Medical Guidelines for Space Passengers

AEROSPACE MEDICAL ASSOCIATION TASK FORCE ON SPACE TRAVEL


In the foreseeable future, private companies will manufacture space vehicles with a capacity of transporting tourists into low Earth orbit. Because of the stresses of spaceflight, the effects of microgravity, and limited medical care capability, a system of medical clearance is highly recommended for these space tourists. It is our purpose to establish guidelines for use by private businesses, medical providers, and those planning on being a space tourist. Consequently, a Task Force was organized by the Aerospace Medical Association (AsMA) for the purpose of facilitating safety of passengers, fellow passengers, crew, and flight operations. The guidelines are meant to serve only as a template with the full expectation that exceptions might be made with appropriate rationale.

Keywords: space travel, fitness to fly.

It is anticipated that private companies in the foreseeable future will manufacture space vehicles with a capacity of transporting tourists into low Earth orbit. Although early flights will probably be of short duration—minutes to several hours—there will eventually be what could be called space hotels that could accommodate visitors for days, weeks, or even months. It is expected that many individuals with a taste for adventure or the exotic will enthusiastically accept the personal risks as well as the expense for the experience.

However, because of the stresses of spaceflight, the effects of microgravity, and limited medical care capability, a system of medical clearance is highly recommended. It is our purpose to establish guidelines for use by private businesses, medical providers, and those planning on being a space tourist. Consequently, a Task Force was organized by the Aerospace Medical Association (AsMA) for the purpose of facilitating safety of passengers, fellow passengers, crew, and flight operations.

The Task Force took into account the stresses imposed by short (up to one day) and long (up to one week) duration flights in microgravity, as well as the possibility of emergency ground egress.

Because of so many unknowns, such as duration of flight, cabin pressure, the direction of accelerative forces, and life support equipment requirements (if any), the Task Force did not intend to be dogmatic nor directive. The guidelines are meant to serve only as a template with the full expectation that exceptions might be made with appropriate rationale. Although disqualification might be recommended for a given condition, an exception might be in order depending upon further evaluation as well as the profile and circumstances of the flight.

It is the intent of the Task Force to periodically review, refine, and revise these guidelines so they can be applied with greater confidence as we study increasing numbers of passengers who take to low Earth orbit and beyond.

GENERAL GUIDELINES

Any medical condition or treatment regimen which could endanger the health of the passenger, fellow passengers, or crew; compromise safety inflight or on the ground; or pose a threat to completion of the flight are causes for DQ. (DQ = Disqualify)

CARDIOVASCULAR

- Coronary Artery Disease
  Symptomatic = DQ
  Asymptomatic = Evaluate for exception
- Arrhythmias/Conduction Defects
  Hemodynamically significant = DQ
  Nonhemodynamically significant = Evaluate for exception
- Pacemaker/Implantable Defibrillators = DQ
- Pericarditis/Myocarditis
  DQ
  Evaluate 6 months post-recovery
- Heart Transplant/Replacement
  DQ
- Hypertension
  Severe or poorly controlled = DQ
  Well Controlled = Qualified with possible exceptions
- Structural/Valvular Defects
  Symptomatic = DQ
  Asymptomatic = Evaluate for exception
- Cardiomyopathy
  Symptomatic = DQ
  Asymptomatic = Evaluate for qualification

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This manuscript was received for publication in June and accepted for publication in July 2001.
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GUIDELINES FOR SPACE PASSENGERS—AsMA TASK FORCE

NEUROLOGICAL

• Multiple Sclerosis
  Active = DQ
  Exceptions could be made depending on condition
  and neurologic deficit
• Parkinson’s and Other Movement Disorders
  DQ
  Exceptions could be made depending upon degree
  and extent of impairment
• Cerebral Vascular Disease/Malformations/Aneu-
  rysms
  DQ
  Evaluate for neurological dysfunction and muscu-
  loskeletal disability
• Seizure Disorder
  DQ, unless there is a reasonable seizure-free period
• Dementia
  DQ
  Evaluate for possible exception depending upon
cognitive impairment related to organic disease
• Headaches
  DQ if frequent, severe, or incapacitating (particu-
larly migraine)
• Syncope or Other Disturbance of Consciousness
  DQ if recent or unexplained
• Intracerebral Neoplasm
  DQ
  Requires evaluation for exception
• Fixed Neurological Deficit From Any Cause
  DQ
  Requires evaluation for exception

