http://youtu.be/bJQEVYBS5ew

AIR NEW ZEALAND
Airline Operations & Safety

Is My Patient Fit to Fly?

Dr Alexandra Muthu
Occupational & Aviation Medicine
Air NZ Aviation Medicine Unit

Overview

1. Background
2. Aviation Medicine Unit
3. Physiology of Flight
4. Specific Medical Conditions
5. Air New Zealand MEDA process
6. Available Assistance
7. Pilots as Patients
8. Take home messages

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Air Travel

- 2 billion air travellers per annum
- Very safe mode of transport
- Increasing number with pre-existing medical conditions

- Physiological changes
- Exacerbation of chronic medical conditions
- Acute in-flight medical events
- Important to assess fitness to fly

379 seats… 12 hours… 36,000 ft

Air New Zealand

Key Air New Zealand codeshare partners

Realities of Air Travel

- Fatigue and stress prior to trip
- Forgotten medications
- Interaction with alcohol

Factors to Consider

- Physiological changes of altitude
- Noise, vibration
- Low humidity
- Immobility, upright position
- Jet lag

- ↑ pax flight hours
- High proportion of elderly travellers

In Flight Medical Emergencies

- Isolation and limited medical facilities
  - Medical outcomes poorer

- Diversions:
  - Flight safety impact
  - Location, fuel, weather, medical facilities at destination
  - Stressful
  - Disruptive to other pax
  - Costly: to the airline and other pax

TAKE HOME MESSAGES

- **Avoid In Flight Medical Emergencies**
- **Assess Fitness to Fly**

1. Risk of complication/exacerbation? (Sickle)
2. Difficult problems to deal with? (Seizure)
3. Risk to others? (Psych, Infection)
4. Special requirements? (Oxygen, Escort, Self Cares)
5. Absolute contraindications?

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Aviation Medicine

- Effects of flying on health & health on flying
- Crew and ground staff
- Effects on individuals and groups

Aviation Medicine Unit

The Team

- Four doctors (3 FTE)
  - CMO Tim Sprott, Ben Johnston, Nicola Emslie, Alexandra Muthu
- Five nurses (4 FTE, 1 in CHC)
- One administrator

Services and Functions

- Passenger Health
  - Pre-travel clearances: MEDA (Paxcare, AvMed)
  - Gate clearances (MedLink, AvMed)
  - In-flight medical events (MedLink, AvMed)
  - Medical emergency planning and oversight
- Crew Health
  - Pilot medical certification
  - Industrial health hazards including Fatigue & Alertness
  - Alcohol & Drug issues (support, training and testing)
  - Rehabilitation, Sickness Absence and RTW planning
  - Travel health cover
- Occupational and Environmental Medicine
  - All Air New Zealand staff

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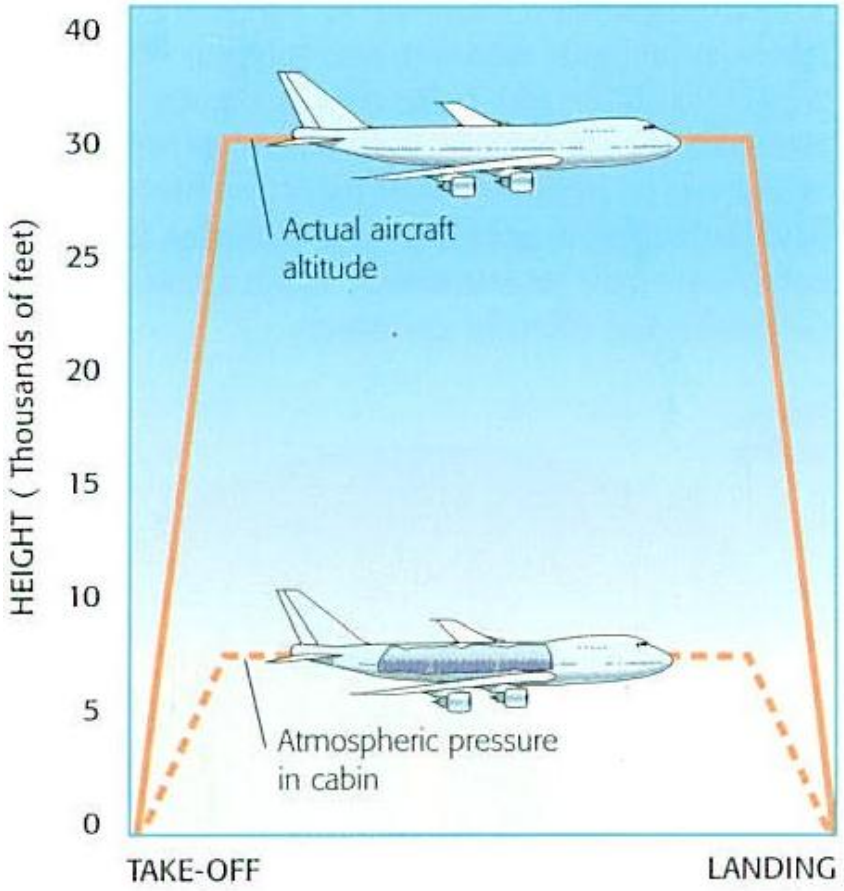
- Effects on Air Travellers of Altitude

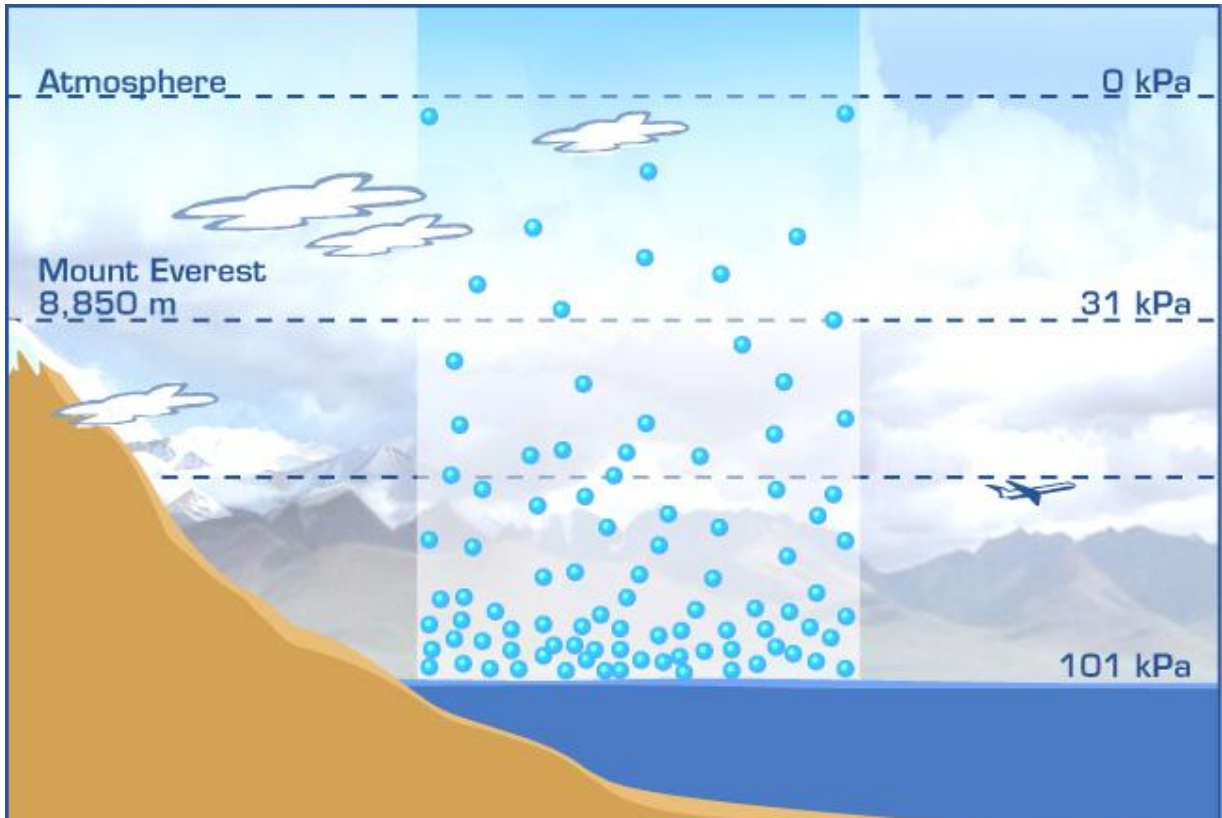
Altitude

- Flight Altitude:
  28-40,000 ft
- Cabin Altitude:
  6-8,000 ft
- Automatically controlled to maintain a safe & comfortable environment



