

**US commercial airlines are not legally obligated to tend to the medical needs of passengers; the provision of first aid and other resuscitation is voluntary.**

**Table 1. Medical problems associated with air travel**

Basis	Disorder
Hypoxemia	Exacerbation of lung, cardiac, or CNS disease; sickle cell crisis
Dysbarism	Barotitis, barosinusitis, pneumothorax, abdominal pain, ruptured viscus
Jet lag	Disturbed sleep, appetite, mood, attentiveness
Motion sickness	Nausea, emesis
Phobia	Hyperventilation, fainting
In-flight accident	Trauma, burns, exposure
In-flight illness	As occur on ground

**Table 2. Contents of medical kits\* for commercial aircraft required as of August 1, 1986**

1. Basic instructions for use of drugs
2. Sphygmomanometer
3. Stethoscope
4. Airways, oropharyngeal (3 sizes)
5. Syringes and needles (4)
6. Dextrose 50% injectable (D-50-W) (50 ml, 1 vial)
7. Epinephrine 1:1,000 (2 ampules)
8. Diphenhydramine (Benadryl, Diphenacen-50) (2 ampules)
9. Nitroglycerin (Nitrostat) (10 tablets)
10. First aid kit (includes flashlight)

\* Number of kits required per aircraft depends on passenger capacity.

with medical consultants on the ground through radio contact. If the volunteer physician is able to adequately manage a self-limited condition, the flight need not be diverted. Under some

circumstances, as will be discussed, the volunteer physician may recommend that the pilot descend to an altitude at which the cabin pressure is equal to that at sea level (about 22,500 ft).

If this does not alleviate symptoms, or if the life of a passenger is threatened or discomfort is intolerable, the pilot should be advised to divert. Prior to the landing, the volunteer physician should send advance information on the patient's condition to the receiving hospital and request that ambulance service be waiting at the flight's terminus.

**A note of caution:** The vibration and background noise inherent during flight make subtle diagnosis by use of a stethoscope or sphygmomanometer difficult. Furthermore, blood pressure readings at cruising altitudes are not highly accurate.<sup>4</sup>

**Medical problems during flight**

Hyperventilation is the most frequently encountered cause of distress during commercial air travel. The diverse symptoms, which include respiratory distress, chest pain, dizziness, and paresthesia, may resemble serious pulmonary, cardiac, or neurologic disease. Hyperventilation usually reflects anxiety about flying, or "air flight phobia," and is best treated by reassurance and by having the patient breathe into a small container, such as an oxygen mask disconnected from the oxygen supply or a paper emesis bag. Those with recurrent air flight phobia should be advised to participate in behavioral modification.

*continued*

---

**The vibration and background noise inherent during flight make subtle diagnosis by use of a stethoscope or sphygmomanometer difficult.**

fication therapy.

Shortness of breath, chest pain, and abdominal pain not due to hyperventilation should be treated with supplemental oxygen. Chest discomfort, or a suspected anginal equivalent in the appropriate individual, may be treated with sublingual nitroglycerin (Nitrostat) every five minutes. If symptoms are not relieved within 15 minutes, the plane should be diverted because of the possibility of an evolving myocardial infarction.

Persistent shortness of breath or severe abdominal pain (likely due to expansion of gas within a hollow viscus) may improve with just a drop in cruising altitude. Subcutaneous injection of epinephrine 1:1,000 (0.3 to 0.5 ml for an adult, 0.01 mg/kg for a child) should be considered for severe dyspnea or wheezing in a young asthmatic or in a situation suggesting anaphylaxis (eg, presence of hives or insect bite, prior history). Intramuscularly administered diphenhydramine (50 mg) (Benadryl, Diphenacene-50) should follow epinephrine in the management of anaphylaxis.

Fainting that responds to lowering the head and raising the legs requires only observation. Persistent lethargy calls for the questioning of companions, searching for a medical alert medallion or card, and adminis-

*continued on page 62*

**Table 3. Contraindications to commercial airline travel**

**General**

**Absolute**

- Unlikelihood of surviving journey
- Contagious or communicable disease
- Extensive skin disease
- Otitis media or sinusitis, severe

**Relative**

- Immobility (bedridden)
- Anemia, severe (hemoglobin < 7.5 gm/dl)
- Anemia, sickle cell alone or with thalassemia or hemoglobin C disorder
- Mental illness (unless escort and sedation available)
- Air travel phobia

**Surgical conditions**

**Absolute**

- Surgery within 10 days (21 days for chest surgery)
- Introduction of air into body cavities for diagnostic or therapeutic purposes within 7 days

**Relative**

- Fractured limb in new, unsplit cast
- Fracture of mandible, with fixed jaw wiring

**Cardiovascular and pulmonary conditions**

- Cerebrovascular accident within 2 wk
- Myocardial infarction with limited ambulation within 6 wk
- Active ischemia or congestive heart failure; uncontrolled hypertension
- Pneumothorax
- Vital capacity < 50% predicted
- Chronic obstructive pulmonary disease, severe (see table 4)

