



**National Medevac, Inc.**  
***Air Ambulance Service***

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## **Air Transportation of Patients**

### **Information for Case Managers, Discharge Planners, and Social Workers:**

***Patient Selection:*** Generally all patients that are stable for transport by ground ambulance can be moved by air. Relative contraindications include: diving accident, untreated pneumothorax, severe hypoxia [i.e. pneumonia], and unstable vital signs.

***Time vs. Distance:*** Fixed-wing air transport [conventional airplanes] are effective when patient transport distance is greater than 200 miles. Aircraft travel at speeds from 165 MPH to over 400 MPH therefore the time to travel a certain distance will vary depending on the airplane used.

***Pressurized vs Nonpressurized:*** Not all aircraft are pressurized. Generally, most patients can tolerate altitudes up to 6,000 feet. Therefore the use of nonpressurized airplanes is safe in many instances and presents a reasonable cost saving alternative over more sophisticated aircraft. The choice of aircraft is based on a thorough medical assessment and the final decision to fly in a nonpressurized aircraft rests with our medical director. The major compromises in using nonpressurized aircraft are: slower speed (usually less than 200 MPH) and less flexibility with bad weather. Advantages are: lower costs (sometimes 50% less than turboprops or jets), easier to load, and can fly into smaller airports.

***Medical Crew:*** National Medevac uses critical care nurses with flight training on ***all*** flights. Therefore continuity of care is assured while travelling between facilities. We have full ventilator capability and a respiratory therapist will accompany the flight nurse on these flights.

***Aircraft Operator:*** We work directly with several licensed commercial air taxi operators. They are all highly regarded and provide a wide selection of aircraft to meet the needs of the patient. We use "quick change" modules to convert passenger aircraft into air ambulances in less than ten minutes. Because we use multi-role aircraft, we can minimize the cost of air travel. You do not have to pay for a dedicated air ambulance airplane which may or may not be the right aircraft for a particular trip.

***Required Equipment:*** National Medevac is fully licensed as an air ambulance company. Each airplane will have oxygen, suction, heart monitor/defibrillator, stretcher, emergency drugs, and emergency airway/intubation equipment in addition to normal patient care supplies.

***Travel Onboard Commercial Carriers:*** We provide medical escort onboard commercial airlines. This presents an alternative for travel when a patient can sit in an airline seat - the patient does not have to be ambulatory. Oxygen can be furnished for commercial flights with 48 to 72 hours notice. International air carriers will accommodate stretcher bound patients and National Medevac has worldwide capability. Domestic carriers specifically ban stretchers except in special circumstances.

## Problems Associated with Aeromedical Transport:

**General:** There are two main problems associated with air ambulance travel: **1.** any trapped gas, i.e. ileus, pneumothorax, etc., will expand with increasing altitude; **2.** progressive hypoxia occurs with increasing altitude. Generally, hypoxia can be readily corrected by giving more oxygen [to a reasonable degree]. Gas expansion is more difficult to correct and may require a pressurized aircraft or other medical/surgical intervention.

**Neuro:** Head injured patients [old] generally have no problem. We measure oxygen saturations with a pulse oximeter and will administer supplemental oxygen as needed. New head injuries [less than 72 hours] should be transported in pressurized aircraft. Patients with seizures should be in good control. Vibrations of the aircraft can sometimes precipitate seizures. Air transport for spinal injuries is preferred over ground (much smoother ride).

**Respiratory:** Hypoxia on the ground [i.e., a patient with severe pneumonia] will be more profound at altitude. These patients must be carefully monitored and transported in a pressurized aircraft. COPD patients can travel by air. Oxygen saturation is monitored and O<sub>2</sub> titrated to maintain baseline ground levels. Ventilator dependent patients will travel with an RN/RT crew and a volume ventilator. Any underlying pulmonary problems such as pneumonia, ARDS, CHF, etc. should be stabilized prior to transport. It is mandatory that any pneumothorax be treated with a chest tube and any existing chest tubes should not be removed within 72 hours of air transport. Chest x-Ray should be taken prior to transport.

**Cardiovascular:** Acute Myocardial Infarction patient can travel by air with appropriate medical crew and equipment. All patients should be stable [i.e., no dysrhythmia or pulmonary edema, normal blood pressure/HR, etc.]. All recent MI patients should receive oxygen. Consider flying patients with gangrenous limbs in pressurized aircraft, the expansion of gas could occlude blood flow. Patients in Sick Cell Crisis should always be flown in pressurized aircraft and receive oxygen.

**GI/GU:** Abdominal distension is a problem [i.e. bowel obstruction, ileus, etc.] and these patients should travel in pressurized airplanes. Other pathologies which do not produce distension usually do not present problems and may fly nonpressurized if appropriate. Tube feedings should be held for two hours prior to flight to avoid regurgitation and aspiration. Bladder and bowel elimination should be addressed since it is difficult to handle these problems in the air.

**MusculoSkeletal:** All new casts should be split and wrapped with an ace bandage — swelling at altitude can compromise circulation. Halo vests should have wrench attached to vest. Balanced traction is not possible in the air — alternative methods of stabilizing a fracture are necessary. Acute spinal injury should be transported with rigid immobilization. Critical burns should be stabilized and transported as quickly as possible, the additional problem of temperature stabilization is a major problem with transport.

**IV's:** No glass bottles if possible. Heparin locks are preferred over KVO lines. All medicines should continue on schedule — please send any meds that are due during transport. The flight nurse will administer these on schedule to avoid interruptions in treatment.

**Miscellaneous:** Patient belongings should be kept to a minimum. If family is accompanying patient tell them it is better to have a few small suitcases/carry on bags than one or two large ones. Wheelchairs are a problem but can be handled if we know about them before hand.

If you have any specific questions regarding air transport of a patient, please call National Medevac.