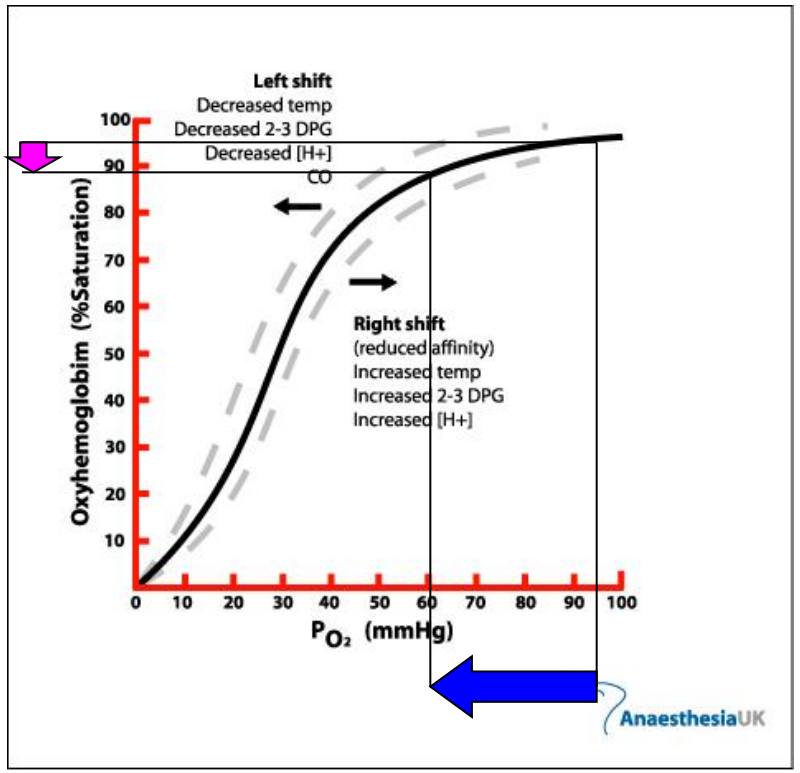
Altitude

- Gaseous mixture same
- Barometric pressure ↓
- Gas volume ↑
- P_aO_2 ↓

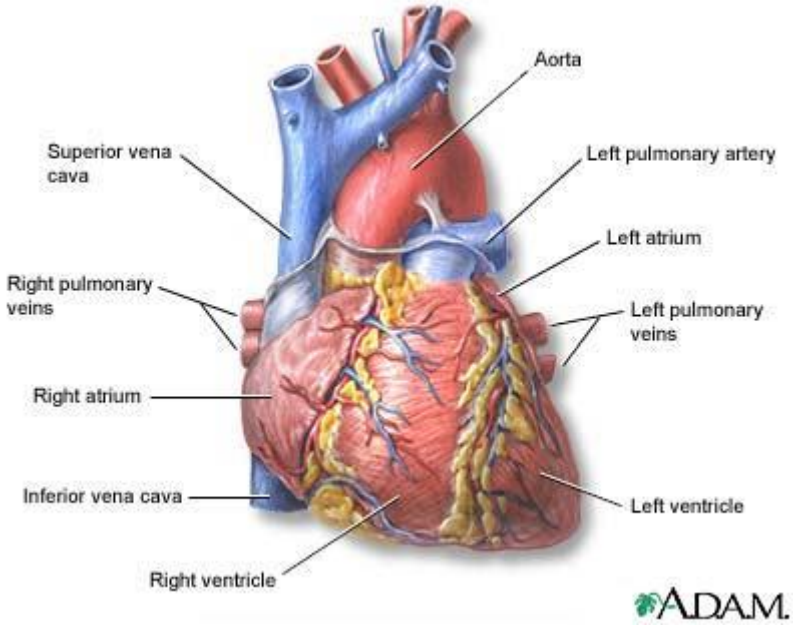


Cabin Altitude 8000 ft: Oxygen

- ↓ P_aO_2 95 to 60mmHg
- Equivalent to 15% oxygen
  - Hypobaric/hypoxic hypoxia
- Healthy individuals experience 3-4% ↓ S_AO_2

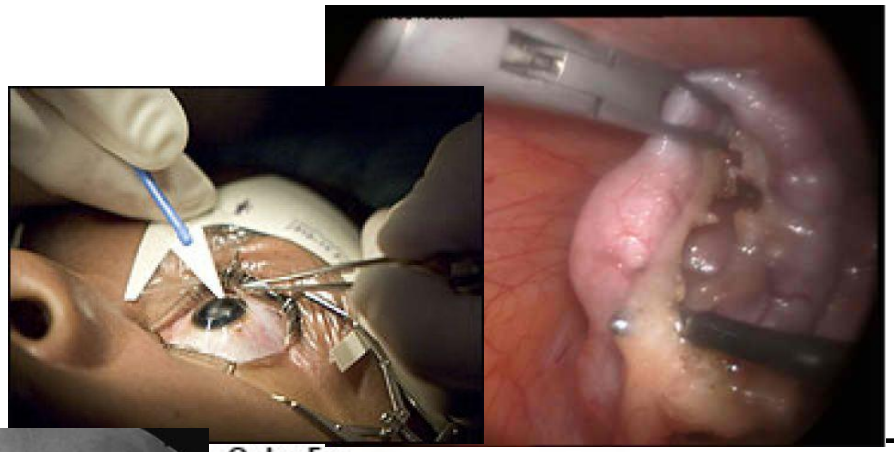


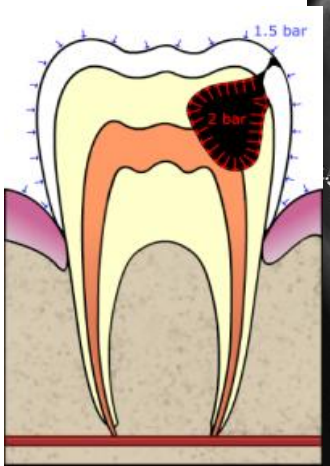
- Pax with pre-existing cardiac, pulmonary or haematological disease
  - Reduced baseline P_AO_2
  - More vulnerable to additional hypoxia

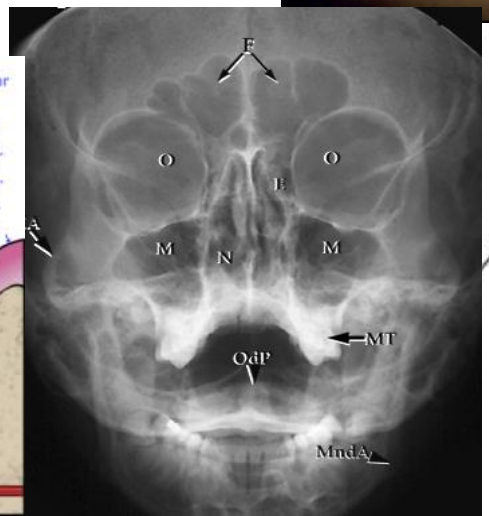


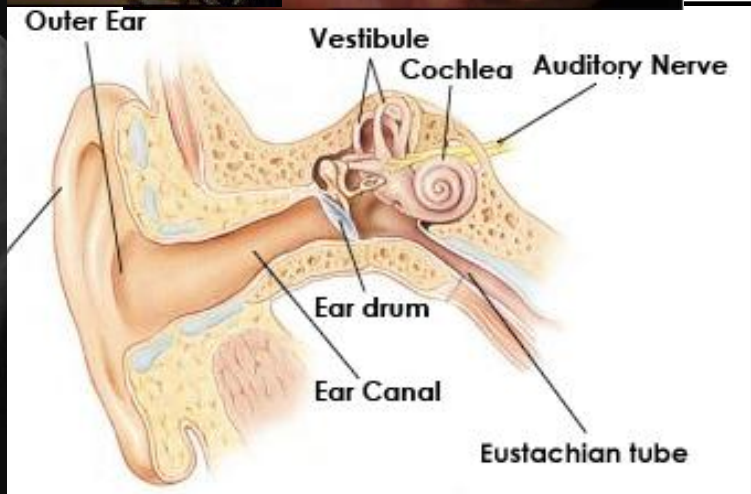
Gas Volume Changes

- Internal gas expansion and contraction
  - Up to 30%
- Organ expansion or venting essential
  - Pain, trauma









TAKE HOME MESSAGES

- Cabin altitude is equivalent to 15% O_2
  - Beware pre-existing cardiac, respiratory or haematological conditions
- Gases expand and contract up to 30%
  - Beware trapped gases due to illness or treatment

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   - Current Recommendations
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Physiology aside…

"It's the **stability**, or instability, of someone's underlying condition that indicates the probability of a spontaneous event occurring while they are in the air."

Dr David Smith, British Cardiovascular Society

"There should be no compromise on the principle that a patient must be **clinically stable** at the time of travel."

Dr MJ Peters, HOD Thoracic Medicine, Concord Hospital (NSW)

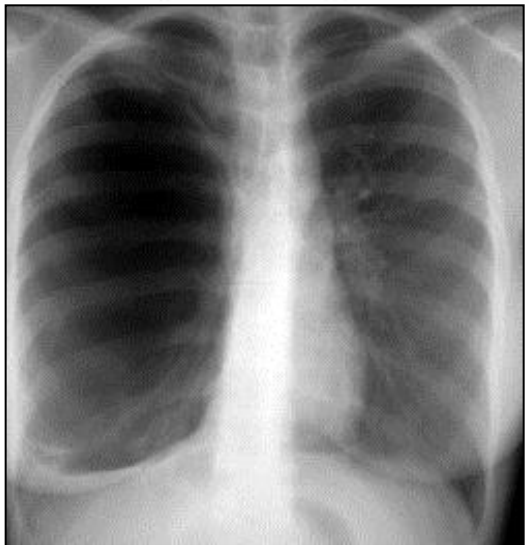
Respiratory Disease

- Pneumothorax
- COPD
- Asthma

Pneumothorax

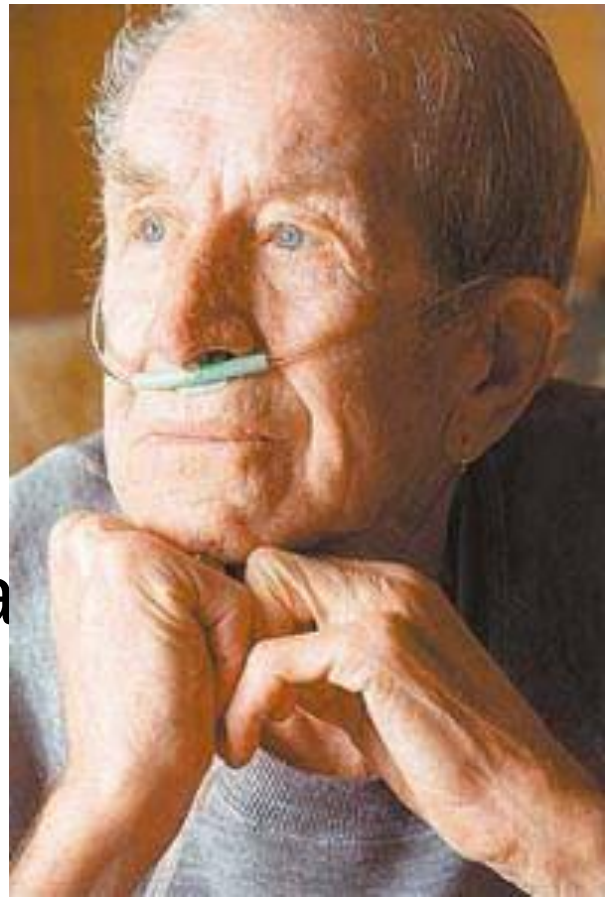
- Absolute contraindication to air travel
- May expand up to 30%
- CXR required confirming full resolution
- Wait 14 days before travel

