

Aerospace Medical Association

Medical Guidelines for Airline Travel

Air Travel for Passengers with Neurological Conditions

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Though passenger air travel is safe for most individuals with neurologic disorders, for others it can be problematic. Included are persons with risk of sudden incapacitation, recent neurological surgery, cerebrospinal fluid leakage, significant behavioral manifestations of neurological disorders, mobility limitations, and bladder/bowel control issues such as urgency and incontinence. In one study, neurological symptoms represented the most commonly encountered inflight incident at 31%, cardiovascular symptoms ranking second at 13 % (1).

Sudden Incapacitation

- Epilepsy (seizure disorder, convulsive disorder): The primary consideration is risk of inflight seizures. Generalized tonic clonic seizures in confined aircraft cabin conditions can lead to compromised airway maintenance, expose the individual to fractures and dislocations, and carry the risk of continued seizures (status epilepticus). Since anticonvulsant medication is not a common component of airline medical kits, emergency aircraft diversion may be necessary. In a 2002 study, seizure was the second most common inflight neurological incident following dizziness and vertigo (1).

Persons with frequent, uncontrolled seizures should be advised against air travel (1,2,3). Passenger education should include lowered seizure threshold related to sleep deprivation, interrupted sleep patterns and circadian rhythm related sleep disturbances. Strict medication compliance should be emphasized. For long distance travel an adequate supply of medication should be assured along with accessibility during flight. Incomplete control is likely for persons experiencing one or more seizures in the previous month, and air travel is not recommended.

- Transient ischemic attack and stroke: Transient ischemic attack is a harbinger of stroke. Patients with frequent or crescendo transient ischemic attacks should avoid air travel. Stroke in flight does not allow the option of potential deficit-saving therapeutic options such as thrombolysis. Persons with recent stroke should avoid travel until stabilization is assured with an observation period of 2-4 weeks depending upon severity (2). Individual assessment will guide the air travel decision. Degree of neurological deficit including motor and speech deficit are important considerations, as are alterations in level of alertness and clarity of mental status. In a study of over 4 million flights, 21 in flight strokes occurred (1).

- Migraine: Known, infrequent or well controlled migraine presents no challenges to flight. An exception would include frequent, uncontrolled severe migraine with nausea, vomiting and incapacitating prostration. Air travel related exposure to migraine triggers including sleep deprivation, lack of food intake, circadian related sleep disturbances and noise should be emphasized. In addition, the relative hypoxia of aircraft cabin altitude can precipitate migraine in some individuals. Access to abortive medication should be assured. Headaches represent a significant factor in in flight incidents (1).
- Syncope: The chief consideration for syncope in flight is assessment of the mechanism of syncope. Benign vasovagal syncope must be differentiated from potentially serious mechanism such as arrhythmia related cardiac syncope (3). On board medical and/or telemedicine assistance is essential to decision making that may include aircraft diversion. Benign vasovagal syncope with rapid return of alert wakefulness may warrant simple observation, especially if there is a preceding history of benign syncope. In a published neurological study, syncope was the fourth most common in flight incident (1).
- Dizziness and Vertigo: Dizziness is a non-specific term. In true vertigo there is an element of rotation, spinning of the person (subjective vertigo) or the environment (objective vertigo). Peripheral vertigo is of labyrinthine origin and is addressed in the otolaryngology guidelines. Central vertigo is of brain stem origin and may be due to vascular disease, demyelinating disease or medication toxicity. Individuals suffering from or at risk for sudden bouts of vertigo should be advised against air travel until the condition is stabilized. Dizziness and vertigo was the most common cause of inflight medical incidences in one study (1).
- Hyperventilation and panic attacks are not considered primary neurological conditions, though they must be distinguished from neurological events. They will be considered in the psychiatric section.

Recent Neurological Surgery

- Prior to air travel there should be an adequate period of observation to assure neurological stability following intracranial or spinal surgery. Risk of delayed bleeding should be considered. Since gas expansion with altitude occurs, the presence of intracranial air carries risk of neurological deterioration (2). For intracranial surgery, 10-14 days of observation with assessment for intracranial air and neurological stability may be appropriate.

Neurobehavioral Considerations

- Individuals with dementia or behavioral manifestations of other neurological conditions may experience accentuated aggressive, resistive or uncooperative behavior when exposed to unfamiliar surroundings, disrupted daily routines, sleep deprivation and confined surroundings. The prime consideration is education of caregivers and travel

companions to increase awareness and emphasize availability of behavior modifying medications if prescribed. Though perhaps not necessary in familiar surroundings, a companion may be needed for air travel.

Mobility Considerations

- Motor deficit: Passengers with paraplegia, paraparesis, hemiparesis or monoparesis should consider wheelchair and other assistance needs for gate access, aircraft entry and idealized seating placement.
- Spasticity/ataxia/rigidity/slowness of movement: Wheelchair assistance, balance precautions, assisted early entry and convenient seating arrangements are important elements to consider for these neurological manifestations.

Bladder/Bowel Considerations

- Urgency/frequency/incontinence: Heightened awareness of limited access to facilities should be conveyed to passengers with bladder/bowel control impairment. Adequate supplies should be on hand and pre-arranged seating can help assure timely access to lavatory facilities.

1. Sirven JI, Claypool DW, Sahs K et.al. Is there a neurologist on this flight? *Neurology*, June 25, 2002;Vol 58, No. 12:1739-1744
2. Ranford DJ, Gradwell DP, ed. Ernsting's Aviation Medicine, 4th edition. Oxford University Press, NY. 2006.
3. Low JA, Chan DKY. Air travel in older people. *Age and Ageing* 2002;31:17-22