So what if your patient happens to fly?

Dr Claude Preitner - Senior Medical Officer CAA
So what if your patient happens to fly?

Your patient is a pilot
- General principles
- Cases
- Doctors legal obligations

Your patient travels by air
- General Principles
- In-flight emergencies
Pilots, not all subject to the same standards

CAA medical certificate, by designated Medical Examiner

- Class 1: Commercial
- Class 2: Private
- Class 3: Air traffic Controller (ATC)

Non CAA medical certificate, by GP

- NZTA (passenger vehicle): Recreational pilot
- Medical Declaration: Self regulating organisations e.g gliders, microlights, hang gliders etc.
General principles

Flying is foreign to the individual (3 D + time)
Can’t stop the aircraft! – need for planning ahead
Multitasking

- Must have good cognitive function & Judgment
  - Fatigue (workload - Jet lag - poor sleep e.g. due to sleep apnoea, or pain, worries)
  - Medication / drug and alcohol
  - Mental Health, behaviour issue
  - Aging
General principles

- Requires sufficient **physical function** for the task
  - Vision
  - Hearing
  - Limb function
    - Range of movements
    - Power and coordination
    - No distracting / incapacitating pain
General principles

Must have low risk of incapacitation (sudden, subtle)

- Epilepsy, PTE
- CVA
- Migraine
- Vertigo
- Eustachian tube / sinus dysfunction
- Asthma (unstable or severe) / COPD
- Coronary Artery Disease
- Tachy / brady arrhythmia
- Hypotension &
- Vasovagal syncope
- Cholelithiasis
- Renal lithiasis
- DVT $\Rightarrow$ P. E
- etc
Case

J Blogg, male - age 60

- Flies small twin engine aircraft for the local Air ambulance
- Total hip replacement on 1 July 2010
- Reports to you that he is fine, wants to work seeking clearance certificate from you

- What do you do?
- What do you write?
Medical Certificate

Typical certificate

“Mr J Blogg has been unable to work since 1st July 2010. He has recovered well and will be fit to work on 8 August 2010”.

Problem:

- CAA Medical certificate has been suspended
- CAA doctor or Aviation Medical Examiner needs to make a decision to clear him back to flying
- CAA Cannot make that decision without adequate medical information
- Please report the facts. Can you make an aviation medicine decision or recommendation?
J Blogg – Total hip replacement

❖ Cognitive:
  ➢ Sleep ?
  ➢ Medication ?

❖ Function ?
  ➢ Range of movement
  ➢ Muscle power

❖ Incapacitation ?
  ➢ Risk of dislocation
  ➢ DVT
Mr J Smith underwent shoulder surgery on 1 July 2010. He has near full range of movement and full power, he is free of pain during the day, he sleeps well with the help of two Paracetamol tabs taken at night for some residual nocturnal pain."
Ag pilot - mid 40s - Accident
Ag pilot - mid 40s

⇒ S: patient seeks clearance to work as a Pilot. Aircraft accident one week ago.

⇒ O: Moving well, no apparent pain, BP 136/74. chest and heart ok. Bruising only to leg and pelvis, abdomen ok. Chest X-ray reviewed, no finding.

⇒ Plan: Copy notes to patient for aviation doctor.
GP notes - comments

- Notes quite detailed
- Considered chest injury
  - No Pneumothorax!
- Did not give an opinion regarding flying clearance
  - Not qualified to do so
  - Avoids conflict
- Did not clearly indicate if head injury (CT scan?)
- Did not clearly address psychological status (PTSD?)
Treating / Prescribing to pilots

- **Concern with condition**
  - Seizure risk (head injury, history of seizure, cancer)
  - Migraine
  - Vertigo
  - Ischaemic heart disease
  - Rhythm disturbance i.e. AF, tachyarrhythmia, heart block
  - Renal stones
  - Depression
  - Drug / alcohol

- **Concern with medication**
  - Psychoactive medication
  - Medication that can lead to impairment - primary effect
    - Antihypertensive (trial period), Warfarin, Sulphonylurea
  - Can lead to Impairment - side effects
    - Alpha blockers, Steroids, Anticholinergics, Isotretinoids etc
Case 3 – Female – Age 35

- Jane Dow attends
  - Poor sleep
  - Anxiety
  - Depressed mood, 1 month
  - Not suicidal
  - Relationship difficulties
  - Mother just passed away

- Rx: Fluoxetine

Certification issues:
- Is condition likely to:
  - Impair concentration?
  - Impair judgment?
- Is it early major depression, i.e. stable?
- Is the medication tolerated?