- Chronic pneumothorax or severe cystic lung disease requires specialist assessment
- Heimlich drain + escort OK



COPD

- Should not travel if:
  - Unwell
  - Cyanosis with O_2 on ground
  - P_aO_2 <55mmHg
- Oxygen flow rate for hypoxia due to altitude
  - 2L in most cases, even quite severe disease



Rules of thumb

- At sea level, on air:
  1. Can walk 50m without SOB:
     - *unlikely* to need O_2
  2. SaO_2 on the ground:
     - <93% *may* need O_2
     - <88% *will* need O_2
     - Indicate SaO_2 on MEDA

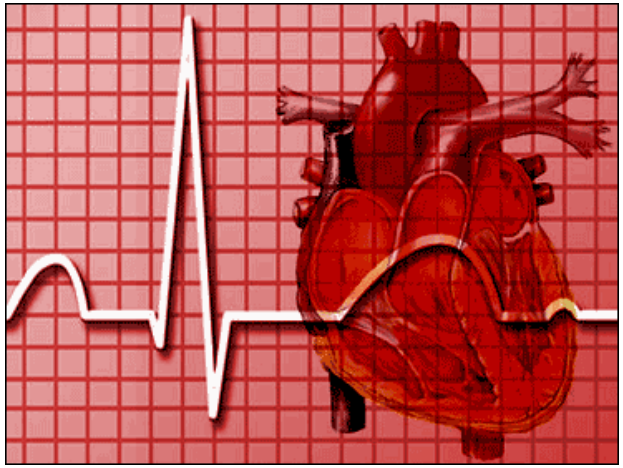
- Complicated assessments
  - Altitude chambers
  - 15% oxygen trial

Asthma

- Exacerbations: rushing, forgotten inhalers
  - Cabin-air free of typical allergens
- Ensure medication carried on board
- Should not travel within 48h of significant exacerbation

Cardiovascular disease

- Consider:
  - Resting SaO_2
  - Exercise tolerance
    - Walk 50m & up stairs without SOB or chest pain: probably don't need O_2
    - Consider seating, wheelchair
  - Length of journey
  - General condition
  - Stability
    - Be more cautious after acute heart failure (6/52)



Myocardial Infarction:
British Cardiothoracic Society Guidelines

- High risk patients = EF<40% with signs and symptoms of heart failure or requiring further investigation, revascularization or device therapy
  - Discuss with AvMed Unit

- Moderate risk = EF>40%, no evidence heart failure, inducible ischaemia or arrhythmia
  - Delay travel ≥10d

- Low risk = 1st cardiac event, uncomplicated, age<65, successful reperfusion, EF>45%
  - Consider travel ≥ 3d
  - Emergency repatriation earlier with AvMed approval, O_2 and escort

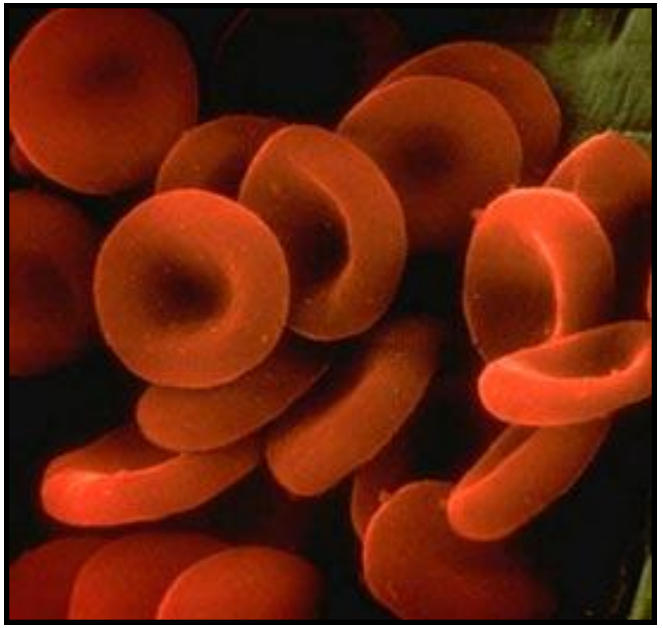
Angina

- Carry GTN on board
- Consider wheelchair to the aircraft door, seat near toilet

- Severe/Unstable:
  - Supplementary oxygen + medical escort
- Stable, can walk 50m at mod pace without pain/SOB, no angina at rest:
  - Probably don't need oxygen

Haematological conditions

- Generally fit to fly if Hb≥95g/L
  - Chronic compensated disease consider Hb ≥80g/L
- If Hb lower or concurrent lung/cardiac disease
  - Consider transfusion +/- O_2
- Acute anaemia
  - Check Hb>24h after last blood loss, which must have ceased



Pregnancy

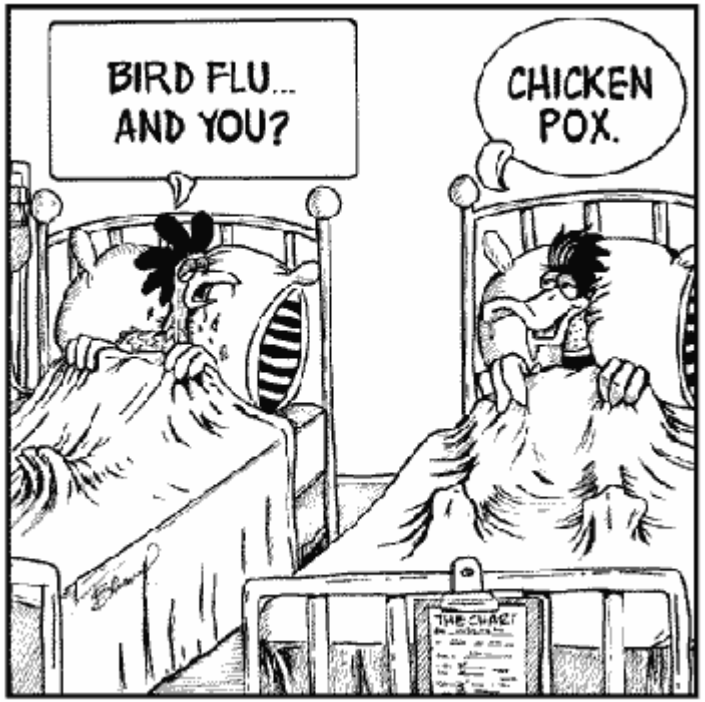
- Foetal oxygen preferential
- Assuming uncomplicated singleton pregnancy, no history of premature labour:
  - >5h flights permitted to $36^{+0}/40$
  - <5h Flights permitted to $38^{+0}/40$

- Considerations:
  - Multiples ($32^{+0}/40$ INTL)
  - Medical complications in foetus
  - Letter confirming dates, fit to travel
- Also: miscarriage, VTE, infections, cosmic radiation

Infectious passengers

- Chicken pox
- Gastroenteritis
- Whooping Cough

- TB
- Influenza
- Measles
- Mumps



Chicken Pox

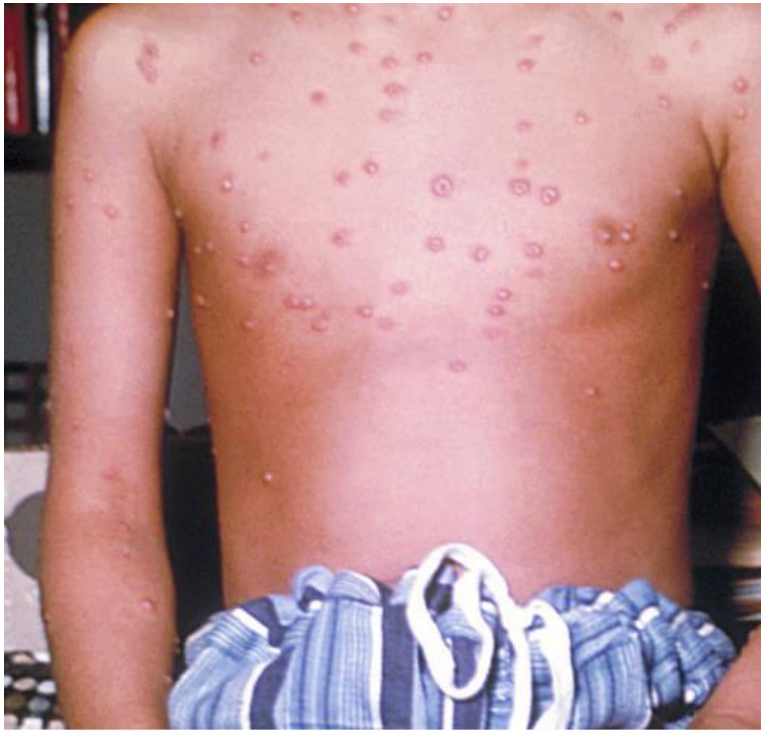


Photo Courtesy of CDC - J.D. Miller

- Must not travel while infectious
  - All lesions must be crusted
  - Consider siblings
- Submit MEDA
  - Confirming not infectious

