AOPA NZ – Pilot Medical Certification Policy – May 2017.

Prologue:

AOPA NZ is a long established incorporated society which represents over 1,100 pilots and aircraft owners in New Zealand. It is an affiliate of International AOPA which represents 78 countries and has over 450,000 members.

Pilot medical certification has been a part of aviation since the 1950's. However during these 70 years, aviation has changed. The health of our pilot population has improved, life expectancy has grown. General Medical Practice has become organised and now has computer based comprehensive patient records allowing the GP to accurately evaluate the health of a pilot.

Recreational flying has developed and grown.

Pilot medical standards have been adapted to adjust for expanding medical knowledge and new types of aviation. However pilot medical standards have never had a full review to identify the proportionate risk differential between commercial and private pilots (excepting in the microlight/light-sport category).

AOPA NZ Medical Certification Policy is focused on the recreational and private group of pilots. There has never been a rigorous, evidence based analysis validating the medical standards applied to private and recreational pilots. The existing standards are predominantly based on pragmatism and subjective opinion.

The United Kingdom and United States of America have recently published wide ranging changes in their medical standards and the way they administer private and recreation pilot medical certification. CASA, in Australia, has asked for public submissions on this subject.

In 2016 International AOPA with encouragement from ICAO passed a resolution for all member states to move towards simpler medical certification of all recreational and private flying utilising the medical standards of each countries light motor vehicle certification. (Ref 1.)

The regulation and education of private and recreational pilots has not taken advantage of internet technology. The opportunities this technology brings should be harnessed to spread appropriate health knowledge to our pilot population.

Summary:

- Recreational and private flying medical standards are presently undergoing significant review in many countries.
- Recreational and private flying medical standards have historically been based on pragmatism and opinion; they have little scientific basis.
- Recreational and private flying requires a totally different set of medical standards and application processes to commercial aviation.
- Recreational and private flying is no more dangerous than many other sports our community accepts with no medical certification.

- Recreational and private flying has illogically applied medical standards which encourages pilots to change from heavy to light aircraft which is counterproductive to safety.
- Recreational and private flyers should all share the same privileges.
- Recreational and private flying accidents are rarely caused by medical incapacitation they are caused by fuel starvation, loss of control and flying VFR into IMC.
- Recreational and private flying resources are better utilised in ongoing, online medical education relevant to safe flying than on an inappropriate disassociated medical examination.

Goal:

AOPA NZ goal is to have all private and recreation pilot medical certification based on the same medical standards as are applied to driving a light motor vehicle.

We envisage that our pilots will visit their GP and complete a light motor vehicle driving examination and certification (DL9 form). The pilot will then either inform a regulator that they have this DL9 or keep the DL9 with their licence and carry it when piloting an aircraft.

AOPA NZ wishes to see aviation's international governing body, ICAO, accept that each signatory nations' medical standards for driving a light motor vehicle be accepted by all member states as the basis for private pilot medical certification; therefore allowing these pilots to use their licenses in all member states.

AOPA NZ expects that full Private Pilot Licence (PPL) privileges and limitations will be bestowed upon these licences with the new medical certification. This will include flight speed limit of 250 knots, aircraft less than 5,700kg, unlimited altitude allowed, pressurised aircraft allowed, twin aircraft ratings, IFR ratings, night ratings acrobatic ratings and access to all present available airspace etc.

AOPA NZ's goal is to emphasise the difference between commercial aviation and recreational and private aviation. The relevant medical standards should be totally disconnected in determination and application.

Evidence:

1. New Zealand Transport Agency (NZTA):

The standards set by NZ Transport Authority for motor vehicle driving in New Zealand are very specific and comprehensive. (2) The Class 1 car licence standard is presently used for Microlight Pilots Licence (MPL) and the NZTA (P) endorsement medical standard is used for the Recreational Pilots Licence (RPL); these standards are closely aligned. The main differences are in the stand down times before driving can occur. The differences are itemised in Appendix 1.

It is our belief that private flying should have a Private Driving Medical standard and the standard set for the RPL in New Zealand should not be based on a Commercial taxi/bus Driving Standard.

New Zealand is fortunate to have a stable well developed motor vehicle driving medical standard. The NZTA guidelines were reviewed in 2009 and have not required any changes since. The New Zealand primary health service is based around a highly developed and well organised 'General Practice'. As part of this service each person has a Practice where they are 'Enrolled', they cannot be Enrolled in two practices and the electronic health record, including hospital records, follows the patient with an Enrolment. Consequently when the doctor is completing the NZTA DL9 form for a pilot applying for the MPL and RPL medical, the doctor has access to substantial medical history and usually knows the pilot as a patient.

