



**COLLEGE OF GENERAL PRACTITIONERS
OF SRI LANKA**

**Print CPD Programme
October 2014**

Health and Air Travel

Author

Dr. Shreen Willatgamuwa MBBS, DFM, FCGP, Cert Av Med

Converted to print CPD format by

Dr. Jayantha Thambar MBBS, DFM (Col), FRACGP (Aus), MRCGP [INT]



"Ladieshh and gentlemen, thish ish your captain shpeaking, hic!"

Print CPD

Health and Air Travel

By

Dr Shreen Willatgamuwa MBBS, DFM, FCGP, Cert Av Med

Formerly company Doctor to Sri Lankan airlines and Qatar airways Doha

Converted to print CPD format by

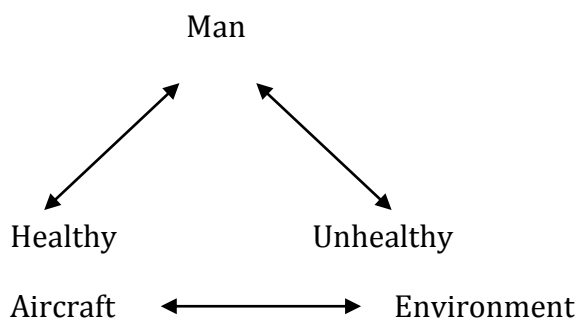
Dr Jayantha Thambar MBBS, DFM (Col), FRACGP (Aus), MRCGP [INT]

Introduction

There has been a massive rise in air travel in the last decade. The International Air Transport Association (IATA) estimates the global airline industry to carry more than 3 billion passengers in 2013. Modern air travel has evolved to provide a very safe and comfortable journey for passengers.

Would be travelers are most likely to consult their General Practitioners for matters pertaining to their health before travelling

Outcomes of air travel are due to interactions between various factors and shown in the diagram below;



Atmosphere and Aircraft

The earth is surrounded by a gaseous envelop 500 miles thick and maintained around earth by gravitational attraction.

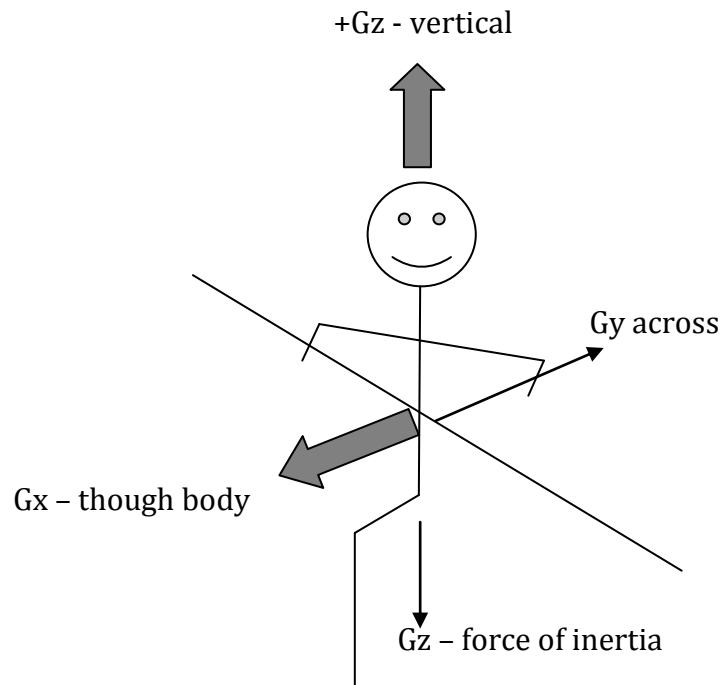
Modern aircrafts fly at a height of 35,000 – 40,000ft. Inside the aircraft is similar to the atmosphere at 8,000ft. This is called pressurization of aircraft.

Air is tapped from engine compressors, cooled and then circulated around the cabin under pressure to provide a tolerable atmosphere. Cruising altitude is reached in 10 – 15 min of takeoff. Descent begins approximately 30 min. before landing. Consideration should be given to the following as the aircraft atmosphere is at 8,000ft and not as at sea level.

6. Acceleration

Axes of acceleration

It must be kept in mind the internal organs are also subjected to these force.