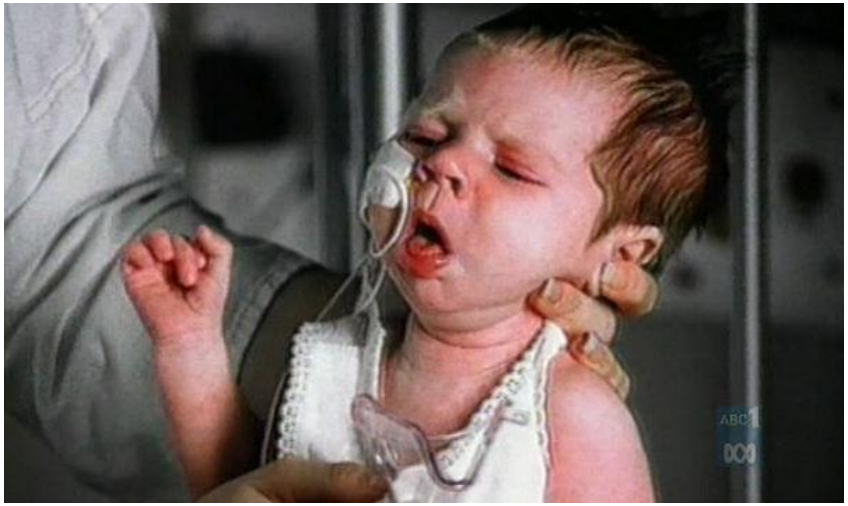
Gastroenteritis

- Must **not** travel:
  - Actively vomiting and/or
  - Profuse or bloody diarrhoea or
  - Symptoms of dehydration (weakness, lightheaded)

- Food and water hygiene on holiday
  - Eat only hot cooked food
  - Avoid buffet meals and chilled desserts
  - Beware tap water used to wash salads or make ice cubes
  - Drink water from safe sources only

Bordetella Pertussis

- Risk for babies
- Infectious
  - Prior to symptoms
  - During vague URTI sx
  - For 3/52 after cough starts
  - For 5/7 after AB start



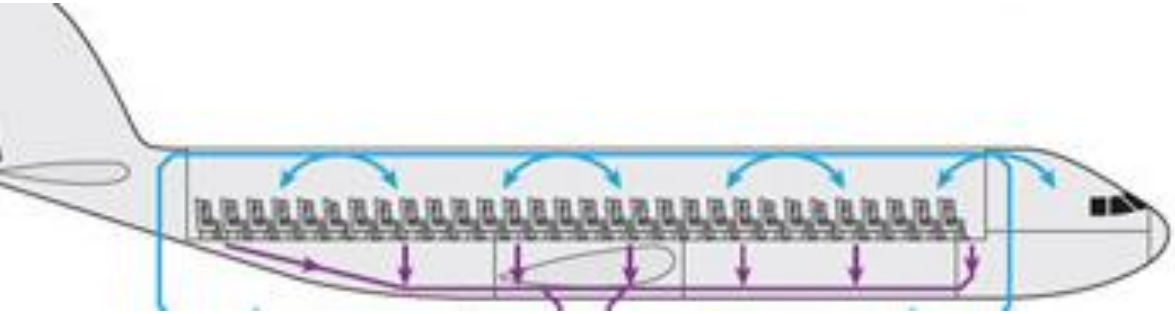
- May contract even if immunised
  - High risk if household contact +ve
  - Advise against travel

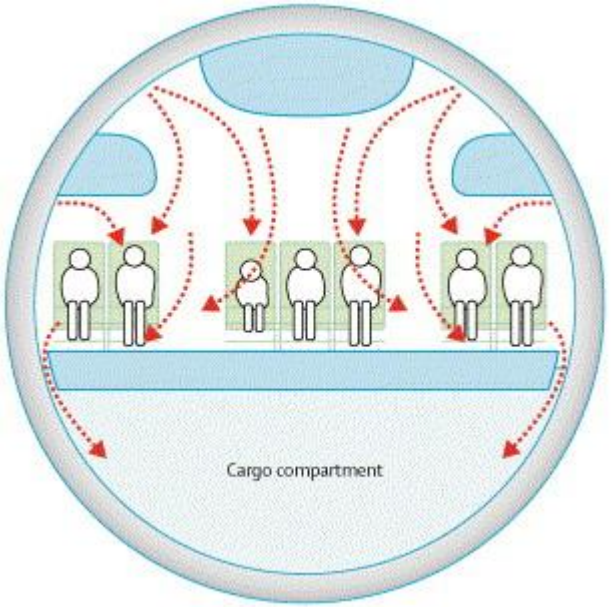
Cabin Air Quality

- Source
  - 50% from outside
  - 50% re-circulated via filters
- Air is clean
  - HEPA (>99.997% efficiency) & adsorbent filters
  - Catalytic converters
    - Bacteria, fungi, viruses, dust, fibres, ozone, odours, VOCs, SVOCs
- Full exchange every 2-5 minutes

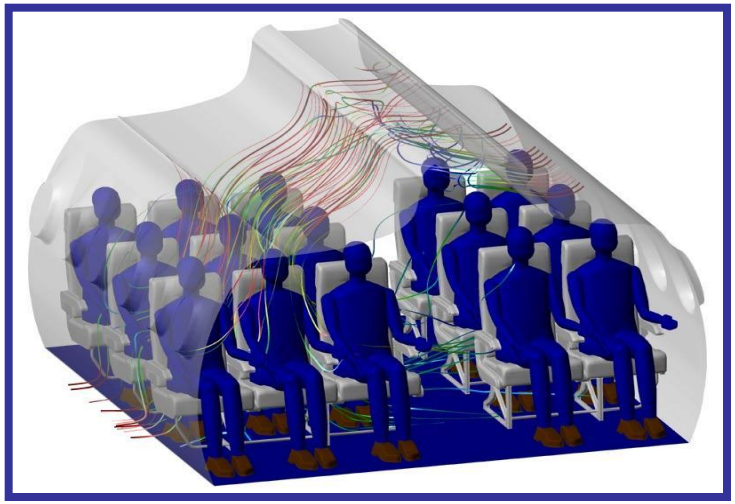
Aircraft Airflow

- Laminar not longitudinal





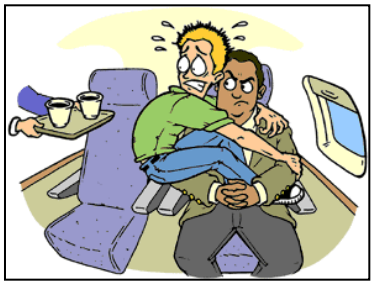
- Risks for Infectious Disease:
  - Sitting in close proximity
  - Fomites, hand-to-hand



Psychiatric Conditions

- Consider:
  - Stability
  - Additional stresses of travel
  - Ability to self-care
  - Management of own medication
  - Risk of deterioration

Anxiety and fear of flying
Claustrophobia
Psychosis



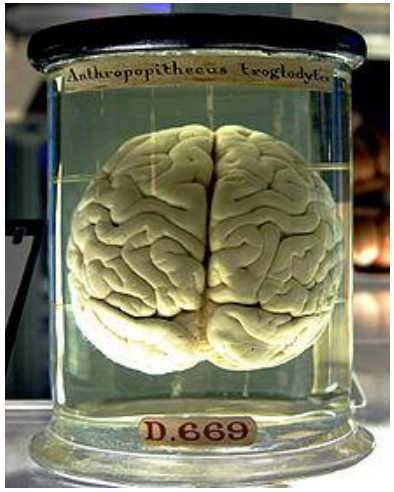
- May require an escort
  - Travel companion (friend/family)
  - Medical (nurse/doctor)
  - Security

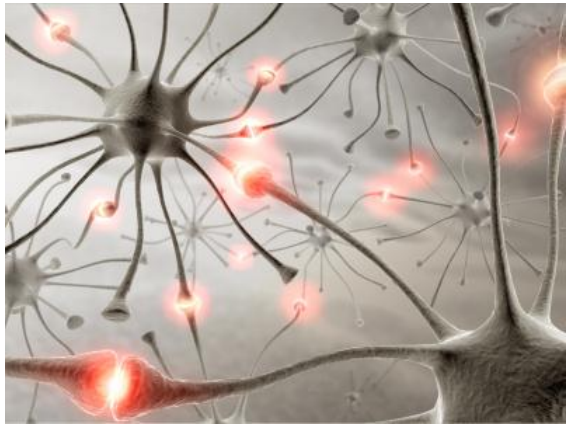
- Educate
  - Hyperventilation, breathing exercises
- Anxiolytic
  - If required, ground trial prior
- Consider MEDA
  - Crew aware

Adverse effects of alcohol are more marked at altitude… especially if combined with sleeping tablets & other medication

Neurological Conditions

- Escort
  - Physical or cognitive deficits (CVA, dementia)
- CVA, TIA
  - Supplementary oxygen within 2/52
- Seizures
  - Relative hypoxia may lower seizure threshold
  - Medication compliance essential
  - Not within 24h or prior to medical assessment for first seizure





Diabetes

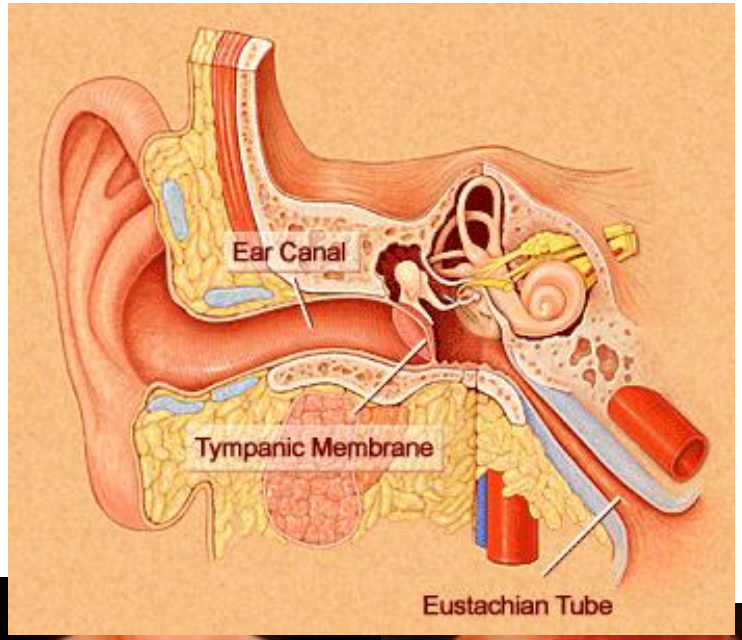
- Goal is to avoid hypoglycaemia in flight
  - Carry all medication in cabin (storage)
  - Letter from doctor
- Time Zone changes:
  - West: additional short acting or ↑ dose of intermediate
  - East: ↓ dose of intermediate and long acting insulin