OPHTHALMOLOGICAL

• Visual Acuity
  DQ if legally blind
• Narrow Angle Glaucoma
  DQ
• Any Acute Condition
  DQ if causing pain, discomfort, or interference
  with ability to see

EAR/NOSE/THROAT

• Any Acute Disease
  DQ if causing pain or discomfort
• Meniere’s and other vertiginous conditions
  DQ
  Exceptions could be made if treated and there is
  reasonable vertiginous-free period

ORTHOPEDIC

• Musculoskeletal Integrity (e.g. amputations, mal-
  formations, arthritides, use of appliances)
  DQ if structural and functional integrity preclude
  capability of emergency ground egress and use of
  life support systems
• Osteoporosis
  DQ if severe
• Acute Injury or Pain
  DQ until asymptomatic
  Evaluate for exception

GENITOURINARY

• Calculi
  DQ if symptomatic
• Chronic Renal Failure/Renal Insufficiency
  DQ
  Evaluate for possible exception depending upon
  level of insufficiency
• Pregnancy
  DQ
  Evaluate for qualification 6 weeks postpartum (in-
cluding loss or termination of known pregnancy
  for any reason)
• Dysmenorrhea
  DQ if there is significant functional impairment
• Acute Infection or Urinary Tract Obstruction
  DQ

DERMATOLOGY

• DQ for any severe skin disease such as psoriasis,
  chronic pruritus, skin tumors that may interfere
  with use of life support equipment

PSYCHIATRY

• Any Psychotic Episode
  DQ
  Exceptions could be made for those with a revers-
ible cause
• Bipolar Disease
  DQ
• Suicide Attempt/Gesture
  DQ
  Evaluate for possible exception
• Substance Abuse/Dependence
  DQ if ongoing
  For history of, evaluate for possible exception
• Miscellaneous Conditions Such Phobias, Anxiety,
  Panic Attacks, Depression
  Evaluate for possible exception depending upon
  history of stability
  DQ individual with claustrophobia with no imme-
  diate means of relieving apprehension from con-
  finement

ONCOLOGY

• Cancer
  DQ for any active or treated cancer which inter-
  feres with function of any organ system or has the
  potential for incapacitation.
  Evaluate for possible exceptions

GASTROINTESTINAL

• Peptic Ulcer Disease
  Symptomatic = DQ
  Asymptomatic = Evaluate for exception
• Inflammatory Bowel Disease
  Symptomatic = DQ
  Asymptomatic = Evaluate for exception
GUIDELINES FOR SPACE PASSENGERS—AsMA TASK FORCE

- Irritable Bowel Syndrome
  Symptomatic = DQ
  Asymptomatic = Evaluate for exception
- Acute Pancreatitis
  DQ
- Gall Bladder Disease
  Symptomatic = DQ
  Asymptomatic = Evaluate for exception
- Active Abdominal Pain, Nausea/Vomiting, Diarrhea of Any Etiology
  DQ
- Hepatitis
  DQ, if acute
- Cirrhosis
  DQ
  Evaluate for possible exception
- Ostomies
  Evaluate for qualification
- Abdominal Surgery
  DQ until recovery is complete

PULMONARY

- COPD
  DQ
  Evaluate for exception
- Asthma
  DQ
  Evaluate for exception
- Pulmonary function
  DQ if significantly decreased from any cause
- Pneumothorax
  DQ if current or recurrent
  Evaluate all others

MISCELLANEOUS

- Diabetes
  DQ if unstable, brittle, or poorly controlled
  Evaluate all Type I diabetics
- Infectious/Contagious Disease
  DQ for active disease
  For blood-borne disease such as hepatitis B and HIV/AIDS, evaluate for qualification based upon risk of transmission
- Anemia
  DQ if severe/symptomatic
- Medication
  DQ if medication causes significant side effects such as somnolence, nausea/vomiting or exacerbation of illness if dosages are missed or poorly absorbed
- Dental
  DQ if disease causes significant discomfort

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