We believe, and have evidence from USA and UK, that in many cases pilots withhold information from their Aviation Medical Examiners.(3) It is much more difficult for pilots to withhold information from their GP's. NZ and UK are fortunate to have this medical asset available to them.

2. The Aircraft:

The age of the average GA aircraft is increasing; there are few new GA aircraft in New Zealand. One of the reasons for this is that Class 2 PPL medical examinations have become expensive to maintain; whereas microlight medical examinations are more convenient and easier to maintain. (4)

The RPL was designed to fill this gap and it has succeeded to a limited extent. However the RPL should never have been based on a Commercial Driving licence medical standard.

AOPA NZ represents many microlights and home built aircraft pilots and we consider ourselves agnostic regarding aircraft category. However we are passionate about safety and are concerned that our present system incentivises our competent and healthy aging pilots to change from familiar GA aircraft to modern, lightweight microlight aircraft solely to avoid the cost and inconvenience of the Class 2 PPL medical examination. Our system should not force pilots to change from a high mass GA aircraft (probably with analogue instrumentation) to a low inertia microlight aircraft (with complex handling characteristics and digital instrumentation). Due to the different stall characteristics of these aircraft types pilots need significantly different training and skills. We believe that this incentive is counterproductive to safety.

AOPA NZ policy celebrates the developments in microlight aircraft; they often have complex and comprehensive digital instrumentation, may have twin engines, retractable undercarriage, some travel very fast and some very slow, they have become reliable. In spite of all these changes the microlight pilots with a private motor car medical standard of fitness have not had a significantly different rate of medical incapacitation in flight to other groups of private aircraft pilots. Therefore we see no reason for all private and recreational pilots not to conform to these same medical standards.

3. Privileges:

PPL aviation has a well-defined set of privileges with well organised extensions to allow PPL pilots to fly at night, aerobatics, agriculture, IFR etc. The RPL licence holders forgo some privileges and the microlight pilots some different ones. The vast majority of privileges are common to all recreational flying. The gradation of withdrawal across licence types is not logical and has been introduced in a haphazard way over decades.

Common privileges include access to 99% of airspace (RPL and microlight only allowed over built up areas for training and access to runways), unlimited altitude, maximum speed 250knots, flying any day and any weather.

RPL and Microlight aircraft may only carry one passenger. We believe this is illogical and the section on 'Risk' will show our calculations.

In New Zealand IFR flights are only undertaken by a very small minority of GA, non ATPL pilots. IFR ratings are hard to get and onerous to maintain. This compares unfavourably to USA where 51% of PPL pilots have IFR ratings and use them frequently. New Zealand sits in the 'Roaring 40's' and is known for its dramatic weather which often makes flying difficult. Our present rules encourage recreational flyers to stay below cloud, often in the rain with limited visibility (scud-running) – this is quite legal but a very stressful and a less safe way to fly compared to above the cloud under Air Traffic Control using Instrument Flight Rules. There is no evidence that IFR recreational pilots have more medical incapacitations compared to VFR pilots. Therefore we believe that private and recreational IFR pilots should comply with the same medical standards as NZTA class1 motor vehicle drivers.

Airspace: 99% of New Zealand is mountains, countryside and farmland; GA pilots fly over cities and towns infrequently. In modern times there have been no deaths reported of residents of our towns and cities caused by light aircraft crashing. We acknowledge the perceived logic, but fail to see any evidence, that recreational flight by pilots with Class 1 motor vehicle medical standards over towns would be unacceptably dangerous.

Microlight and PPL pilots can fly twin engine aircraft, but RPL cannot. PPL licence holders can fly pressurised aircraft where as RPL pilots have to turn off their pressurisation and install oxygen cylinders. If a pressurised microlight aircraft comes to New Zealand it could be flown by a microlight pilot, but not an RPL pilot, once again not logical.

Microlight and RPL pilots cannot fly at night or carry out aerobatic manoeuvres. We have found no evidence that any suitably trained and certified pilot flying at night or acrobatically would be more likely to have medical incapacitation if they were compliant with NZTA Class 1 car licence rather than Class 2 CAA medical certification.

Cost:

AOPA NZ is not promoting its systematic review of private recreational aviation medical certification solely on the basis of cost. However it would be negligent not to include comment on this subject and its influence on recreational and private aviation. GA aviation around the world has been in decline over the last three decades.(5) Recently the number of Class 2 medical certificates issued by NZ CAA has been declining in spite of increasing population.(6) We believe that cost has been a significant factor in this decline. The fee paid to CAA, the fee paid to the AME, the fees paid for 'Accredited Medical Conclusions' all add up. We do not believe recreational and private flying should only be available to the wealthy in New Zealand.