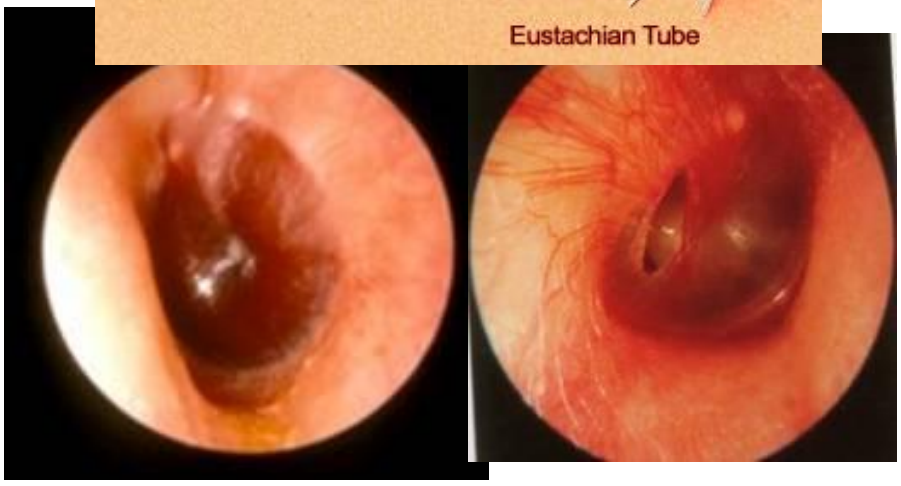
Tips for patients on air travel:

www.diabetes.org.nz

www.diabetes.org.uk

Middle Ear Infections



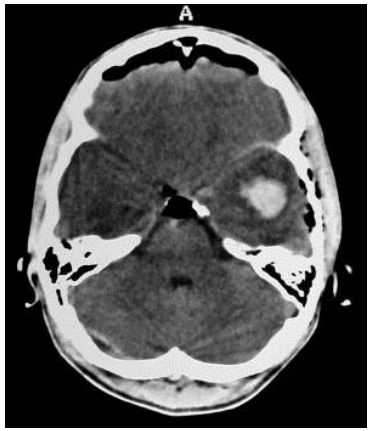


- Gas expands on ascent, contracts on descent
- If Eustachian tube blocked on descent:
  - Vaccum effect pulls TM in
    → Pain
    → Potential rupture, Otic barotrauma

DO NOT FLY IF CANNOT EQUALISE EARS

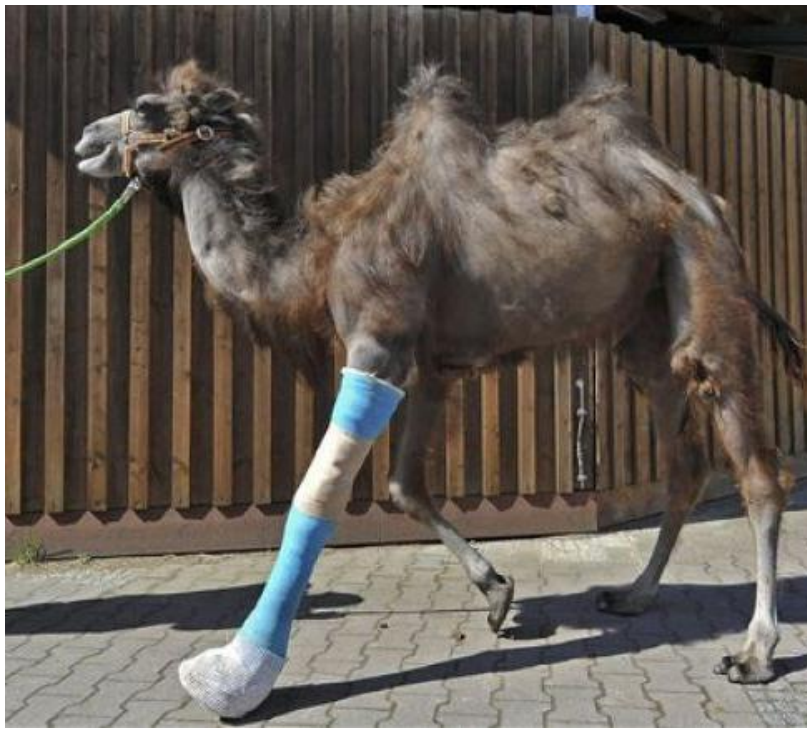
Surgery

- Depends on procedure
- Cataract/corneal surgery: 24h
- Laparoscopic surgery: 3-5/7
- Major abdominal surgery: 10/7
  - Case reports of suture dehiscence
- Cranial surgery: ≥10d
  - Or: CT with no intra-cranial air
- Check online guidelines



Broken Bones

- Problems if limb swells within closed cast
- Lower limb cast
  - Bivalve if <48 hours since break or surgery
- Consider
  - Anti-coagulation flights >8h
  - Check Hb >95
- Exit row must be able bodied, not permitted for more room



DVT Prophylaxis

- Risk secondary to air travel is controversial: 1 in 4656 flights
- Multi-factorial, related to duration of immobility (>8h), RR 2.0

All passengers	Slightly increased risk	Moderate risk	High risk
	Age >40 yrs Varicose veins Polycythaemia	Obesity Pregnancy Post natal OCP HRT Relative immobility Family history	Hx VTE Abnormal blood clotting Major surgery Malignancy
Maintain hydration, avoid alcohol Frequent calf muscle contraction, remain mobile Avoid constrictive clothing around waist and legs			
	Avoid sleeping pills or sleeping for long periods Consider graduated compression stockings		
		Graduated compression stockings	
			LMW Heparin

TAKE HOME MESSAGES

- Stability of condition predicts flight risk
  - Need medications in cabin baggage
  - Diabetics need specific advice
- Oxygen
  - Unlikely if walk 50m without SOB or pain
  - 2L is usually enough when required
- Consider Escort
- Air NZ Website for specific medical issues

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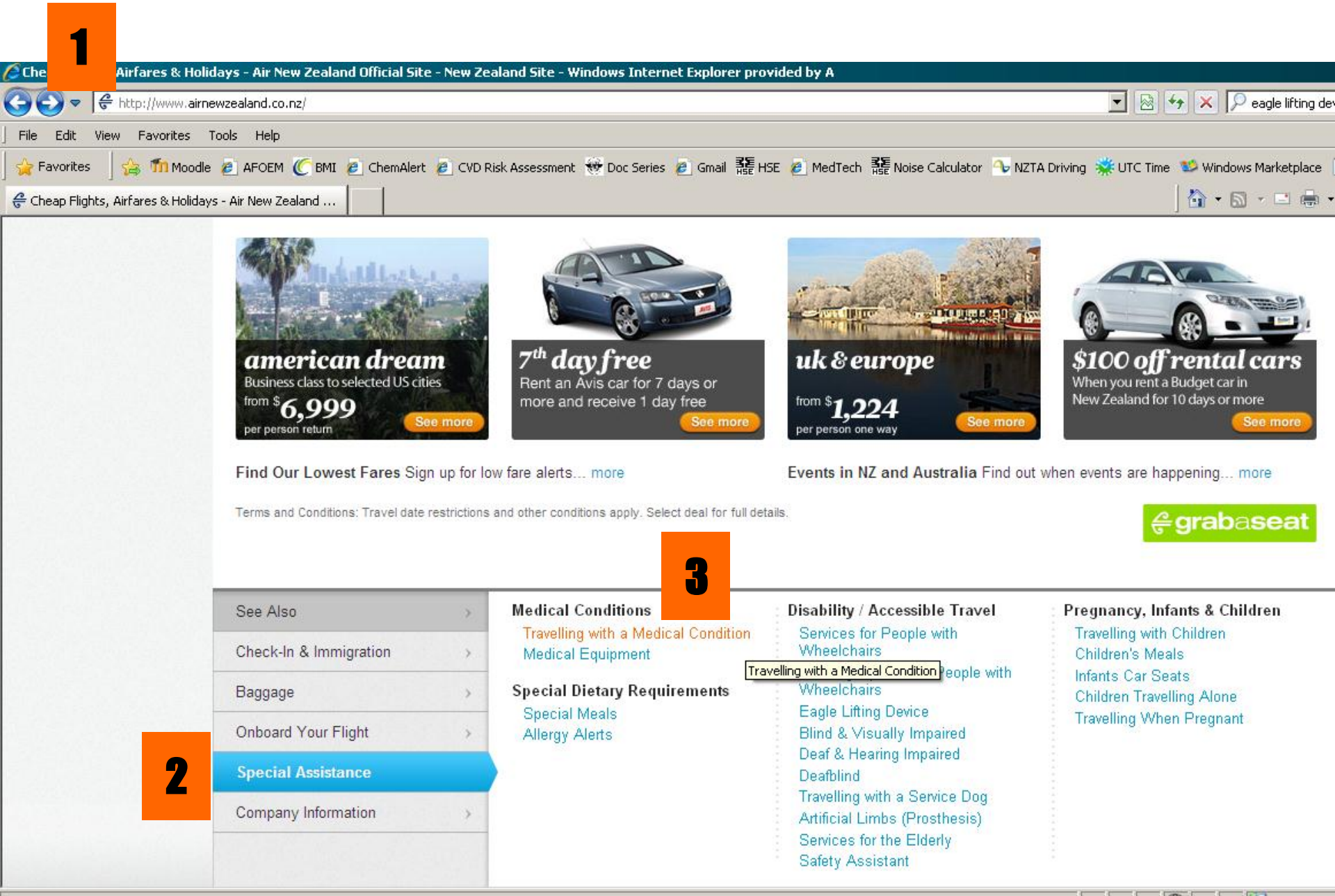
- Purpose
- Forms
- Website

MEDA Process

- Thinking about the condition and the in-flight environment
- Requesting assistance
- Stating your opinion on medical fitness for proposed flight
  - Can always call for advice
  - An application: Air NZ makes final decision
- Very few pax denied travel
  - Those that are can often travel once stabilised

- Aids treatment if deterioration in flight
  - Crew aware
  - Cooperation with other airlines

- Access latest version online



- Part 1: Pax or Agent to complete

MEDICAL INFORMATION FORM
FOR AIR TRAVEL (MEDA)

PART 1
To be completed by PASSENGER or AGENT

Please complete the form in CAPITAL letters using BLACK ink.