**Gastrointestinal conditions**

- Diverticulitis or colitis, acute
- Hemorrhage from peptic ulcer disease within 3 wk

**Obstetric/pediatric conditions**

**Absolute**

- Pregnancy: within 1 wk of due date or 1 wk after delivery
- Newborn babies: < 1 wk of age or with respiratory difficulty

**Relative**

- Pregnancy: within 4 wk of due date (within 1 wk, see above) for flights > 1 hr in duration

References: 1. National survey of 2,980 physicians, including 1,502 cardiologists and other physicians subspecializing in cardiology, conducted by Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, New Jersey, August 1982

#### Lasix® (furosemide)

A brief summary of the Prescribing Information for Lasix (furosemide) Tablets 20, 40 and 80 mg

**WARNINGS:** Lasix (furosemide) is a potent diuretic which, if given in excessive amounts, can lead to a profound diuresis with water and electrolyte depletion. Therefore, careful medical supervision is required, and dose and dose schedule have to be adjusted to the individual patient's needs.

**INDICATIONS:** Edema associated with congestive heart failure, cirrhosis of the liver, and renal disease, including the nephrotic syndrome. Hypertension when used alone or in combination with other antihypertensive drugs; patients not adequately controlled with thiazides also probably will not be adequately controlled with furosemide alone.

**CONTRAINDICATIONS:** Anuria. History of hypersensitivity to the compound.

**WARNINGS:** Excessive diuresis may result in dehydration and reduction in blood volume, with circulatory collapse and with the possibility of vascular thrombosis and embolism, particularly in elderly patients. Excessive loss of potassium in patients receiving digitalis glycosides may precipitate digitalis toxicity. Exercise care in patients receiving potassium-depleting steroids. Perform frequent serum electrolyte,  $\text{CO}_2$ , and BUN determinations during first few months of therapy and periodically thereafter, and correct abnormalities or temporarily withdraw the drug. Initial therapy of patients with hepatic cirrhosis and ascites is best carried out in the hospital. Closely observe cirrhotic patients for sudden fluid and electrolyte imbalances that may precipitate hepatic coma. Supplemental potassium chloride and, if required, an aldosterone antagonist are helpful in preventing hypokalemia and metabolic alkalosis. Discontinue furosemide if increasing azotemia and oliguria occur during treatment of severe, progressive renal disease. Observe patients regularly for possible blood dyscrasias, liver damage, or other idiosyncratic reactions. Patients with known sulfonamide sensitivity may show allergic reactions. Furosemide may potentiate the therapeutic effect of other antihypertensive agents. Potentiation occurs with ganglionic or peripheral adrenergic blocking drugs. Exacerbation or activation of systemic lupus erythematosus may occur. Furosemide appears in breast milk. If use of the drug is essential, the patient should stop nursing. Cases of tinnitus and reversible hearing impairment have been reported.

There have also been some reports of cases in which irreversible hearing impairment occurred. Usually ototoxicity has been reported when furosemide was injected rapidly in patients with severe impairment of renal function at doses exceeding several times the usual recommended dose and in whom other drugs known to be ototoxic were given. If the physician elects to use high-dose parenteral therapy in patients with severely impaired renal function, controlled intravenous infusion is advisable. (For adults, an infusion rate not exceeding 4 mg furosemide per minute has been used.)

**PRECAUTIONS:** As with any effective diuretic, electrolyte depletion may occur, especially in patients receiving higher doses and a restricted salt intake. Patients receiving furosemide should be observed for clinical signs of fluid or electrolyte imbalance, namely, hyponatremia, hypochloremic alkalosis, and hypokalemia. Serum and urine electrolyte determinations are particularly important when the patient is vomiting excessively or receiving parenteral fluids. Medication such as digitalis may also influence serum electrolytes. Hypokalemia may develop with furosemide as with any other potent diuretic, especially with brisk diuresis, when potassium is present, or during concomitant use of corticosteroids or ACTH. Interference with adequate oral electrolyte intake will also contribute to hypokalemia. Digitalis may exaggerate metabolic effects of hypokalemia, especially with reference to myocardial activity. Asymptomatic hyperuricemia can occur and gout may rarely be precipitated. Increases in blood glucose and alterations in glucose tolerance tests with abnormalities of the fasting and two-hour postprandial sugar have been observed, and rare cases of precipitation of diabetes mellitus have been reported. Furosemide may lower serum calcium levels, and rare cases of tetany have been reported. Periodic serum calcium levels should be obtained. Reversible elevations of BUN may be seen. These have been observed in association with dehydration, which should be avoided, particularly in patients with renal insufficiency. Patients receiving high doses of sulfonylureas in conjunction with furosemide may experience sulfonylurea toxicity at lower doses because of competitive renal excretory sites. Furosemide has a tendency to antagonize the effects of tubocurarine and may potentiate the action of succinylcholine. Lithium generally should not be given with diuretics because they reduce its renal clearance and add a high risk of lithium toxicity. Diuretics such as furosemide may enhance the nephrotoxicity of cephalosporins. Therefore, furosemide and cephalosporins should not be administered simultaneously. Furosemide may decrease arterial responsiveness to norepinephrine. This diminution is not sufficient to preclude effectiveness of the pressor agent for therapeutic use. It has been reported in the literature that coadministration of indomethacin may reduce the natriuretic and antihypertensive effects of Lasix (furosemide) in some patients. This effect has been attributed to inhibition of prostaglandin synthesis by indomethacin. Indomethacin may also affect plasma renin levels and aldosterone secretion; this should be borne in mind when a renin profile is evaluated in hypertensive patients. Patients receiving both indomethacin and Lasix (furosemide) should be observed closely to determine if the desired diuretic and/or antihypertensive effect of Lasix (furosemide) is achieved.

