemaking and inflight medical emergency experience, some questions remain. What medical emergencies are likely to occur to air travelers during their journey? Will trained personnel be available to treat their medical emergencies? Will there be adequate equipment on board the aircraft for those personnel to use?

Recently the issue of medical emergencies during air travel was examined from a different point of view: a survey of all medical emergencies among travelers at a major U.S. international airport.

The study was undertaken as a cooperative effort involving a major local university, county emergency medical services and airport fire department emergency personnel.

The purpose of the survey was to obtain information on the frequency and type of medical emergencies experienced by air travelers — not only in flight but also in the periods immediately before and after travel. Such information was felt to prove helpful not only to ground emergency personnel who are normally expected to respond to such emergencies but also to those physicians, nurses and flight attendants who may be asked to render assistance during flight.

Further, this information is seen to substantially contribute to ongoing discussions on whether the contents of the present FAA-mandated medical kits in the U.S. are useful for the various problems that occur and whether additional medications or equipment are needed, in addition to implications relative to additional emergency medical training requirements for flight attendants.

It is noted this survey recorded only medical emergencies in which someone requested assistance from the airport emergency medical services system. An inflight emergency during air travel was determined most often (51 percent) by an airline employee (generally flight attendants) aboard the aircraft and occasionally by a physician (13 percent) who made a quick evaluation of

the passenger and decided to request an unscheduled landing or medical assistance upon arrival.

## Methods Used

The one-year survey covered all emergency calls to the referenced airport, including emergency calls for travelers, airport and airline employees, and any other people at the airport.

The data collected included the following specifics: name, address, age, sex, action taken, mechanism of injury, procedures, outcome, and type of problem.

## Results

Over the period of the study, emergency personnel evaluated 1,107 patients: 68 percent were passengers, 21 percent were employees of the airport or airlines, and 11 percent were area residents, primarily friends and family of airline passengers. The analysis phase of the study concentrated on 754 (68 percent) calls for passengers.

Of the 754 passengers evaluated, 75 percent experienced problems in the airport either before or just after a flight, whereas 25 percent experienced their problems during flight.

It is noted that for these 190 inflight passengers, emergency personnel met the aircraft on arrival; seven (4 percent) of these responses were to aircraft that made unscheduled landings at the airport.

## Traveler's Profile

The study revealed that, of people who experienced in airport emergencies, 26 percent were aided by an airline employee before emergency personnel arrived, whereas only 1 percent were assisted by a physician. With respect to inflight emergencies, however, airline employees (mainly flight attendants) rendered needed medical assistance for 51 percent of the passengers, while a physician was noted to have provided assistance for 13 percent.

It was revealed, too, that 33 percent of all ill travelers required ambulance transport by aid unit, medic unit, or private ambulance to the nearest emergency facility. Inflight emergencies accounted for 44 percent of such passengers requiring emergency transportation upon landing.

## Common Emergencies

In consideration of all travelers encountering medical emergencies, it was found that 60 percent of such problems were medically-related, with such problems being

more frequent for inflight emergencies than for in-airport emergency situations.

Of specific interest, as noted in the study, is the fact that the most frequent medical complaints in flight were gastrointestinal, such as nausea, vomiting, diarrhea, and abdominal pain. Shortness of breath was cited as the most common inflight respiratory problem. Additional complaints were cardiac-related, such as chest pain and angina. Loss of consciousness and seizures were indicated as two other frequent inflight problems.

During the one-year period of the study, five cardiac arrests occurred among all travelers, with only one of these arrests taking place onboard an aircraft (occurred while aircraft was on the ground).

### **Medical Kit Effectiveness**

It was determined by the study that the current "doctors only" medical kit contains useful items in treating inflight medical emergencies. However, it is likely that the kit may be inadequate to deal with several other problems that may occur in air travel, including severe bronchospasm, drug-induced loss of consciousness, shortness of breath due to congestive heart failure, and severe motion sickness. The management of such problems could be better aided by the addition of several medications to the kit, as detailed in the study. These medications include: injectable antiseizure medication, inhaled bronchodilator, injectable narcotic antagonist, parenteral diuretic, and parenteral antiemetic.

