

A stroke, also sometimes called a Cerebro-Vascular Accident (CVA), occurs when part of the central nervous system, which includes the brain, is damaged due to an interruption of the oxygen supply. A Transient Ischaemic Attack (TIA) is similar to a stroke except that the symptoms and signs do not last longer than 24 hours.

The problems that a stroke or TIA can cause include: Weakness or paralysis; Speech impairment; Thinking disturbance; Blindness; Behavioural changes; and alterations of mood.

Strokes and TIAs are important medical conditions for civil aviation regulatory authorities to consider. This is because they are relatively common and because they can cause impairment and/or an ongoing increased risk of incapacitation.

What causes Strokes and TIAs?

Anything that can interrupt the blood supply to the Central Nervous System can cause a TIA or stroke. The possible causes include: Atherosclerosis ('hardening of the arteries'); Emboli from the heart or elsewhere, and the rupture of a small aneurysm or vascular malformation within the skull.

Elevated blood pressure and abnormal heart rhythm (e.g. atrial fibrillation) are two important factors that predispose to a stroke or TIA. Other risk factors include diabetes, cigarette smoking, elevated blood lipids, and narrowing of the blood vessels that supply the head (carotid arteries).

The stroke or TIA occurs usually when the blood supply to part of the Central Nervous System is interrupted. The tissue of the brain is very sensitive to the lack of blood, which provides it with necessary oxygen and sugar, and so stops functioning after only relatively short periods of interrupted blood supply. If the blood supply interruption is of a relatively short duration the brain tissue will recover function relatively quickly — a TIA. If the interruption lasts longer then areas of the brain may be irreversibly damaged, and a stroke occurs.

What causes atherosclerosis?

There is no simple answer to this question. A wide variety of factors appear to contribute to the likelihood, or risk, of someone having significant amounts of atheroma in their blood vessels. Please refer to MIS 007 'Cardiovascular Risk'¹ for a more detailed answer to this question.

Why is a stroke a problem?

A stroke has the potential to interfere with aviation safety in two ways.

A stroke results in a reduction in functional capacity — your ability to do things. In some cases this impairment is major and permanent and prevents safe aviation. An example of this might be the complete paralysis of one half of the body. In some cases the impairment is relatively minor or even completely resolves and does not, in itself, prevent safe aviation.

A stroke can also represent an important risk factor for future strokes, TIAs, or heart attacks.

In the majority of cases people who have had a stroke are at an increased risk of suffering a future TIA, stroke, heart attack, or other complication of vascular disease. This increased risk of incapacitation is very high during the first year after the stroke, then falls to a low-point after 2-3 years, and then gradually rises after that. In some rare cases,

¹ <https://www.aviation.govt.nz/assets/publications/medical-information-sheets/mis007-cardiovascular-risk.pdf>

such as stroke caused by drug use or complicating diver's 'bends' and a hole in the heart, the underlying cause of the stroke can be treated and there is not a significant increased future risk of incapacitation.

Why is a TIA a problem?

A TIA does not result in any long-term reduction in your ability to do things.

A TIA does, however, indicate an increased ongoing risk of medical incapacitation — again mainly due to another TIA, a stroke, or heart disease.

Can I return to flying after a stroke?

It is unlikely that the ongoing risk of medical incapacitation will be low enough for a professional pilot, or air traffic controller, to be issued a class 1 or 3 medical certificate after a stroke.

The ongoing risk of medical incapacitation will, in many cases, also be too high for the issue of a class 2 medical certificate. In some cases, the ongoing risk of medical incapacitation will not be as high and a restricted class 2 medical certificate may be issued.

The exception to this is those strokes that are caused by something that can be (and has been) adequately treated, and so do not lead to an increased risk of medical incapacitation (including convulsion). These sorts of strokes are rare.

Can I return to flying after a TIA?

It is unlikely that the ongoing risk of medical incapacitation will be low enough for a professional pilot to be issued an unrestricted class 1 medical certificate, after a TIA (or amaurosis fugax — the temporary loss of vision in an eye due to a restriction in the blood supply to that eye). The ongoing risk may, in some cases, be compatible with a return to professional aviation in a multicrew capacity. Similarly, an Air Traffic Controller is unlikely to be issued an unrestricted class 3 medical certificate after a TIA.

After a TIA a private pilot may either be declined class 2 certification, issued a restricted medical certificate, or issued an unrestricted class 2 medical certificate. The outcome in any individual case will depend on the level of continuing risk factors and the likelihood of a further incapacitating medical event.

What level of medical incapacitation risk is OK?

Please refer to MIS 012 'Medical Incapacitation'² for information on this matter.

What if I don't agree with a decision concerning my stroke or TIA?

You are always able to seek review of CAA medical certification decisions. For further information on review / appeal options you may wish to consult MIS 005 'What Are My Review Options?'³ or the medical section of the CAA website (www.aviation.govt.nz).

² <https://www.aviation.govt.nz/assets/publications/medical-information-sheets/mis012-medical-incapacitation.pdf>

³ <https://www.aviation.govt.nz/assets/publications/medical-information-sheets/mis005-what-are-my-review-options.pdf>

Looking at the law

Civil Aviation Rule Part 67: Medical Standards

None of the medical standards in the Civil Aviation Rules refers specifically to strokes or TIAs. The medical standards that relate to strokes and TIAs can be found in Rules 67.103 (Class 1), 67.105 (Class 2), and 67.107 (Class 3), and include the general provisions that require an applicant to have 'no medical condition that is of aeromedical significance*'.

Other medical standards may also apply, including those in the 'nervous system' and 'cardiovascular system' sections of the medical standards, but again their wording is relatively general in nature and does not refer directly to strokes or TIAs.

* Rule 67.3(a) defines 'aeromedical significance': A medical condition is of aeromedical significance if, having regard to any relevant general direction, it interferes or is likely to interfere with the safe exercise of the privileges or the safe performance of the duties to which the relevant medical certificate relates.

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