**PREGNANCY:** Pregnancy Category C. Furosemide has been shown to cause unexplained maternal deaths and abortions in rabbits at 2, 4 and 8 times the human dose. There are no adequate and well-controlled studies in pregnant women. Furosemide should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**ADVERSE REACTIONS:** Anorexia, oral and gastric irritation, nausea, vomiting, cramping, diarrhea, constipation, jaundice (trihydroxycholesterolemia), pancreatitis, dizziness, vertigo, paresthesias, headache, xanthopsia, blurred vision, tinnitus and hearing loss, anemia, leukopenia, agranulocytosis (rare), thrombocytopenia, aplastic anemia (rare), purpura, photosensitivity, rash, urticaria, necrotizing angitis (vasculitis, cutaneous vasculitis), exfoliative dermatitis, erythema multiforme, pruritus. Orthostatic hypotension may occur and may be exaggerated by alcohol, barbiturates, or narcotics. Other adverse reactions include hyperglycemia, glycosuria, hypernatremia, muscle spasm, weakness, restlessness, urinary bladder spasm, thrombophlebitis.

Q66395-985

Hoechst-Roussel Pharmaceuticals Inc.  
Somerville, New Jersey 08876

**Hoechst**

## In the acutely confused middle-aged traveler, cerebrovascular insufficiency or hypoxemia should be suspected.

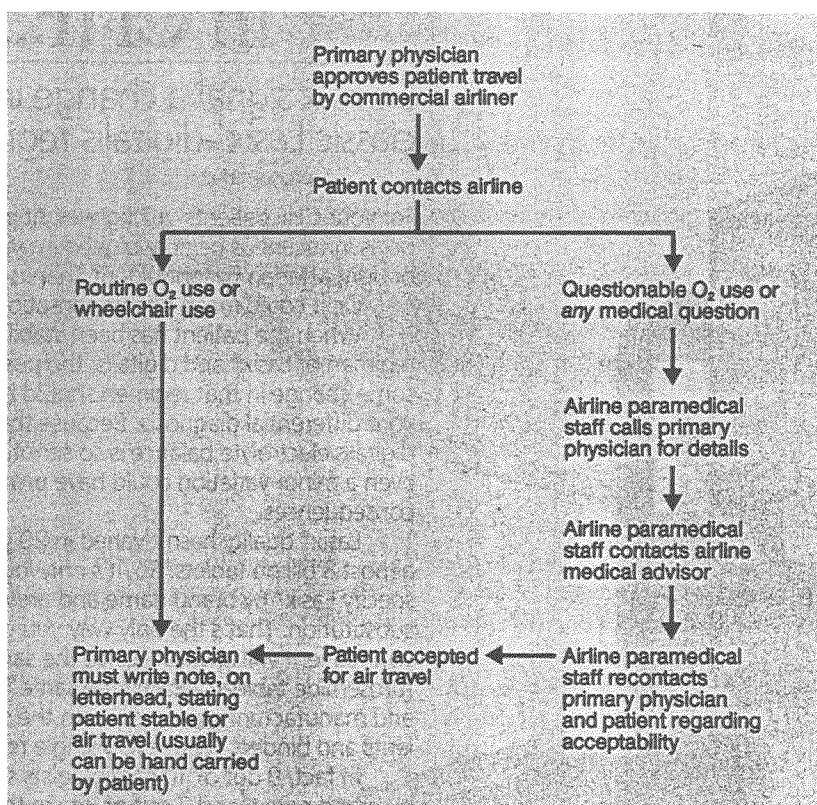


Figure 1. Steps necessary in arranging air travel for patients with actual or potential medical problems.

tering supplemental oxygen. If any possibility of diabetes exists, 50 ml of 50% dextrose (D-50-W) should be injected directly into an accessible vein (a sphygmomanometer placed about the arm and inflated to 30 to 50 mm Hg may be used to distend the veins of the antecubital fossa). The flight should be diverted if the patient does not awaken promptly.

In the acutely confused middle-aged traveler, cerebrovascular insufficiency or hypoxemia should be suspected. Careful questioning of travel companions will indicate whether the behavior was of acute onset. Brief neurologic examination revealing hemiparesis or aphasia (inability to follow commands, write to dictation, read, recite) suggests

*continued*