



Advances in Medical Technology and Treatment Give Many Pilots Second Chance

While the number of medical conditions that can be treated effectively is increasing and more pilots are receiving medical recertification after successful treatment, preventive measures such as healthy lifestyle choices are still paramount.

by
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Annually, pilots of all ages find themselves disqualified from flying because of medical conditions that are often preventable by lifestyle changes.

The United States has been a leader in restoring to flight status pilots who had lost medical certification but were judged safe to fly following appropriate therapy and assessments. The return to flight status is based on the subsequent health of the disqualified pilot. U.S. Federal Aviation Regulation (FAR) 67 specifies a minimum two-year monitoring period for the recertification applicant. Recertification is often contingent on obtaining certain

follow-up evaluations before future medical certification requests.

For civil aeromedical certification, the U.S. Federal Aviation Administration (FAA) relies on FAR 61.53, an honor system in which the individual pilot "self-grounds" himself or herself if a disqualifying illness occurs or recurs, or if an illness develops that would preclude medical certification. The FAR states: "No person may act as pilot in command, or in any other capacity as a required pilot flight crew member while he has a known medical deficiency, or increase of a known medical deficiency, that

would make him unable to meet the requirements for his current medical certificate.”

This regulation is the key to civil aviation safety in medical terms because each civil pilot cannot be followed daily and examined before flight by an FAA-designated physician. The individual pilot must, therefore, exercise good judgment and personal responsibility.

FAR 67 sets forth for pilots the medical standards that are applied by the FAA purely as a screening standard — with no preventive component. The standards, for example, do not address obesity or the use of tobacco.

Self-inflicted Diseases Avoided by Lifestyle Choices

To help prevent the loss of medical certification, pilots should adopt healthy lifestyle practices.

The current trend among pilots who are committed to professionalism and quality career performance is to avoid the use of all forms of tobacco. For those who have developed a nicotine habit, there are proven and effective ways to terminate this disease-producing addiction.¹

Other health threats include:

- **Alcohol.** The number of superb pilots who lost their careers because of health or behavior deterioration resulting from alcohol consumption reached such significantly high proportions during the 1970s that the FAA established an airman education and intervention program in conjunction with the National Institute on Alcohol Abuse and Alcoholism, the Air Line Pilots Association and several airlines.² The program has been successful; several thousand pilots have been treated for alcoholism and returned to flight duty.
- **Coronary Artery Disease.** Coronary artery disease, the major disqualifying condition for pilots, is caused by tobacco use, a lack of exercise, excessive dietary fat, obesity, hypertension, excessive use of salt and other self-destructive behaviors.^{3,4}
- **Eye Lens Damage.** Persons who expose unprotected eyes to intense sunlight for lengthy periods

are at high risk to develop cataracts.⁵ Using suitable protective sunglasses can considerably reduce that risk. The documented “cataract sunbelt” in the southern United States shows the adverse effects of sunlight on the unprotected lens of the human eye. The probability of developing cataracts also increases for smokers.⁶

- **Stroke.** A major cause of strokes is high blood pressure, a condition that can be prevented in many cases. In most cases where high blood pressure is diagnosed, it can also be successfully treated. A major cause of high blood pressure is the regular use of alcohol, which results in liver and other changes. In some cases, another cause is the presence of fatty deposits in the major neck arteries and certain brain arteries. In these instances, the long-term intake of a diet high in fat content often is the major contributory culprit.

Categories Outline Recertification Action After Medical Certificate Loss

The special issuance procedure benefits both the individual airman and overall aviation activities by retaining within the system pilots who, after treatment, are fully capable of performing safely.

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After treatment and recovery (or stabilization), and following the institution of a preventive medicine lifestyle, recertification can often occur. Table 1 (page 3) provides 1993 data on 19 major medical categories by FAA code under which medically disqualified pilots have been returned to flight status through “special issuance” procedures. The principles of compensatory capacity and/or recovery and stabilization underlie recertification decisions and apply to all the medical conditions for which special issuances are granted.