- 7. *Vibration*
 - 8. *Noise*
- } mainly contribute to the feeling of fatigue

9. *Orientation and disorientation* - affect the pilots mainly when they continue to look at the sky. They need to be guided by instruments.

10. *Special considerations*

Hypoxia - is due to the low oxygen O₂ content in the air that is breathed in or the body already has a low O₂ content. In some conditions effects of low O₂ leads to fatigue.

- Avoid** - heavy smoking
- drugs (not regular Rx)
 - alcohol
- } during and just before flight

In flight – Changes in man

Many factors govern the changes that occur in man

1. Physical condition – whether well or ill
2. Physical exertion
3. Food and beverages consumed – before air travel
- during air travel
4. Daily routine – food
Exercise/mobility
Sleep
5. Time of travel – weather during day or night
6. Destination – Climate, Culture differences

Circadian rhythm

Physical fitness & Mental performance } have a Diurnal high & nocturnal low

Body functions on a 24 hour cycle irrespective of time differences due to air travel

Jetlag

Jetlag is a combination of mental and physical effects caused by rapidly travelling across 5 or more time zones.

This results in disruption of the body's rhythm and the sleep wake cycle. Sleep patterns are disturbed for 2-3 days. Full adjustment takes 1 week.

Change in body rhythm results in disturbed body functions -Gastrointestinal discomfort, bowel habit change, headache, BP and pulse changes etc.

Practical implication of jetlag is – substandard performance

Therefore there is a reduced ability to perform with a competitive edge. Whenever possible start adjusting to destination time prior to departure

I.e. if you board a flight at night do not sleep if you're disembarking at night

Adjustment is effected by

- Stress of travel
- Age
- Alcohol

Exacerbated by

- Lack of Sleep
- Stress of Travel
- Alcohol

Interruptions of circadian and diurnal cycles are **not** deleterious to health

Body's sense of time affected by

- Internal factors - hormones
- External factors- environment

Time cues – are inputs that help the body to determine whether it is day or night

- light /sound
- diet
- exercise
- drugs/medications
- social interaction

Usually

- Carbohydrate – induces sleep
- Protein – induces alertness
- Eat according to destination requirements

Acclimatization is affected by

- Time zones crossed
- Climate – cold intense heat
- Geographical – altitude – the elevation above sea level
- Culture – Psychological stress
- Diet

Time zones

There are 24 Time zones (TZ) the earth is $360 \text{ deg}/24 = 15 \text{ deg}$

15 meridian = 1 TZ = 1 hour

Eastwards = for every TZ add 1 hour = + 1hour

Westward = for every TZ minus 1hr =- 1 hour

Jet lag adjustment faster going westward (because day is longer)

E.g. SL time - 5hrs = UK Time approximately

Immunization – should be updated depending on country requirements. (Epidemiology dept or MRI is very helpful in this regard)

General Health Advice / Information when travelling

1. Care with food – raw vegetable, shell fish, dairy products, ice cubes, under cooked – meat and fish cold /reheated food.
2. Drinking water
3. Personal hygiene – hand washing, toilet

4. Prevention of STI's (using condom)
5. Addictive drugs
6. Skin piecing , tattoeing, acupuncture, ear boring
7. Sea bathing , swimming pools
8. Rabies – dog , cat , fox, monkey, bandicoot, bats
9. Snake bite
10. Insect / mosquito bite
11. Sunburn

Criteria governing acceptance of patients for air travel

1. Expansion of air in the cabin (100 ml air expands to 130 ml)
2. 3% desaturation of O₂
3. Passengers needing assistance
 - Unaccompanied minors
 - Incapacitated persons.
 - Blocking passage
 - (These affects evacuation in an emergency)
4. Fatigue – disruption of circadian rhythm / old age
5. Hazards to security
6. Hazards to health of others
7. Whether commercially viable

Specific contraindications

1. Infectious diseases
2. Advanced stages of pregnancy
 GP letter written 48 hours before flight
 It is safe to travel up to 36 weeks POA as a guideline – In recent years this has been extended by various airlines. Some even accept up to 10 days pre and post DOD (date of departure)
3. Offensive passengers – Physically, mentally
4. Terminal cases – allowed at times on sympathetic grounds with accompanying medical officer
5. Operative/Therapeutic procedures
 - a) Air into body cavities not allowed - minimum 7 days must lapse.
 - b) Major surgical – 21 days must lapse
 - c) Minor surgery – not less than 10 days