CAA wants to know!
Pilot obligation - s27C (paraphrased):

- If a licence holder is aware of or has reasonable grounds to believe any change in his / her medical condition that may interfere with safe exercise flying, the licence holder must:
  - Advise the Director
  - May not exercise the privileges related to the certificate.
What are your obligations

S27C of the Civil Aviation act (paraphrased):

- If a doctor is aware of or has reasonable grounds to believe that a person is a licence holder, and

- is aware, or has reasonable grounds to suspect that the licence holder has a medical condition

- that may interfere with safe exercise flying, the registered medical practitioner must, as soon as practicable:
What are your obligations

- Inform the licence holder (your patient) that you will advise the Director of Civil Aviation
- Advise the Director of the condition
- **Indemnified Act:** Not subject to any civil or criminal liability.
CAA Action

- Require information
- Can impose conditions (e.g. Isotretinoid → no night flying)

- Can suspend the medical certificate
  - And after 10 working days
    - Can disqualify
    - Can do all of the above
Ethical Issues

- Ethical dilemma, choosing between:
  - Best treatment,
  - and
  - Treatment that is acceptable for certification?
    e.g.: Not giving optimum treatment for diabetes, to avoid Sulphonylurea or Insulin

- Reporting to third parties: NZMC guidelines. No advocacy!
Questions?

www.caa.govt.nz → Medical, or call us
Your patient as a passenger
NZ is remote – long distances
Large aircraft – lots of people
Your patient as a passenger

Environment

- Low humidity (5 – 35 %)
- Reduced barometric pressure
- Reduced paO2
Diving and flying

Risk of decompression sickness (Undersea and Hyperbaric Medicine Society workshop - 1990)

- 12 h for less than 2h diving in past 2 days
- 24 h after multiday unlimited (in time) dives
- 24 h but preferably 48 h after any dive requiring decompression stops

Sheffield, PJ, Abstract 20, Supplement to Undersea Biomedical Research, Vol 17, 1990
General issues

- Stress prior to departure
- Lack of sleep
- Medication
  - Forgotten / in wrong luggage
  - Interaction with alcohol
  - Time zone → Timing of medication
- Delayed flights
- Delayed luggage
Cardiovascular disease

☞ Ischaemic heart disease
  ➢ Angina controlled
  ➢ MI > 7 days if uncomplicated

☞ Cardiac failure
  ➢ Controlled
Respiratory disease

- **Pneumothorax**
  - 7 - 14 days, with escort

- **COPD**
  - Exercise tolerance > 50 – 100 m
O2 need assessment

 денежная оценка

Scientific

- Altitude chamber to 8000 ft
- 15% Oxygen trial
- Prediction formula

Practical

- Can patient walk 100 m with hand luggage, unassisted?
- SatO2 on the ground:
  - < 93% but > 88%, may need O2
  - < 88% does need O2 M
    - Must book O2 supply with airline
Haematology

- Anaemia
  - Symptomatic, or
  - <8.5 g /L
  - Transfusion or O2 supplementation

- Sickle cell
  - Uncommon in NZ, usually not a problem
  - > 10 days after crisis (+ O2)

- Thrombophilia
Diabetes on insulin

- Two blood monitoring devices with extra batteries (in two bags);
- Enough insulin, syringes and testing equipment;
- Regular insulin and short acting (no fridge available on aircraft);
- Emergency kit, i.e Carbohydrates & Glucagon;
- Medication for diarrhoea and vomiting;
- Medic Alert;
- Insurance papers;
- GP letter or essential medical records.

Metabolic - diabetes

Adjusting insulin injections:

- Avoid hypoglycaemia

- Less than 5 times zone, no adjustment
- Keep watch at departure time

- Travelling East → shorter day → less Insulin
- Travel in West → longer day → more insulin

Pregnancy

- Foetal haemoglobin favours the foetus
- Flying permitted until 36 weeks (certificate if over 28 weeks)
  - Multiple pregnancies?
  - History of pre term labour?
  - Complicated pregnancy?
    - Foetus?
    - Mother?
Surgery

- Laparoscopic surgery;
  - > 5 days

- Major abdominal surgery;
  - > 10 days

- Neurosurgery
  - > 10 days and no air

- Intraocular surgery
  - > 7 days up to 6 weeks (retinal detachment)

- Other considerations: secondary bleed!
Fractures

- Lower limbs oedema during flight
- Lower limbs cast must be split if $< 72$ h Cast
- Exit row not permitted
Mental health

- Psychosis not under control
  - Medical escort if unstable
  - +/- security
- Anxiety and fear of flying or
- Claustrophobia
  - Hyperventilation
  - Panic
Infectious disease

- Tb

- Air conditioning: complete recycle every 3 minutes
- Complete air change every 6 minutes
- In practice 2 rows in front and behind to be traced
Special needs

- O2
- Impaired i.e blind or deaf
- Mobility
  - Assistance – need for wheel chair to aircraft
  - Patient in wheel chair
- Neonates
- Terminally ill
- Stretcher
### Medical Fitness for Air Travel (MEDA) - July 2009