The following are the codes and conditions of FAA special issuances:

Code 134. Absence of the Natural Lens of the Eye. In this category, more than 100 Class I medical certificates, almost 400 Class II certificates and nearly 900 Class III certificates were active as of

Jan. 1, 1993. It was determined through individual pilot assessment that the loss of the natural lens of one or both eyes did not adversely affect performance because contact lenses or spectacles were used by the

affected airmen to achieve suitable vision for the medical class of certification and flight operations undertaken.

Code 139. Glaucoma. Before the development of early diagnosis and modern medical therapies, this blindness-causing condition resulted in many pilots losing medical certification. Today, as shown in Table 1, more than 200 Class I medical certificates have been issued for this category, along with more than 500 Class II certificates. For Class III, the number exceeds 1,000. How well the glaucoma can be controlled by suitable treatment and acceptable vision can be preserved are necessary considerations.

Code 160. Lens Implant. An artificial lens is used to replace a removed natural lens. The loss of the natural lens may be the result of cataract surgery, infection or injury. Lens removal surgery now involves only a short inpatient stay or a widely used outpatient procedure.

Code 162. Monocular Vision. More than 200 Class I pilots, more than 700 Class II pilots and more than 2,600 Class III pilots are monocular. The FAA defines monocular as the absence of one eye or the total loss of vision in one eye, or legal blindness in one eye (the vision in the eye cannot be corrected to defined medical standards). Since the beginning of aviation, evidence has shown that monocular pilots do not have an adverse flight safety record. The leading British ace in World War I, Mike Mannock, was a monocular pilot, as was U.S. aviation pioneer Wiley Post. The leading Japanese ace in World War II, Saburo Sakai, lost vision in one eye from a combat-inflicted wound. Following treatment, he returned to combat and shot down five more airplanes. Famous aerobatic and racing pilots have also operated through the years with monocular vision. The FAA recognizes that visual compensation for the loss of an eye or for legal blindness in an eye does not necessarily preclude medical certification.

Code 220. Severe Hearing Loss. More than 3,000 pilots have been returned to medical certification status despite severe hearing loss. Many pilots have been certified with a hearing aid, which

is equivalent in concept to wearing spectacles or contact lenses. Many partially deaf persons can, in the cockpit noise environment, hear reasonably well. For those pilots who are totally deaf and cannot be helped by hearing-aid equipment, a restriction to airports that do not require two-way radio communication is included on the medical certificate.

Code 420. Heart Transplants. Two such cases were listed as of Jan. 1, 1993. Modern surgical transplantation and follow-up procedures have enabled patients to return to a remarkably healthy state after receiving heart transplants. The transplant pilots have at present

Table 1
Active FAA Special Issuances for
Medical Recertifications
As of Jan. 1, 1993

Code	Condition	Medical Certificate		
		Class I	Class II	Class III
134	Aphakia	145	381	884
139	Glaucoma	229	502	1,216
160	Artificial lens	307	861	1,921
162	Monocular	218	739	2,623
220	Hearing aids and deafness	919	1,461	903
420	Transplant, heart	0	0	2
431	Myocardial infarction	148	194	1,289
439	Angioplasty	127	109	776
440	Coronary bypass	127	185	1,588
445	Cardiac pacemaker	1	12	67
456	Mitral valve prolapse (Barlow's syndrome)	472	573	1,094
457	Mechanical heart valve	3	7	52
458	Tissue heart valve	7	7	22
565	Liver transplant	0	1	7
570	Kidney transplant	5	19	48
573	Kidney stones	3,030	4,475	1,094
602	Stroke	115	147	369
605	Epilepsy, grand and petit, and convulsive reaction	16	20	54
620	Multiple sclerosis, chronic brain syndrome, and degenerative nerve disease	20	14	61
621	Parkinson's disease	10	17	38
685	Alcoholism	811	114	9
931	Disturbed carbohydrate metabolism	99	163	310
932	Thyroid, hyper	150	169	314
933	Thyroid, hypo	584	927	1,925
935	Diabetes, diet-controlled	147	343	784
937	Diabetes, oral medication	57	80	248
938	Diabetes insipidus	3	5	14
939	Cushing's or Addison's disease	96	120	215

Source: Civil Aeromedical Institute, U.S. Federal Aviation Administration

been limited to Class III medical certificates. As follow-up procedures and enhanced control of immune processes evolve, it is possible to predict that persons with Class II and ultimately Class I medical certificates will be recertified.