RISK – The Maths:

In May 1973 Mr I.H. Anderson presented a paper to the 44th Annual Scientific Meeting of the Aerospace Medical Association. He compared his engineering calculations regarding aircraft mechanical failure causing fatal accidents to fatal accidents due to pilot incapacitation. It was a sentinel presentation; prior to this time pilot medical standards were very much based on opinion rather than evidence. In 1982 the UK CAA led the way and initiated the process whereby the risk of fatal accidents in commercial multi pilot aircraft could be quantified and analysed objectively.

0ne accident, with fatalities, where pilot incapacitation is the cause, per 1000 million flying hours flight was the figure which was deemed a level of risk acceptable to the aircraft passenger community; this was half of the actual rate at the time. The calculations are not complex but they are tedious. For detail I refer you to ICAO Manual of Civil Aviation page 70 3.1.1. This line of risk analysis was the groundwork for the original '1% Rule'.

The elegant analysis of risk pertaining to multi crew commercial airline operations is to be commended. However there is **no** parallel calculation for private and recreational pilots. The lower medical standards for this group are pragmatically based on opinion and bias (7).

AOPA NZ would like to propose we apply similar medical standards to recreational and private flying as we apply to other sports and activities. Our community accepts that there is a risk of dying from driving on our roads, being in a boat, riding a horse and swimming etc. We would like to suggest that flying in a light aircraft has similar risks to many of these activities.

Recent information on the risk of death from a variety of recreational activities has come from the UK.

Dr David Smith, who is editor of GA Safety Council journal 'Flight', has done a detailed comparison looking at death rates, for all causes, per million hours of participation, in a variety of recreational activities. This evidence has been accepted by CAA UK and forms an integral part of their decision to radically simplify and lighten medical standards for private pilots.

Activity	Fatal Accidents per million hour's participation for all causes.
Canoeing	4
Motorcycling	8
All GA flying	13
Swimming	13
Rock climbing	40
Boxing	200
Horse riding	280
Driving in New Zealand	1 (AOPA Calculation)

Our analysis shows that the only activities on this list which have any regulation are private and recreational flying and motorcycling. Note here that we support the medical standard for driving a motorcycle (same as motorcar) being adopted for private and recreational flying.

SCUBA diving is known to be a potentially dangerous sport. Before dive trainees go on an open water dive they have a one off medical examination with their GP.

Driving a high speed boat does not need any medical examination.

To race motor cars or motorbikes in New Zealand a driver need to have an annual medical certificate filled in by his GP. This medical is valid internationally. Rally drivers race at high speed close to spectators. Our community accepts this risky sport only requires a GP certified medical standard.

The average recreational and private pilot, fly's with the same number of passengers as is carried in the average motorcar, so why do we limit some aircraft to one passenger.

The Australian Transport Safety Bureau (ATSB) conducted a study of all pilot medical incapacitations from 2010 to 2014 (AR-2015 – 096) (8). There were 15 cases of medical incapacitation in GA aircraft (though the majority of these operations were commercial GA). One pilot died of a heart attack after landing his aircraft – he had been specifically told not to fly by his cardiologist and DAME. One did not disclose he had had numerous 'loss of consciousness episodes' – died after crash landing, passenger survived. The majority pilot incapacitations due to health were dehydration, tiredness and gastroenterological (read food poisoning), and did not end in fatal accidents. ATSB clearly states in its literature that the top three reasons for GA incidents and fatal accidents are 1. Fuel starvation. 2. Loss of control. 3. VFR into IMC - medical incapacitation does not register as a significant cause of fatal accidents.

Appendix – one

Comparison of Class 1 and P endorsement medical standard set by NZTA in New Zealand – summary:

