CORRESPONDENCE

Pilots' fitness, a time for questions

Soon the new European requirements¹ for the medical examination of pilots come into force. These apply to commercial pilots and the many private pilots. The Joint Aviation Authorities have harmonised the requirements within all fields of aviation throughout Europe and subsequent regulations enter national law. For 6 years the medical subcommittee has laboured; most of their work relates to the adverse pathology which would make a pilot unfit, but the method by which fitness is to be policed is controversial.

Medical examinations date from 1915 when there was a high failure rate during military training. Selection, mostly eye tests, eliminated those with poor prospects of success. Although people with epilepsy were excluded on the history, long term health prospects were not a consideration. During the years between the wars, medical examinations were required of pilots under the Air Navigation Acts and these followed practices established by the Air Ministry.² After the second world war, the International Civil Aviation Organisation extended United States practice by treaty.³ Fitness was policed by a routine medical examination every 6 months and for private pilots at 2 yearly intervals. In the United States, the Federal Aviation Administration relaxed this to 3 yearly for private pilots less than 40 years old. In Europe the opposite trend applied. Driven by pressure from medical specialists, the frequency and complexity of the examination increased, with the associated expense. Recent negotiations were based on harmonisation and not a scientific review. The outcome is that it will cost a private pilot in Europe twice what it would cost one in the United States to demonstrate fitness.

After a notorious accident at Staines in 1972,⁴ the airline industry introduced the philosophy that pilots could be expected to fail. Incapacity training was introduced together with the wearing of shoulder harnesses. Since that date there have been several deaths in the cockpit, but in every case another pilot has landed the aircraft. Airliners carry two pilots for the same reason that engines are duplicated. A greater risk exists for passengers carried by single pilots in air taxis or sightseeing commercial flights, but mostly private flying. The risk is similar for light aircraft, gliders, or microlights. Balloons act as parachutes when uncontrolled, and for these the risk is less. A review of 1000 fatal aviation accidents⁵ between 1956 and 1995 showed that 47 had a medical factor, of which over half were cardiovascular in origin. The risk to the population on the ground is small, especially from low mass private aircraft or gliders.

The limited capability of periodic medical examinations to predict illness or incapacity is now well known.^{6,7} A defect of the joint aviation requirements is that there is no contact between the aeromedical examiner and the general practitioner. After the suicide of a pilot who had previously been treated for depression and attempted self harm, the Air Accident Investigation Board recommended that this be remedied,⁸ however, no change

has been made. Some years ago, the British Gliding Association introduced a health declaration from the pilot, to be validated by a general practitioner when the pilot became qualified to instruct or carry passengers. No administrative or ethical difficulties have occurred. The schedule of the joint aviation requirements, by implication, is ambivalent as to whether pilots can be trusted. For important diseases such as epilepsy, there is no easy alternative to the history, but the justification given for much of the screening is to detect concealed disease. It is difficult to explain to pilots why they can be trusted for some diseases, but not for others. Pilots often complain that the opinions of their clinical advisers are disregarded and that investigations done for clinical purposes are disregarded by aeromedical authorities.

In practice many pilots who become unfit simply do not present themselves, having had an illness which they know is disqualifying. Causes without insight are psychiatric disease and alcohol or substance misuse. Neither can easily be detected on a clinical examination. The first usually becomes known through other channels, and in the United States pilots are subject to random screening. It would be sensible to have a legal provision by which a pilot could be obliged to seek and follow medical advice, as applies to doctors.

The cost to a commercial pilot of medical examinations is about £175 a year, and that can be set against tax. To a private pilot the cost may amount to 10% of the total expenditure on a hobby. The licence validity once over the age of 65 is only 6 months and this has led to the undesirable practice of older private pilots licensing themselves for the summer months, worsening the spring accident rate because of lack of practice. Most accidents arise from deficiencies of pilot skill and it is argued that the same money could be better spent elsewhere. In the United Kingdom there are some 12 000 commercial pilots and 60 000 private pilots of whom about half have been recently active. The 9000 glider pilots and 3500 microlight pilots are outside the requirements of the joint aviation requirements and use a health declaration with the responsibility for fitness resting upon the pilot. There is no obvious difference between these two groups of self and medically certified pilots.

Many pilots think that medical certification has become a medical tax, unjustified by flight safety. Although age or disease will end all flying careers, pilots doubt whether the medical screening can separate those who will become incapacitated from those who will remain fit. Especially criticised by pilots is the resting ECG because of its poor sensitivity and specificity.⁹ It has been calculated that each accident prevented by ECG screening costs over 100 million Euros.¹⁰ In the United States, ECGs are not required unless clinically indicated. The demand for expensive and potentially hazardous angiograms after an abnormal ECG is another cause for complaint. Professional pilots have complained that aeromedical examinations exceed their legal remit in considering long term preventive medicine, although this is probably their most valuable contribution.

Having rejected the objections made by pilot's organisations, the medical subcommittee of the Joint Aviation Authorities is vulnerable. Attackers will ascribe unworthy mercenary motives. For private flying it would be logical to draw a distinction between solo flying and carrying passengers. Even at this late

stage, it would be wise to review the requirements. If the Joint Aviation Authorities' medical subcommittee had followed modern occupational medical practice they would have an evidential base for legislation.