Code 431. Myocardial Infarction. From the 1930s through the 1950s, this disease struck middle-aged males with such ferocity that it led to the age 60 rule for U.S. airline pilots in 1960. Since then, decreases in smoking and alcohol abuse by pilots, increases in exercise programs and increases in healthy nutrition have led to a marked decrease in myocardial infarctions in pilots, as well as for large segments of the general population who follow healthy lifestyle practices. It has been found that even if a myocardial infarction occurred in a given pilot, the return to flight status by special issuance was warranted if the pilot changed lifestyle behavior and experienced healing of the heart muscle. No adverse effects of this recertification have been observed. On Jan. 1, 1993, almost 150 Class I pilots were recertified following myocardial infarctions, along with 194 Class II and 1,289 Class III pilots.

Code 439. Angioplasty. In the 1970s, it was found that if a tiny balloon is inserted through a peripheral artery into a coronary artery and then expanded, the troublesome fat blockage in the coronary artery wall would flatten, often relieving restrictions to coronary flow and any symptoms that accompanied the restriction (angina pectoris). This remarkable procedure, done under real-time radiographic surveillance, often on an outpatient basis, has led to numerous pilots being returned to flight status. It is understood that these pilots will practice risk-lowering behavior for heart disease. More than 1,000 active pilots have been returned to flight status following angioplasty.

Code 440. Coronary Bypass. Coronary bypass surgery was introduced more than three decades ago. Tens of thousands of people have benefited from this procedure that provides restored blood circulation throughout the coronary arteries. The number of U.S. pilots certified with this condition approached 2,000 as of Jan. 1, 1993. Approval for a return to flight status is based on the institution of lifestyle practices that diminish heart disease risk factors (for example, the cessation of tobacco use), as well as success of the procedure in the individual applicant.

Code 445. Cardiac Pacemaker. One Class I medical certificate holder, 12 Class II certificate holders and 67 holders of Class III certificates were certified as of Jan. 1, 1993, with cardiac pacemakers. Advanced medical

technology has led to cardiac pacemaker evolution that normalizes the heart rhythm in many persons with dysrhythmic problems. Accordingly, the increasing number of pilots whose heart rhythms have been normalized by modern pacemakers has led to recertification.

Code 456. Mitral Valve Prolapse. This condition, also known as Barlow's syndrome, is actually an anatomical heart valve variation from what is defined as normal. The variation was not recognized in medical literature until recently, and there is no evidence that persons with mitral valve prolapse will die early or have other adverse medical problems. Many healthy persons have the condition, which is usually discovered by accident as an incidental finding in other physical examinations. The condition is often not diagnosed during a routine physical examination. However, the FAA documents those pilots known to have the condition. More than 2,000 pilots have been certified with this diagnosis.

Code 457. Mechanical Heart Valve. Three Class I pilots have been medically certified with mechanical heart valves, along with seven Class II pilots and 52 Class III pilots. The advanced technology that produces and enables installation of these valves, and the medical success in their function, justifies these certifications.

Code 458. Tissue Heart Valves. Seven Class I pilots with porcine (pig) heart valves have been certified by the FAA

under the Class I category, with another seven under Class II and 22 under Class III. Medical progress in the use of animal tissue valves has been extensive and very successful and, as with mechanical valves, fully justifies the certification of pilots who have a suitable outcome following surgery.

Code 565. Liver Transplant. One Class II certificate and seven Class III certificates have been given to pilots following liver transplants. The success of these transplants has justified the issuances.

Code 570. Kidney Transplants. Five Class I, 19 Class II and 48 Class III pilots are flying with this condition.