Special Precautions

1. Cardiovascular Disease
 - a) Severe uncompensated heart failure
 - b) Recent MI – i.e. not less than 4 weeks
 - c) Angina

- d) Recovered from MI and controlled heart failure may need extra O2
- e) Severe Hypertension – Danger of CVA
- f) Severe Anaemia – less than 50% Hb
- g) Pace makers – no risk on aircraft
Preferable not to go through metal detectors at airport

2. Respiratory Diseases

- a) Wheeze - respiratory exchange is grossly impaired – less than 50%
- b) Emphysema
- c) Acute Otitis media
- d) Severe sinusitis
- e) Pneumothorax
- f) Open TB
- g) Severe Asthma
- h) Bronchiectasis with offensive sputum

3. GI Tract Disease

- a) Recent GI bleeding not less than 3 weeks
Because gas expansion could aggravate a bleed
- b) Colostomy – carry extra discharge

4. CNS

- a) Epilepsy – Precipitated by mild hypoxia and hyperventilation
- b) Cardiovascular disease in elderly leads to **confusion** because of **hypoxia**
- c)

5. Metabolic disease

- a) Diabetic – Proper meals and medications taken regularly. Better adhere to home time until destination is reached i.e. for meal and drugs

6. Blood disorders

Severe anaemia – Specially due to a dyscrasia could lead to bleeding

7. Psychiatric disorders

Proper sedation and medication. Accompanying doctor is essential

8. Any condition preventing opening of mouth

Eg Severe trismus, fracture of mandible.

After reading the preceding 7 pages take a break to read this interesting episode, to uplift your flagging spirits!



In the '80s a highly placed government official had to travel to Chennai for bypass surgery that was not available in Sri Lanka. He was brought in an ambulance to the airport from a private hospital. At the airport the male nurse from the airline took him in a wheel chair to fast track him through the airport. His wife cleared the baggage, customs etc with another agent. The patient insisted on visiting the duty free shop. He bought whisky for the Indian doctors as gifts. The nurse transported the whisky on the

wheel chair while the patient walked to aircraft!!

Since then patients on wheel chairs are not permitted to go to the duty free shop. Instead their escorts are permitted to do so in their place.

GP to consider following as he knows the clients condition best. Airline Doctor only assesses a form

Do not recommend unless you know the patient well. Whatever the flight time add 8 hours to flight time when planning mealtimes which can be delayed until aircraft takes off

- a. Where is patient – home or hospital
- b. Time taken to travel
 - to airport
 - at airport
 - on aircraft
 - to destination
- c. Mode of travel – vehicle , ambulance
- d. Accompanying person – Doctor, Nurses or laymen
- e. Customs/ Immigration – time taken
- f. Baggage

Cabin attendants are not trained medically, they know only first aid. They do not use these skills regularly

Medaform (given by airline to passengers needing special facilities)

Part I – To be filled by passenger or escort

1. Name
2. Itinerary
3. Nature of incapacitation
4. Stretcher – needed or not – charges are high
(Usually 9 seats are dismantled charged for 6 seats)
5. Intended escort
6. Wheel chair - from airline or own, If own whether spillable batteries
7. Ambulance - Own or airline
8. Other ground arrangements – departure connections, destination connections ie if ambulift is available
9. Special in-flight meals
10. Medical card

Medaform

Part II – to be filled by attending physicians or GP

1. Patients name , age , sex
2. Attending physicians name, address , phone
3. Medical data and diagnosis
4. Prognosis for trip
5. Contagious / communicable disease
6. Discomfort to others – physically or mentally
7. Use of normal upright aircraft seat
8. Can take care of own needs
9. Escort –whether satisfactory to airline i.e.- airline may suggest nurse/doctor.
10. Oxygen – if needed rate of flow airline will calculate for journey including time at airports, connections etc. Aircraft O2 is for an emergency only.
11. Medication and equipment
12. Hospitalization at destination – what arrangements- who will meet/ambulance etc.
13. Remarks
14. Arrangements done already

Summary

When advising our patients regarding effects of air travel and their fitness to fly, air expansion and O2 de saturation that occurs onboard must be borne in mind. All patients on medications should label them and hand carries it. When it come to the elderly and those with concurrent illnesses, the long distances to walk at terminals and the possibility of delayed meals times must be taken into consideration.