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- 2 Sprigg TS. *Air licences*. London: Pitman, 1934: 15-16, 20-1.
- 3 International Standards and Recommended Practices (ISARPs). *Personnel licensing. Annex 1, Chapter 6, Medical requirements*. Montreal: ICAO, International Civil Aviation Building, 1988.
- 4 Civil Aviation Accident Report 4/73. *Department of Trade and Industry. Trident G-ARPI. Report of the Public Inquiry into the causes and circumstances of the accident near Staines on 18 June 1972*. London: The Stationery Office, 1973. (AIB 4/73)
- 5 Cullen SA, Drysdale HC, Mayes RW. Role of medical factors in 1000 fatal aviation accidents; case note study. *BMJ* 1997;314:592.
- 6 Spitzer WO, et al. Canadian Task Force on the Periodic Health Examination. The periodic health examination. *Can Med Assoc J* 1979;121: 1193-249.
- 7 Guide to Clinical Preventive Services. *Report of the US Preventive Services Task Force*. Philadelphia: Williams and Wilkins, 1989. (ISBN 0-683-08507-7.)
- 8 AAIIB Bulletin No 2/98 Ref: EW/C97/11/2 Accident to G-FLEN <<http://www.open.gov.uk/aaib/feb98htm/gflen.htm>>
- 9 Rose G, Baxter PJ, Reid DD, et al. Prevalence and prognosis of electrocardiographic findings in middle-aged men. *Br Heart J* 1978;40:636-43.
- 10 Saundby RP. ECG screening of private pilots, a cost benefit analysis. *Commission Internationale Medico-Physiologique; Dublin 1994. Fédération Aéronautique Internationale, Lausanne.*

Author's reply—I am most grateful for this opportunity to respond to Saundby and his well researched letter regarding the fitness of pilots.

I must agree with almost all of what he writes in that there is a long history of the development of medical standards for pilots that relates back to early military experience and only in the past few decades has this begun to be separated from that military influence. In fact, in some European states, the military influence is still very obvious.

I offer comment on several of the issues that Saundby considers. As he well knows, the United Kingdom medical standards for pilots were probably the most liberal in Europe and yet supported a very safe operation. There has been no public transport accident with a medical cause in United Kingdom aviation for more than 30 years and for private pilots the fatal accident rate related to medical cause tends to revolve around concealment of information by applicants or by the appearance of unheralded illness and related incapacitation. Saundby mentions the 3 yearly medical assessment interval for private pilots less than 40 years old in the United States. This was 5 yearly in the United Kingdom until the introduction of the recently harmonised Joint Aviation Authorities' medical requirements, when it has become 5 yearly under the age of 30.

The mention of the Joint Aviation Authorities' requirements demands a short explanation of them. For the past 10 years, after the United Kingdom government agreement to harmonise all aspects of civil aviation, the development of medical standards for use as the sole code, without variation, among the 31 states of the Joint Aviation Authorities in

Europe, has been taken forward. The standards were agreed in the autumn of 1996 and published as an adopted document in February 1997. The standards were developed from the International Civil Aviation Organisation baseline standards which are the absolute minimum standards that are applied in 185 states around the world. Then, the inevitable political harmonisation process of compromise between existing practices of the states in Europe took place along with the participation of international aviation organisations sending medical observers to aid the process. These standards were supposed to have been introduced throughout Europe on 1 July 1999 and the United Kingdom now works to them. Other states are implementing them over the next few months depending on legal and other issues that need to be considered.

Saundby then makes reference to the fact that there is no contact between the authorised medical examiner and the general practitioner. That is true in that there is no mandatory requirement for such contact. If it were mandatory, it would mean refusing licences to foreign nationals who did not have a general practitioner or to people who had not registered or who were temporarily registered, and a bureaucratic bar to a person achieving a licence would be put in place. Methods are being explored between the National Health Service and the Civil Aviation Authority regarding transfer of information, especially as electronic records are becoming available, but only a preliminary discussion has taken place and no formal proposals or projects have been identified at this stage. With regard to the one case that he

quotes regarding a person committing suicide, that person made meticulous preparation for this event and concealed it from all concerned in the aviation environment in which he was training. I am confident that if there were a mandatory link between his general practitioner and the authorised medical examiner, that the person would then have gone to a private general practitioner so that such enquiries would have produced no result. The person concerned had taken up flying training with the express intention of committing suicide but his instructor had no clue that this was the case and regarded him as a perfectly normal and well balanced person throughout the many hours of instruction that he undertook.

Saundby then mentions the cost of medicals. With 31 different cost regimes throughout Europe, some of which are funded by central government, the United Kingdom Civil Aviation Authority is unique in having to recover its costs from the industry it regulates. Harmonisation here has not been pursued.

I would agree that the previous United Kingdom standards were perfectly adequate for the task in hand but I am obliged to accept that compromise was necessary to take forward the harmonised European task that was set. This may well benefit professional pilots more than private pilots and it would be for international aviation organisations to lobby for changes rather than the national authority.

To return to more clinical matters, the demand for hazardous angiograms is an inflammatory statement that I must refute. An abnormal resting ECG calls for an

exercise ECG to be undertaken. A 24 hour Holter recording is likely to follow and then a perfusion scan. Only after all these tests have continued to show abnormalities does an angiogram become required for continued licensing. In the general hospital population, it is known that angiograms do carry a risk but in the pilot population that is generally much healthier, there has yet to be, in the United Kingdom, any problem caused by such an investigation.

I could not comment upon the medical industry in other states but I am aware that there is a much heavier preventive role undertaken by the regulatory bodies in some countries and that may well stem from their close involvement with airlines or the military. That has not been the case in United Kingdom and only a very small element of that has been allowed into the joint aviation requirements for medical assessments. It is the aim of the United Kingdom to prove that that is inappropriate, and to have these minimal extra requirements struck out in due course. A regular audit of results will be necessary to collect the evidence necessary to persuade the Joint Aviation Authorities' medical subcommittee to amend their standards and I am pleased to state that a 3 year rolling programme of review for each clinical system is in place such that amendments are possible at relatively short time intervals.

I hope this information clarifies some of the questions raised by Saundby.

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