Code 573. Kidney Stones. This is a very common medical condition and occurs in many persons who had not realized they had them. The salt crystals in the urine, from which these stones are made, often produce no symptoms. Occasionally, a passing stone will create severe side pain. Accordingly, the FAA requires some documentation that the kidney-stone history or present condition is stabilized and not likely to cause an inflight

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incapacitation because of pain for issuance or re-issuance of a medical certificate. The FAA maintains records on approximately 8,000 pilots who have been returned to flight status following the presence of kidney stones.

Code 602. Stroke. More than 100 pilots were medically certified under a Class I certificate following a history of strokes as of Jan. 1, 1993, along with 147 Class II and 369 Class III pilots. Stroke is defined as a condition that causes an impairment of circulation to the brain, often accompanied by loss of consciousness.

A common cause of stroke is rupture of a cerebral artery because of an aneurysm (weak place in the artery wall) or a rupture in a cluster of small blood vessels. A stroke may also result from an artery clogged by a fat deposit (atherosclerosis) or embolus (a blood clot or other material coming through the arterial circulation that blocks the artery). In addition, blockages in the large neck arteries (carotid arteries), usually from atherosclerosis, may also cause the signs and symptoms of a stroke. If the individual has recovered fully (or to an extent sufficient to allow satisfactory performance), and if there is a decreased likelihood of recurrence of the stroke through the control of risk factors, the FAA will return individual pilots to flight status on a case-by-case basis. No impairment of air safety has been found as a result of such action.

Code 605. Epilepsy, Grand and Petit, and Convulsive Reaction. Histories of these conditions are disqualifying under FAR 67. However, if recovery has occurred for a sufficient period, and if a recurrence of signs or symptoms is forecast to be very unlikely, a special issuance in individual cases may be granted. Sixteen special issuances in this category have been given for Class I medical certificates, 20 for Class II and 54 for Class III.

Code 620. Multiple Sclerosis, Chronic Brain Syndrome and Degenerative Nerve Disease. These conditions are much better understood today through modern medical technological advances (including psychometric and psychomotor assessments, magnetic resonance imaging, positron electron emission studies and other advanced techniques). Medical certification depends on the specific circumstances. Twenty Class I, 14 Class II and 61 Class III pilots have been recertified in this category through special issuance.

Code 621. Parkinson's Disease. Until the proper therapies became available, this disease caused loss of medical

certification when the victim's ability to perform was impaired.

Code 685. Alcoholism. Nearly 1,000 pilots have been returned to medical certification status following loss of medical certification because of alcoholism. In this code

as of Jan. 1, 1993, a total of 811 pilots were currently certified in the Class I category, despite the fact that alcohol can cause irreversible damage to the brain and other organs. Modern medical technology enables an assessment of health status for a given alcoholic, in addition to an assessment of performance capability following cessation of alcohol abuse. These tests of health and performance, objectively assessed, can be applied to pilots of any age and provide valid data on which to base return-to-flight-status decisions. The FAA has found no adverse impact on flight safety by returning some of these pilots to duty.

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Code 931. Disturbed Carbohydrate Metabolism. If those pilots prone to hypoglycemia (low blood sugar) can learn to space their meals and take other precautions as prescribed for this condition, certification is possible.

Codes 932 and 933. Hyperthyroidism and Hypothyroidism. With appropriate response to therapy, certifications are possible.

Codes 935 and 937. Non-insulin Dependent Diabetes Mellitus. These include 1,274 pilots who can control their condition by diet alone and 385 who use oral hypoglycemic agents. Code 938 covers diabetes insipidus (inability to naturally control the body's loss of water through the kidneys), which requires hormone therapy.

Code 939. Cushing's or Addison's Disease. This code covers hypercortisone secretion and hypocortisone secretion, respectively. With suitable treatment, certification is possible.

Lifestyle practices that promote health, physical fitness and disease prevention are important choices for airmen. As shown by the data on special issuances, even those pilots who have acquired disqualifying and life-threatening disease may, through the use of modern medical technology and the conscious reduction of risk factors, be returned to flight status.

The ideal approach is to put into routine practice those exercise, nutrition and other behaviors that prevent disease and medical disqualification. ♦

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