Sudden cardiac death was considered in this survey, as it represents the most frequent cause of death during air travel, although actual death during a flight remains extremely rare. Of particular concern here was the possible need for the new technology of automatic external defibrillators being made available inflight, especially in light of transoceanic international flights of long duration by increased numbers of air travelers. The observations in this survey, however, were found not to support this recommendation at this time.

### **Flight Attendant Training Concerns**

Additionally, the study called attention to the fact that U.S. flight attendants are not allowed to diagnose or administer medications in flight. The question here is "... does this survey suggest any additions to flight attendant training for medical emergencies?"

The study recommended continued training with respect to lacerations and closed minor trauma. Conditions involving seizures, shortness of breath, chest and abdominal pain, and loss of consciousness, are more "problematic." As cited in the study: "These complaints present

diagnostic difficulties to experienced physicians. Any expectations that it would be acceptable to train flight attendants to diagnose and treat such problems in the United States is probably remote."

A progressive approach to this thought, however, is present in Europe and more specifically in the United Kingdom where selected senior cabin attendants receive specialized training in patient assessment, triage and immediate inflight treatment of specific medical emergencies. As stated in the study "... Though the ultimate effect of such programs has not been fully evaluated, preliminary observations reveal enthusiastic acceptance on the part of the cabin attendants, staff, pilots and passengers. In addition, these specially-trained senior cabin attendants have been useful in the prevention of unscheduled landings for medical emergencies."

Undoubtedly, many unscheduled landings could be prevented by intelligent triage decisions in the air thereby preventing the expense and inconvenience associated with an unscheduled landing.

Proposals to train selected, experienced flight attendants to a higher level of medical skill merit serious consideration. Such considerations must, out of necessity, include not only cost effectiveness analyses but also the broader issue of who has responsibility for the emergency care of passengers during air travel, in addition to the associated legal ramifications.

As revealed in the study "... Fully 42 percent of the inflight emergencies that occurred in this survey, once evaluated on the ground, required no more evaluation and treatment than that provided by emergency medical technicians."

From a realistic viewpoint, expanding emergency medical skills for flight attendants could greatly assist in meeting the goal of emergency medicine to reduce pain and suffering in the most rational, expeditious manner. Such basic life-support training, in addition to required first aid training presently in effect, would enhance flight attendants' personal skills and would prove an invaluable asset if faced with a critical medical condition when no physician or trained medical personnel were on board.

### **Conclusions**

As a result of the study, several determinations were made:

- Inflight medical emergencies necessitating a request for ground emergency assistance and evaluation were rare.

- The most troublesome inflight medical emergencies include: unconsciousness, shortness of breath, and abdominal and chest pain.
- Improved flight attendant training, closer to the basic level of emergency medical technicians, may improve the quality and timeliness of inflight emergency care.
- The current medical kit required aboard all U.S. air carriers contains clinically useful items and should continue to be required. However, the kit may need to be supplemented with additional medications and equipment. ♦

## References

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# Some Good from the Bad

*The "laboratory" of aviation accident investigation often yields new data on ways to reduce aircraft occupant injuries in future mishaps.*

The investigation into the crash of the British Midland Airways Boeing 737-400 early in January is concerned with other than the direct causes of the accident, and may help reduce injuries in future accidents.

The new airliner was equipped with passenger seats meeting the most recent 16-G acceleration requirements of the U.S. Federal Aviation Administration, and a very comprehensive study of survival aspects is an integral part of the accident investigation.

When the aircraft crashed on approach to the East Midlands airport, after engine problems en route from Lon-

don Heathrow to Belfast, the nose section was detached and the tail section buckled over and to the right of the center section. The overwing cabin area received less seating damage than the other areas. Fatal injuries claimed the lives of 47 passengers, serious injuries were sustained by 67 passengers and seven crew members, and four passengers and one crew member received less severe injuries.

Because of the wide variety of injuries sustained in the accident, the extensive investigation is expected to yield valuable information on aircraft cabin survivability that may benefit passengers and crew alike. ♦

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