AIR NEW ZEALAND

A PASSENGER'S FULL NAME: DATE OF BIRTH (DD/MM/YY) / /

SEX: Male ☐ Female ☐ AGE: DAYTIME TELEPHONE: ( )

B FLIGHT DETAILS
Note: You may need to allow longer for transfer between flights.

AIRNZ BOOKING REF.	FLIGHT NO.	DATE	FROM	TO	CLASS	STATUS
	NZ					
	NZ					
	NZ					
	NZ					

C NATURE OF DISABILITY, ILLNESS OR INJURY:

D 1 INTENDED ESCORT
NAME: THEIR AIRNZ BOOKING REF: TRAVEL COMPANION ☐ DOCTOR ☐ NURSE ☐

2 Is the intended escort capable and prepared to provide all assistance including feeding, toileting and lifting as required? YES ☐ NO ☐

E SERVICES REQUESTED:
WHEELCHAIR NEEDED? YES ☐ NO ☐
If YES indicate category:
WCHR: Cannot walk far, but can manage stairs ☐
WCHS: Cannot walk far, cannot manage stairs ☐
WCHC: Unable to walk, needs assistance to cabin seat ☐

Own wheelchair? YES ☐ NO ☐
Manual? YES ☐ NO ☐
Power driven? YES ☐ NO ☐
Battery type (spillable?) YES ☐ NO ☐
Wheelchair weight? Kgs
Wheelchair Dimensions (Inches): W D H

Quadriplegic harness YES ☐ NO ☐
Seating Aisle seat ☐ Seat near toilet ☐
YES ☐ NO ☐
Oxygen (refer Part 2) YES ☐ NO ☐

Wheelchairs with spillable batteries are "restricted articles" and are permitted on passenger aircraft only under certain conditions.

F IS STRETCHER NEEDED ONBOARD? YES ☐ NO ☐ All stretcher transfers must have a medical escort.

G HAVE AMBULANCE ARRANGEMENTS BEEN CONFIRMED? Details:
At Departure Port? YES ☐ NOT REQUIRED ☐
At Transit Port? YES ☐ NOT REQUIRED ☐
At Arrival Port? YES ☐ NOT REQUIRED ☐

H HAS HOSPITAL ADMISSION BEEN CONFIRMED AT ARRIVAL PORT? YES ☐ NOT REQUIRED ☐
HOSPITAL DETAILS:
RECEIVING DOCTOR: ADDRESS
PHONE No. ( )

Medical transfer letter attached ☐ Note: All ambulance and hospital arrangements must be arranged by the treating doctor/hospital.

I OTHER GROUND ARRANGEMENTS NEEDED? YES ☐ NO ☐
If Yes, SPECIFY below and indicate against each item [a] the ARRANGING airline or other organisation.
[b] CONTACT addresses/phone numbers here appropriate, including when specific persons are designated to meet/assist the passenger.

Specify:

1 Arrangements for Departure Port YES ☐ NO ☐
2 Arrangements or assistance at Transit Ports YES ☐ NO ☐
3 Arrangements for Arrival Port YES ☐ NO ☐
4 Other requirements or relevant information. YES ☐ NO ☐

PASSENGER'S DECLARATION

- I HEREBY AUTHORISE _____ (Name of nominated medical doctor in CAPITAL LETTERS) to provide Air New Zealand with the information required by Air New Zealand's Chief Medical Officer for the purpose of determining my fitness to fly, I believe that doctor of his/her professional duty of confidentiality in respect of such information, and I agree to meet such doctor's fees in connection therewith.
- I have provided my Doctor with Air New Zealand MEDA Part 2 to complete and MEDA Part 3 Information for Doctors
- I take note that, if acceptable for carriage, my journey will be subject to the general conditions of carriage/tariffs of Air New Zealand and that Air New Zealand does not assume any special liability exceeding those conditions/tariffs.
- I am prepared, at my own risk, to bear any consequences which carriage by air may have for my state of health and I release Air New Zealand, its employees, servants and agents from any liability for such consequences.
- I agree to reimburse Air New Zealand upon demand for any special expenditures or costs in connection with my carriage.
- I hereby authorise Air New Zealand to send a copy of this authorisation to my medical doctor indicating my consent.
- I agree to contact the Air New Zealand Passcare team if my medical condition or travel details change in any way prior to travelling.

NAME SIGNATURE DATE (DD/MM/YY) / /

• Part 2: Doctor to complete

- 14 check boxes (Yes/No + details if required)
- Send to Paxcare

MEDICAL INFORMATION FORM
FOR AIR TRAVEL (MEDA)

PART 2
To be completed by nominated DOCTOR

This form is intended to provide CONFIDENTIAL information to assess the fitness of the passenger to travel. If the passenger can be transported, this information will facilitate the issuance of the necessary directives.

The Doctor of the named passenger is requested to answer ALL questions. Enter an "X" in the appropriate "Yes" or "No" box and give concise answers.

MEDA 01 PASSENGER'S FULL NAME: DATE OF BIRTH (DD/MM/YY) / /

SEX: Male ☐ Female ☐ DAYTIME TELEPHONE: ( )

FLIGHT DETAILS
Note: You may need to allow longer for transfer between flights.

AIRLINE BOOKING REF.	FLIGHT NO.	DATE	FROM	TO	CLASS	STATUS
	NZ					
	NZ					
	NZ					
	NZ					

MEDA 02 DOCTOR NAME: SPECIALITY:

NAME OF HOSPITAL/CLINIC: MOBILE PHONE: ( )

FAX: ( ) EMAIL

Note: You may be contacted by Air New Zealand for further information to allow your patient to fly. Please provide all contact information requested

MEDA 03 MEDICAL DATA

DIAGNOSIS IN DETAIL (eg injury, type of operation, co-morbidities): Date of surgery/procedure/diagnosis: (dd/mm/yy) / /

VITAL SIGNS (dd/mm/yy) / /

BP: / PULSE: bpm SAO2 (on air): %

MEDA 04 PROGNOSIS FOR THE FLIGHT(S) Please consider the potential effects of the itinerary and physiological stresses of flight on the patient's state of health and mention if Terminal case. Details should be provided for guarded / poor (refer Part 3).

GOOD ☐ (no problems anticipated) GUARDED ☐ (potential problems) POOR ☐ (problems likely) Details (e.g. late stage disease, unstable)

MEDA 05 Is PASSENGER FREE FROM Contagious AND/OR Communicable disease: YES ☐ NO ☐ Specify:

MEDA 06 Would the physical and/or mental condition of the passenger cause distress or discomfort to other passengers? YES ☐ NO ☐ Specify:

MEDA 07 Can the passenger use a normal aircraft seat with seatback placed in the UPRIGHT position when required (required by Civil Aviation Rules) YES ☐ NO ☐ Travelling via Stretcher? YES ☐ NO ☐

GUIDANCE: Passengers who can walk to someone without oxygen generally do not require supplementary oxygen. If sea-level SAO2 is 95% passenger is unlikely to need oxygen in flight. If SAO2 is 92% they may need O2 if >48hrs. should travel with O2.

Continuous flow ☐ Pulse delivery ☐

Has oxygen been arranged for transit with another provider? YES ☐ NOT REQUIRED ☐ Specify:
Note: Air New Zealand is only able to provide oxygen in flight

\ 11 Does the passenger need any MEDICATION other than self-administered?

(a) On Ground: YES ☐ NO ☐ Specify:

(b) On board the AIRCRAFT: YES ☐ NO ☐ Specify:

List Medications needed during the flight:

Can these be administered by the escort: YES ☐ NO ☐

\ 12 Does the passenger need the use of SPECIALA PPARATUS such as respirator, IV pump, monitor, etc?

(a) On Ground: YES ☐ NO ☐ Specify:

(b) On board the AIRCRAFT: YES ☐ NO ☐ Specify:

Note: To prevent interference to the flight operation, all electronic apparatus specification must be verified by Air New Zealand for use On Board. Please note whether equipment exceeds cabin baggage weight or dimensions, required aircraft power supply and whether it can be used during all phases of flight including take-off or landing.

\ 13 Does the passenger need HOSPITALISATION? (If YES indicate arrangements made)

\ 14 (a) During layover: YES ☐ NO ☐ Receiving Hospital: Telephone Contact: ( )

(b) Upon arrival at DESTINATION: YES ☐ NO ☐ Receiving Doctor: Telephone Contact: ( )

Medical transfer letter attached ☐ Note: The doctor is responsible for all arrangements including ambulance transfers (refer part 1).