Medical condition	**Class 1 – motor car - Microlight**	**P endorsement – commercial - RPL**
Epilepsy – tonic clonic	12 months stand-down on stable medication and no turns	No driving – maybe after 5 years of medication and seizure free.
CVA - stroke	Recovered as much as going to and no disability to compromise safety.	Not drive- may be able to with special request.
TIA – mini stroke	Stand down one month	Stand down 6 months
Parkinson's, MS. Motor neurone disease	Cease if doubt about ability to control vehicle	Cease unless minor weakness and no significant impairment.
Dementia	Cease if cognitive impairments affect ability to drive	Cease – but no guidance regarding what point diagnosis is made..
Non cerebral tumours	Stand down 6 months	Stand down 12 months
Head injuries serious	Stand down 6 months	Stand down 12 months. Neurologist assessment needed
Myocardial infarction	Stand down 2 weeks and specialist assessment	Stand down 4 weeks with specialist assessment.
Coronary bypass surgery	Stand down 4 weeks – specialist assessment	Stand down 12 weeks with specialist assessment.
Coronary Angioplasty	Stand down 2 days – subject to specialist assessment	Stand down 4 weeks subject to specialist assessment.
Severe Hypertension	Cease if treatment has severe side effects	Cease if bp >200/110 or severe side effects
Loss of consciousness	Cease for 2 months	Cease 3 months after treatment
Pacemaker	Cease for 2 weeks	Cease 4 weeks and specialist approval
Automatic defibrillators	Cease for 6 months	Cease.
Heart valve surgery	Cease for 4 weeks	Cease for 12 weeks with specialist approval.
Heart transplant	Cease for 6 weeks so long as well	Cease 12 weeks specialist approval – existing licences only

Diabetes type 2 on insulin	Fit to drive	Most fit to drive with specialist approval.
Diabetes Type 1	Fit to drive	Generally not fit to drive. Note may get CAA approval with conditions.
Vision	6/12 with 140 degree visual field	6/9 with 140 degree visual field
Colour blindness	Can drive	Can drive
Respiratory conditions	No restrictions	No restrictions
Renal conditions	No restrictions	No restrictions
Cancer	No restrictions	No restrictions
Intellectual disability	No restrictions	No restrictions
Alcoholism and drug addiction	No restrictions	No restrictions
General anaesthetic	Cease for 12 hours	Cease for 12 hours
Mental disorder which may impair ability	Detailed analysis of safety	Higher level of safety
Severe Mental Illness	Cease for 6 months after effective treatment	Cease for 12 months after effective treatment. Specialist not needed.

Comment:

1. Almost all of these listed diseases would require an Accredited Medical Conclusion (AMC) prior to issue of a Class 2 CAA medical certificate. AMC's are notoriously expensive and time consuming.

2. FAA and CAA UK have excluded pilots with certain medical conditions (psychological, cardiac, and neurological) from qualifying under their new medical standards, AOPA NZ believes that these medical exclusions are superfluous in New Zealand as they are covered by the NZTA medical standards.

3. Mental health is a notoriously difficult disease to quantify a pilot who is quite mentally normal one day can experience a personal calamity and act quite irrationally the next. Pilots with mental disease safety to fly is best assessed by a physician who knows them well, not a AME and probably not a psychiatrist; therefore the NZTA class 1 standard for driving is applicable to private and recreational flying. (Please note that commercial operators find this risk assessment difficult also cf German Wings experience.)

4. Cardiac health: The incidence of heart attacks has been decreasing since the 1970's, this was before the time we changed people's diets, dropped their blood

pressure significantly and effectively treated their blood lipids. Public health physicians argue and/or are perplexed as to why the incidence of heart disease has come down so significantly. Sudden death is rare and normally preceded by significant warning signs.

5. Neurology: Strokes and epilepsy are significant causes of incapacitation as identified by FAA Basic Med. However AOPA(NZ) believes that as we have not seen significant pilot incapacitation due to neurological disease in the Microlight community we can be reassured that our NZTA Class 1 Medical Standard will adequately protect us from significant change in the numbers of in-flight incapacitation due to neurological disease

6. AOPA NZ is committed to promoting an online education course which will be compulsory for all recreational and private pilots. This will be associated with the existing BFR. It is time we harnessed modern technology and used a web based education tool to assist our pilots in assessing their own IMSAFE plan for the 729 days which most pilots are able to fly between our aviation medicals.

AOPA NZ is prepared to take a lead in preparing and managing this online course.

Ref 1. http://www.iaopa.org/doc/28thWorldAssembly/documents/CombinedResolutions.pdf

Ref 2. Medical aspects of Fitness to Drive – A guide for medical practitioners July 2009.

Ref 3. ICAO Manual of Civil Medicine 1.1.20

Ref 4. 120319 Petition for exemption from Federal Aviation regulation AOPA(USA)/EAA

Ref 5. 21% decrease – CAA NZ Aviation Safety Report 1st July 2015 – 30 June 2016

Ref 6. 7,000 to 6,100 between 2013 - 2016 CAA NZ Aviation Safety Report – 30/6/2016

Ref 7. Pg 561 Ernsting's Aviation Medicine Fourth Edition

Ref 8. ATSB AR-2015-096

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