**PLEASE PRINT IN BLOCK CAPITALS**

<table>
<thead>
<tr>
<th>Flight Details</th>
<th>All New Zealand booking reference:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME:</td>
<td></td>
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<tr>
<td>AGE:</td>
<td></td>
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<td>DAYTIME TELEPHONE:</td>
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<th>Flight No.</th>
<th>NZ</th>
<th>Date:</th>
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<th>To:</th>
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<td>Date:</td>
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<td>To:</td>
</tr>
</tbody>
</table>

**Are you travelling with: (please circle):**
- A companion?
- A doctor?
- A nurse?

<table>
<thead>
<tr>
<th>Their Name:</th>
<th>Their Air New Zealand Booking Reference:</th>
</tr>
</thead>
</table>

**Medical Details:**

**Description:**

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>Mild ☐</th>
<th>Moderate ☐</th>
<th>Severe ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of injury/increase/surgery (if applicable):</td>
<td>of discharge from hospital (if applicable):</td>
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**Services Requested:**

- [ ] Aisle Seat
- [ ] Wheelchair to the aircraft steps (can manage steps if required)
- [ ] Seat Near Toilet
- [ ] Wheelchair to the aircraft door (cannot manage steps)
- [ ] Quadruple turn harness
- [ ] Wheelchair to the aircraft seat (cannot walk from door to seat)

Note: Ambulance arrangements to/from airports are passengers' own responsibility.

- [ ] Oxygen 2 liters per minute by nasal prongs needs to be AVAILABLE THROUGHOUT THE FLIGHT. Passengers are able to use a SPECIAL DILUTED oxygen concentrator. [ ] Yes [ ] No (extra charge applies for oxygen supply - see note 2)

Note: Other equipment available by special arrangement:

- [ ] Stretcher
- [ ] Air New Zealand International Services Only.
- [ ] Oxygen Bottles to drive ventilator
- [ ] must be escorted by Qualified Doctor/Nurse
- [ ] Power supply to in-flight oxygen

**Other Requests:**

**PLEASE NOTE:** Flight attendants cannot provide assistance with heavy lifting, eating, personal hygiene, using devices or administering medication. Passengers needing help with these needs should be accompanied by someone who can assist.

**DOCTOR'S CERTIFICATE**

**AIR NEW ZEALAND LIMITED** acknowledges that in providing the requested standard MEDA information the medical practitioner concerned is providing an opinion to the best of his/her knowledge and assessment of the subject and that the final decision as to whether to accept the subject for carriage by its services rests with Air New Zealand Limited alone.

I have read the considerations overleaf and on the notes attached to this form. In my opinion this person is safe to undertake the proposed flight, is not contagious, and is not likely to affect the safety or well-being of other passengers. I agree that the services requested above are appropriate in the circumstances. This passenger is able to take care of his/her own needs, transfer, personal hygiene, administering medication and other needs in-flight, or escorted by someone who can assist with these needs.

**Additional Comments:**

**Office Use Only**

<table>
<thead>
<tr>
<th>Doctor's Name:</th>
<th>Signed:</th>
<th>Date:</th>
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<tr>
<td>Qualification / Speciality:</td>
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<tr>
<td>Doctor's Email Address:</td>
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<tr>
<td>Contact Phone Number:</td>
<td>Address:</td>
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**PLEASE FAX THIS PAGE ONLY TO AIR NEW ZEALAND CARINA. Services: (064 - 9) 336 2854 OR EMAIL TO mediclearance@airnz.co.nz**
In a nutshell – questions to consider

❖ Is flying a risk to traveller (exacerbation) ?
❖ Condition in flight difficult to handle ?
  ➢ Seizure, cardiac arrest, behaviour
❖ Traveller a risk to others ?
  ➢ Infectious disease
  ➢ Behaviour
❖ Special requirements ?
Questions ?
Is there a doctor on board?

In flight emergencies
Air New Zealand In-flight Medical Emergencies From 1 May 08 - 31 May 09

Number of Incidents

- Accidental Injury: 62
- Vasovagal: 35
- Gastro: 34
- Resp: 23
- Cardiac: 19
- ID: 19
- NOS: 17
- Neurological: 14
- Psychiatric: 8
- Allergic: 8
- Surgical: 8
- Substance: 5
- Obstetrics: 4
- Other: 4
- Endocrine: 2
- Vascular: 2
- ENT: 2
- Dental: 2
- Urological: 2
Issues for the Medic

- **Obligation to assist**
  - Ethical (NZMC)
  - Legal (i.e. France)

- **Legal protection**
  - Good Samaritan legislation in US (do not charge !!)
  - Airlines contract to a medical service provider
Ground bases assistance

- SOS International
  - Medaire
    - MedLink Global Response Center
      - Phoenix, Ariz.
  - Medair

- Provides in flight consultancy services
  - You are the eyes, ears and hands
Air NZ medical kit
Divert or not

✈️ Decision to Divert

➢ The captain’s, no yours!

➢ Considerations:
  ➢ Fuel
  ➢ Weather
  ➢ Ground facilities
    ➢ Accommodation
    ➢ Medical
  ➢ Safety of the other 350 people on board