\ 15 Other remarks or information in the interest of the passenger's smooth and comfortable travel. NONE ☐ Specify if any:

\ 16 Other arrangements made by the doctor NONE ☐ Specify if any:

Note: Cabin crew are NOT authorised to give special assistance to particular passengers, to the detriment of their service to other passengers.
Cabin crew are employed as a food handlers and are therefore UNABLE to assist with toileting needs. They are trained in FIRST AID procedures only and are NOT PERMITTED to administer any injection, or give medication. Please ensure the passenger has all the necessary help via their travel companion.
IMPORTANT Fees: If any costs are incurred for the provision of specific equipment, these must be met by the named passenger

TOR DECLARATION

- I understand the final decision for passenger acceptance for travel rests with Air New Zealand alone.
- I have read and understood PART 3 of the Air New Zealand MEDA.
- In my opinion, this person is safe to undertake the proposed flight/s, is not contagious, and is not likely to affect the safety or wellbeing of other passengers or crew.
- I agree that the services requested above are appropriate in the circumstances. This passenger is able to take care of their own meals, transfers, personal hygiene, medication and other needs in flight (or is accompanied by someone who can assist with all these needs).
- Where an escort is required, I believe they are qualified and have all necessary equipment to deal with the patient's needs and any likely complications during the journey.
- I have enclosed a recent detailed MEDICAL REPORT for serious cardiopulmonary cases, cases requiring hospital transfer, terminally ill passengers, those requesting continuous oxygen or stretchers, and other complicated or potentially serious medical cases.

E SIGNATURE DATE (DD/MM/YY) / /

- Part 3: Guidelines for Doctors

	hronic disease and g/L. If lower or if ler transfusion +/- < Hb>24h after last blood loss, which must have ceased.
Sickle cell disease	≥10d after a sickling crisis. Must travel with pre-arranged supplementary oxygen.
Bleeding disorders	Contraindicated if active bleeding.
Clotting disorders/ Thrombophilias	Anticoagulation stabilized and therapeutic.

Communicable/ Infectious diseases	
Varicella (Chickenpox)	May travel once all lesions have formed scabs - generally around 7 days after start of rash.
Measles (English)	Travel 5d from the start of the rash.
Rubella (German measles)	Travel 5d from the start of rash.
Dengue Fever	Travel if clinically stable. Transmission Aedes mosquito. Not transmissible from person to person contact.
Hepatitis A,B,C	Travel if clinically stable.
HIV	Travel if clinically stable.
Lice	May not travel if active head or body lice present.
Meningitis (bacterial - meningococcal)	May not travel if ill or had recent close contact to a person with meningococcal disease.
Meningitis (Viral)	Travel if clinically stable.
Mumps	Travel after 4d from start of swelling if stable
Shingles	Travel if otherwise well and all lesions crusted over (and covered where practicable).
Tuberculosis (Tb)	MEDA required from treating physician stating passenger is not infectious.
Cholera	>6d after onset as long as diarrhoea settled and clinically stable.
Yellow fever	May travel after 7d if clinically stable.
Viral haemorrhagic fevers	Absolutely contraindicated for travel.

Gastro-intestinal	
Gastrointestinal bleed	No travel<24h following bleed. May travel ≥10d if stable. After 1-9d travel may be considered if stable and clear evidence that bleeding has stopped e.g. endoscopic confirmation or serial Hb rising as expected over time.
Major abdominal surgery e.g. bowel resection, open hysterectomy, renal surgery etc	Usual is travel ≥10d post-op if uncomplicated recovery. AvMed unit may consider travel at 7-9d if excellent recovery.

TAKE HOME MESSAGES

- Access MEDA forms on Air NZ Website
  - Don’t print and photocopy old versions

- Please make them LEGIBLE!!
- Include contact details clearly
- Use MEDA Part 3: Guidelines for Doctors

Overview

1. Background
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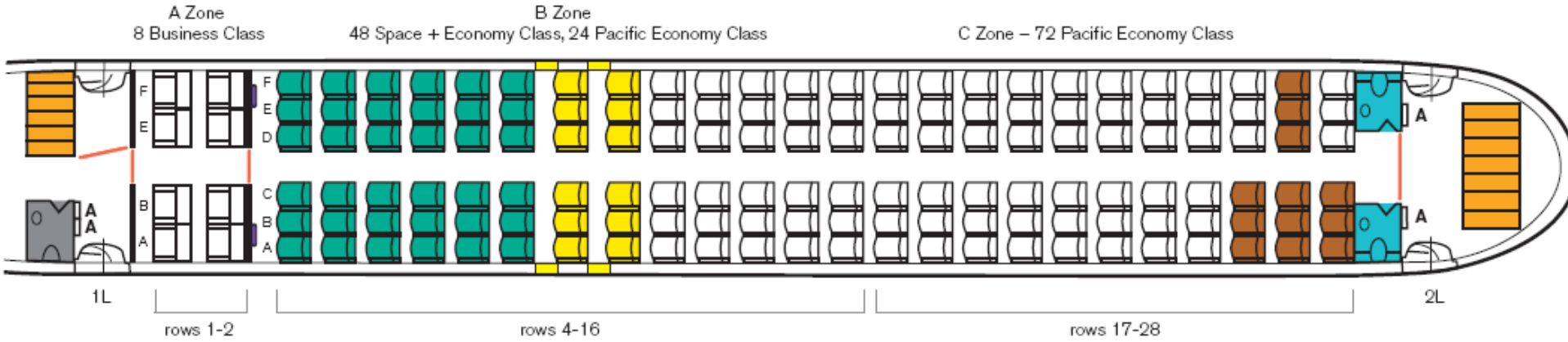
4. Specific Medical Conditions
5. Air New Zealand MEDA Process
6. **Available Assistance**
7. Pilots as Patients
8. Take home messages

- Expert Knowledge
- Medical Equipment

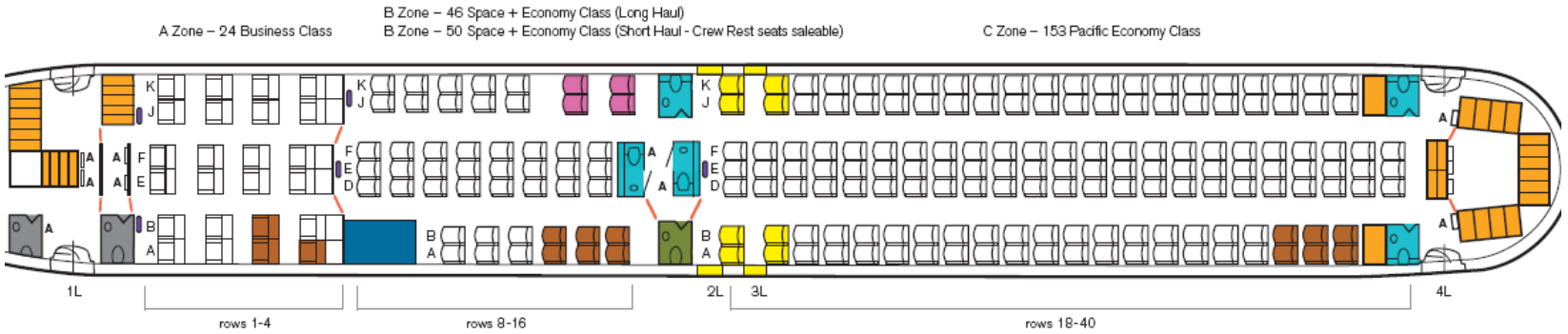
Cabin Layout



Premium Zone lavatories
Economy Zone lavatories
Bassinet positions (2)
Space + Economy Class (rows 4-12)
Galleys
Curtains
Special Handling Seating
Exits row seats
A Flight Attendant position

- Visually impaired seating: Any seat except for restricted emergency exit rows
- Stretcher rows: 26-28ABC
- Medical Power Point: 28B
- Seats with vertical arm-rests: All seats except 4ABC DEF
- Preferred lifting device seating D seats but not row 4
- Oxygen concentrator seating: 28ABC
- Disabled seating: Any seat except for restricted emergency exit rows
- Unaccompanied minors: row 27 and forward except restricted

A320

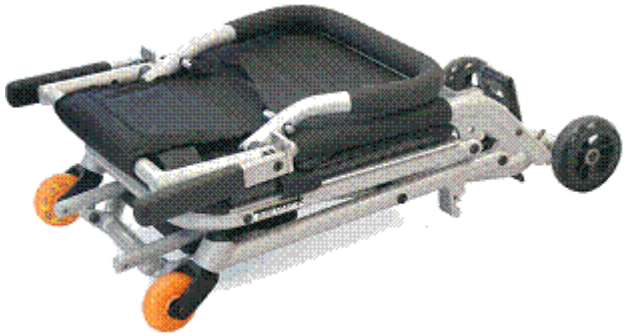


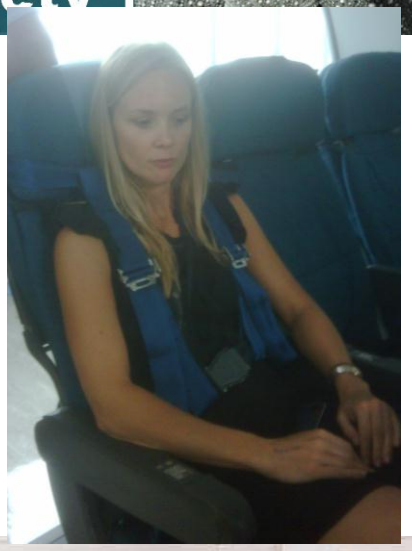
- Oxygen concentrator seating: 4A, 16A
- Stretcher rows: 14AB - 16AB
- Medical Power Points: 3AB - 15AB
- Seats with vertical arm-rests: All except 8DEF, 9JK, 11AB
- Preferred lifting device seating DJ seats but not rows 8, 9, 18, 19
- Disabled seating: Any seat except for restricted emergency exit rows
- Unaccompanied minors: rows 36AB - 38AB
- Visually impaired seating: Any seat except for restricted emergency exit rows

