Motion sickness can be minimized by having a patient sit away from engine vibrations, recline, avoid visual stimulation, and sip a carbonated beverage.

Table 4. Safety measures for persons with chronic obstructive pulmonary disease (COPD) traveling by air

Supplemental O_2 if routine arterial blood gas on room air reveals $Po_2 < 55$ mm Hg
Supplemental O_2 if routine arterial blood gas on room air reveals $Po_2 > 55$ mm Hg but Po_2 on hypoxia air mixture test (HAMT)* < 55 mm Hg
Seating in nonsmoking section near lavatory
Adequate hydration
Isometric exercise during flight
Ready access to medical help
Avoidance of alcohol and sedatives
Wheelchair for ground transportation

*Patient with COPD not severe enough to warrant continuous-flow oxygen at home may desaturate at lower cabin pressures in flight. Arterial blood gas, unless drawn shortly before flight (within hours), will not accurately reflect alveolar-arterial gradient at altitude. Giving HAMT (having patient breathe hypoxic air mixture using formula below to calculate amount of O_2 to be mixed with N_2 in laboratory balloon) more accurately predicts which COPD patients should receive continuous O_2 during flight.

$$Fio_2 \text{ mixture} = 0.21 \times (P_c - 47/P_g - 47)$$

where Fio_2 stands for fraction of inspired oxygen, P_c for cabin pressure, and P_g for ground pressure, and where P_c at 5,000 ft = 620 mm Hg and at 8,000 ft = 575 mm Hg.

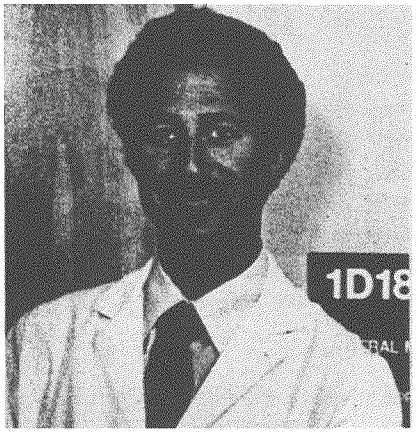
Based on data from Schwartz et al.[3]

potential cerebrovascular accident in evolution; the aircraft should be diverted immediately, oxygen should be administered, and the patient should be placed in the coma position (modified lateral decubitus) across a row of seats (with arm rests retracted) or on the floor.

Confusion responding completely to oxygen administration in a patient with a history or habitus suggestive of chronic obstructive pulmonary disease is probably hypoxemic in origin. Close observation for the remainder of the flight is indicated.

The unresponsive individual should be placed in the coma position already described. In the presence of irregular or labored breathing, an oral airway should be inserted. If an unresponsive victim is not breathing, an oral airway should be inserted and artificial respirations administered, with the rescuer taking breaths from an oxygen mask. A victim who is pulseless to palpation and chest auscultation should be placed on the floor of the aircraft for cardiac compres-

continued



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sions. During cardiopulmonary resuscitation, injection of 0.5 to 1 ml of epinephrine 1:1,000 every five minutes into a distended vein, the sublingual venous plexus, or less desirably, intramuscularly into the deltoid would be reasonable.

The patient in seizure should be restrained only enough to prevent physical injury; oxygen should be administered and a history obtained from companions. Recurrent or persistent generalized convulsions mandate immediate diversion of the aircraft.

Motion sickness can be minimized by having a patient sit away from engine vibrations, recline, avoid visual stimulation, and sip a carbonated beverage. Protracted episodes of emesis may respond to diphenhydramine given intramuscularly (25 to 50 mg in an adult).

Severe pain in the ears or face during descent is likely due to the contraction of trapped gas within the middle ear (barotitis) or the paranasal sinuses (barosinusitis). Swallowing, yawning, and gentle Valsalva maneuvers may relieve symptoms. Nasal decongestants, available in some airline first aid kits, may be helpful.

Good samaritans in the sky

Most states have enacted "good samaritan" laws to protect volunteering physicians from the threat of lawsuit. These laws usually require that (1) no fee for service was anticipated and (2) the medical aid rendered was of a standard compatible with the physician's training. It is possible, but not certain, that state laws will afford protection for in-flight emergencies occurring over their territory. While there exists no federal good samaritan law, Congress is considering such legislation. The situation is less clear for travel outside the United States, especially aboard foreign carriers (some of which carry resuscitation kits even more sophisticated than those now required in this country).

Conclusion

The new, expanded emergency kits now required on US airliners offer the potential for greatly enhanced in-flight diagnosis and treatment, which may in many cases eliminate the need to divert the aircraft. Careful auditing of in-flight emergencies over the next two years will enable the Federal Aviation Administration (FAA) to determine whether the inclusion of defibrillators, parenteral narcotics, sedatives, and antiarrhythmic drugs is warranted. While the status of "good samaritan" legal protection is unclear, the FAA expects that, in the event of an emergency, qualified medical personnel will voluntarily come forward to provide assistance. PGM

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