767-300

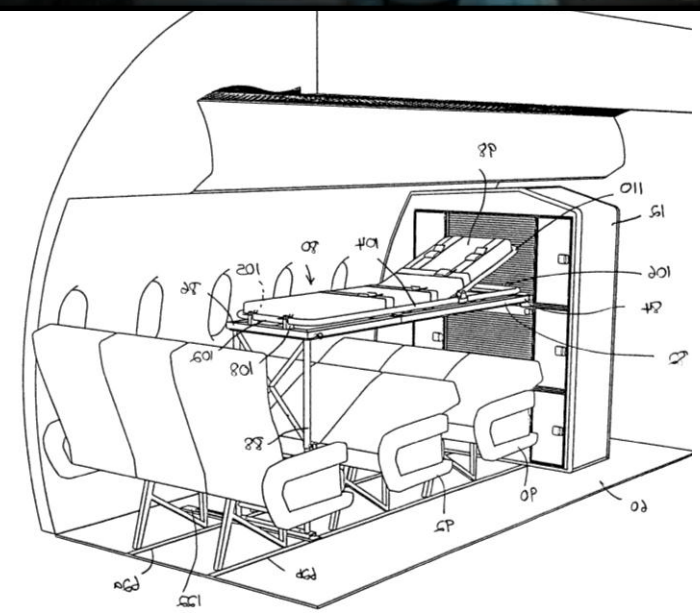
Mobility Equipment

- Ambulift
- Wheelchairs
- Aisle Chairs





- Tetraplegic Torso Harness
- Eagle Lifting Device
- Slide Board & Sheet
  - Staff: slide or legs
  - Support person: if cannot evacuate independently
  - Early boarding



Stretchers

- International only
  - Most aircraft types
  - Most flights
- Medical escort required
  - Ambulance, transit O_2 pax responsibility

In-flight Oxygen

- Must be pre-arranged
  - Nominal cost for pax
- Not provided on ground
  - Raffles, HK

- Emergency oxygen supply is for flight-related emergencies
  - E.g. Sudden decompression
  - Limited supply
  - Must not rely on this for pax

- Oxygen bottles vs concentrators
- Domestic: pre-approved, source from BOC
- Internationally: Air NZ Oxygen Concentrator
  - When pre-approved may use own

Oxygen concentrators

- Concentrates O_2
  - Chemical filter, silicate granules
  - Sieves out nitrogen
- Smaller, lighter
- Can be supplied by Air NZ
  - With sufficient notification
- Pulse delivery
  - Activated by initiation of breath (may not be suitable for those with poor respiratory effort)

Personal Medical Equipment

- Must be pre-approved via MEDA
  - ≥48-72h prior
  - E.g. Nebuliser, CPAP
- Included in cabin baggage allowance
- Most require battery
  - Aircraft power supply 115V, 400Hz, US plug, limited medical outlets

In Flight Assistance

- For more details, come to talk on IFE!
- Medlink via Sat Phone
- Physicians Kit
- Cabin Crew Operating Manual

TAKE HOME MESSAGES

- MEDA process is to facilitate, not deny, travel

- Equipment and Expertise is available
- We will help even seriously ill pax fly
  - E.g. Palliative Care patients

- If in doubt, complete a MEDA

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7. **Pilots as Patients**
8. Take home message

- Legal Obligations
- Medical Conditions of Potential Concern

Civil Aviation Act (s27C)

- Medical Practitioners **must** report a medical condition that ***may*** interfere with Aviation Safety as soon as is practicable

- Public Safety Responsibility
- Indemnity covered if reasonable grounds in good faith
  - Unsure? Discuss with CAA Med Unit
  - Able to report without patient consent
  - Advise pilot going to report to CAA
  - Document reasons

CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

http://www.caa.govt.nz/medical/Med_Info_Sheets/MIS002.pdf

- Law covers:
  - All private pilots, commercial pilots, airline pilots,and ATCs;
  - Some student pilots, parachutists, glider pilots, ultralight / microlight pilots, hang-glider pilots, and balloonists

- Pilots have legal obligation to advise CAA

http://www.caa.govt.nz/medical/Med_Info_Sheets/MIS002.pdf

Examples

- Pregnancy
  - May only fly 13^{+0} to 28^{+6}/40
  - Return ≥6/52 post partum
- Drink driving episode
- Surgery
- Musculoskeletal problems
- CVA/TIA
- Depression, other psych conditions
- Renal stones
- Medications
- Others…

psychoactive drugs
antihypertensives
warfarin
sulfonylurea
alpha-blockers
steroids
anticholinergics
isotretinoids
viagra

TAKE HOME MESSAGES

- All Doctors **must** report a medical condition or treatment that ***may*** interfere with Aviation Safety as soon as is practicable

- Red Flags:
  - Behavioural changes
  - Incapacitation
  - Functional Impairment
  - Reduction in Cognitive Function

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SUMMARY: Take home messages

- Before travel:
  - Discuss or decline high risk or contraindicated pax
  - Submit MEDA
  - Advise pt to obtain travel insurance, vaccinations
  - Consider travel companion, escort
  - Pre-approval for medical equipment, O_2
- During the flight:
  - Medication in cabin baggage
  - Avoid alcohol, smoking, gas producing food/drink
  - Remain mobile, calf exercises

SUMMARY: Take home messages

- Relative hypoxia (15% oxygen c.f. 21%)
- Gas expansion 30%

- Stability of condition
- Risk of complication/exacerbation
- Difficult problems in flight environs
- Risk to others
- Absolute contraindications
- Special requirements
- Doctors treating Pilots have legal requirements

- MEDA process: helpful for both pax and Air NZ
- Guidelines available to help on Air NZ Website

Contact Details

Air NZ Aviation Medicine Unit
Phone: +64 9 256 3924
Email: Alexandra.Muthu@airnz.co.nz
Email: Tim.Sprott@airnz.co.nz

MEDA Clearance enquiries
Phone: +64 9 255 7757
Fax: +64 9 336 2856
Email: MedaClearance@airnz.co.nz

Special Handling enquiries
Phone: +64 9 255 7757
Email: SpecialHandling@airnz.co.nz

Scenarios

- Redesign of form + Guidelines should help
  - Unsure if omitted or purposely left blank
  - Too many follow-up queries required
  - Not consistent with IATA
  - Difficult to read

- 15 m.o. with Chickenpox
- Travelling Wellington to Sydney
- MEDA states “seat away from elderly (at risk) passengers”

Communicable/ Infectious diseases	
Varicella (Chickenpox)	May travel once **all** lesions have formed scabs - generally around 7 days after start of rash.
Measles (English)	Travel 5d from the start of the rash.
Rubella (German measles)	Travel 5d from the start of rash.
Dengue Fever	Travel if clinically stable. Transmission Aedes mosquito. Not transmissible from person to person contact

- Don’t forget parents and siblings
  - Incubation 10-21d
  - Infectious 2d before rash until scabs

- 28y with Pneumothorax
- Due to travel in 5/7
- Lung not fully inflated when MEDA received

Asthma	Can fly if mild or moderate asthma, currently asymptomatic, travelling with medication in hand luggage. Severe/brittle asthma – discuss with AvMed Unit. Note, most common cause for asthma attack in aviation setting is rushing to board flight and forgetting to have inhaler in carry-on bag.
Pneumothorax – spontaneous or traumatic	Contra-indicated for flight if lung not fully inflated. Travel should be delayed 14 days post resolution. Earlier travel may be considered in discussion with AvMed Unit. Requires check x-ray post removal of drain to confirm complete resolution of pneumothorax. If Heimlich type drain and medical escort early transportation is acceptable.
Chest surgery (pulmonary) e.g. lobectomy	May fly ≥11d post-op if uncomplicated recovery, no pneumothorax.

- 12y with Anaphylaxis to Peanuts
- Travelling Auckland to Brisbane
- Carrying an Epipen
- Accompanied by 6y brother

Other conditions/circumstances	
Anaphylaxis	Recommend travel with adrenalin auto-injector in hand luggage and passenger must be capable of self-administration or travelling with escort who can administer. Allergen-free environment (including meals) cannot be guaranteed.
Scuba diving	>24h following uncomplicated scuba diving. Flying should be further delayed if multiple dives in the 3d before travel.
Decompression illness	In discussion with treating physician (hyperbaric medicine) and AvMed Unit – generally 3-7d after treatment

- Unable to provide allergen free cabin
- Consider if could self administer with allergy symptoms & panic
- Escort >16y

- 69y with mild Dementia
- Travelling Invercargill - Wellington - Auckland

Increased intracranial pressure	Travel when clinically stable and neurologically intact.
Dementias	If severe e.g. significant risk of acute behavioural problems that would be difficult to manage in-flight even with escort – avoid travel. If lives in hospital/rest-home may travel providing stable behaviour & management with a nurse escort. If stable (calm and co-operative) may be able to travel with a non-medical family/friend escort, but consider the stresses of travel. Consider provision of oxygen if co-existing heart or lung disease.
Brain tumour	Not fit for travel if significant symptoms e.g. uncontrolled seizures. Consider need for escort if significant deficits.
Cerebral Palsy	Can travel if clinically stable.

- 53y with Epilepsy
- Travelling LAX to Auckland
- Seizure 2/7 ago
- On medication

Neurological Conditions	
CVA/TIA	≤2d should not fly. Minor CVAs including TIAs fit for travel ≥ 3d if stable and improving. Major CVA can travel after 10d if stable. Travel may be considered after 5d with AvMed Unit clearance. Supplementary oxygen required within 2 weeks of major CVA. Nursing escort may be required dependent upon deficits.
Seizures	Should not fly if seizure<24h before departure or uncontrolled epilepsy. May travel if ≥24h since seizure and control stable. First-time seizure requires medical assessment & clearance. Note that relative hypoxia at cabin altitude can lower seizure threshold – encourage compliance with medication .
Syncope	Acceptable for travel if <70y with classic vasovagal symptoms, no history of CAD, significant heart arrhythmia,