

Obstructive Sleep Apnoea

Most people suffer fatigue at some time in their lives. Usually this is due to less sleep or poor-quality sleep for a period of time and usually things settle down over time and the fatigue is just a temporary disturbance. Unfortunately, some people suffer longer term fatigue problems and some of those do not even know they have a problem. This Medical Information Sheet is about Obstructive Sleep Apnoea (OSA), one treatable medical problem that can cause serious long term fatigue problems.

CAUTION

This Medical Information Sheet contains general advice concerning the CAA's regulatory handling of medical conditions. This sheet is not intended as clinical medical advice and should not ever be used as the basis of decisions concerning your medical care. You should consult your medical advisers and discuss your options thoroughly with them before making any decisions about your medical care.

Why is fatigue an aviation safety problem?

Fatigue degrades every aspect of human capability, including reaction times, attention, memory, communication, situational awareness, and mood. Seriously fatigued people suffer lapses in their attention, so called 'microsleeps', and tend to be irritable and apathetic. As a rule, people do not tend to accurately recognise the extent to which they are fatigued.

As you would expect from this list, fatigue also interferes with pretty well every aspect of aviation performance and has been a contributing factor identified in many aviation accidents throughout the world.

What sorts of things lead to fatigue?

There are many factors that can lead to undue fatigue. These can be grouped under four headings:

- Sleep loss;
- Continuous hours of wakefulness;
- Circadian disruption / time of day; and
- Sleep disorders.

While all of these fatigue-inducing problems warrant consideration, and while there are numerous recognised sleep disorders, this information sheet focusses attention on just one sleep disorder: Obstructive Sleep Apnoea (OSA).

The likelihood of OSA, in turn, is often associated with:

- family history;
- decreased muscle tone — due to increased age, alcohol, other depressant drugs, muscle disorders, or brain injuries;
- obesity; and
- smoking.

Why OSA?

OSA is a medical condition that causes fatigue and is relatively common in our community. It can also be fairly readily identified and reliably treated. The main risk factors for OSA are also reasonably well recognised and easily identified.

As such OSA is an important, common, and easily treated medical cause of fatigue.

What is OSA?

The term *apnoea* (apnea) means *without breath* and refers to a pause or cessation of breathing. *Obstructive* refers to the cause of the apnoea being the obstruction or blockage of the upper airways and the 'S', for sleep, refers to the obstruction occurring during sleep. So, OSA refers to the cessation of breathing, during sleep, due to blockage of the (upper) airways.

When someone goes to sleep the muscle tone of the body usually relaxes. In some people this relaxation, coupled with their individual anatomy, leads to the opposing walls of the upper airways (around the back of the mouth and nose) collapsing in and blocking the airway. This blockage of the upper airways usually results in repetitive pauses in breathing and a reduction in the amount of oxygen being carried in the blood. The body recognises this abnormality and, after a time, takes action to ensure that breathing resumes.

A person who suffers with OSA may not even be aware of their difficulty breathing and the problem is often recognised first by others who either witness the individual during sleep (e.g. spouses and partners) or by suspicion due to the effects on the body.

If the obstructive apnoea episodes are frequent enough and severe enough the individual's period of sleep is often noisy (snoring and grunting / gasping), disrupted (many near wakings and wakings), and of poor recuperative quality (daytime fatigue and all its problems).

Who gets OSA?

Many people suffer some degree of OSA. The percentage of the population who have the problem is not confidently known but may be in the 2—10% range for women and the 4—20% range for men. Sometimes it is a minor temporary problem that warrants no particular concern. Sometimes, however, it is a substantial problem and leads to severe fatigue- related and other complications.

There are many risk factors for adult OSA, and these include: genetics (Family History); decreased muscle tone (age, depressant drugs, muscle disorders, brain injury); obesity; smoking; structural factors related to the anatomy of the face and airways; and possibly gender (males predominate).

Could I have OSA?

Many people who suffer some degree of OSA are not aware of the fact. If your sleep has been observed to be noisy (snoring, gasping etc) or interrupted by bouts of no breathing, then you may have OSA. If you suffer with daytime tiredness, noticed by yourself or others, then you may have OSA. If you are overweight or obese you are at increased risk of OSA and may suffer with the problem, even without knowing about it.

I may be at risk. What should I do?

OSA can be successfully treated, and that treatment often leads to huge improvements in general health and fatigue levels. Some people do not realise just how bad their OSA was until they experience the improvements of successful treatment.

Because of its flight safety implications, and because of its relative ease to identify and treat effectively, if there is any likelihood that you may have OSA ... even mild OSA ... it would be very wise to follow the matter up with your medical advisers.

Talk with your Medical Examiner, or talk with your GP, and raise the possibility with them.

If, after discussing the details with you, the doctor shares your concern it is likely that they will then refer you to a sleep medicine specialist. Since there are not very many sleep medicine specialists available it may take a while before you are able to be seen. Again, depending on the details of your situation, the sleep medicine specialist may suggest more formal investigation of your sleep ... a 'sleep study' where many parameters are measured while you sleep (polysomnography).

That will cost me time and money. Why should I do it?

Medical assessments, specialist doctors, and complex investigations do cost money. OSA, on the other hand, can cause severe fatigue and also causes other problems for your heart and the rest of your body. Those, in turn, lead to reduced aviation safety and impaired health.

It is to your personal benefit, and the benefit of all close to you, to follow-up on any possibility that you may have OSA.

What will the CAA do?

The CAA is concerned at the likely number of people with undetected, or undeclared, OSA. The condition does represent a significant aviation medical safety concern, is detect- able, and can be effectively treated.

The difficulty that a regulatory authority faces, in such a situation, is identifying the appropriate risk threshold and the actions to be taken. Education is important, and this MIS aims to raise the awareness of aviation industry participants and hopefully steer some to seek further advice concerning their OSA risk. Education, however, will not serve to reduce the identifiable risk entirely.

The CAA medical certification system will be focussing attention on people with a particularly high risk of OSA. Obesity and neck circumference are two easily measured parameters that can be used, although all other major identifiable risk factors will need to be considered.

Will I be grounded if I have OSA?

Since the diagnosis of OSA covers a wide spectrum of severity it would not be reasonable to associate the diagnosis with automatic grounding. On the other hand, severe OSA and resultant fatigue issues can be a major aviation safety concern and someone in this situation should not be flying, at least not until the problem has been well controlled and no longer causes undue fatigue.

It is likely that if you have significant risk factors for OSA your Medical Examiner will require for you to be assessed by a sleep expert, and that assessment may include polysomnography testing. If you have multiple risk factors, or a particularly high single risk factor, then you may be required to undergo polysomnography and not issued a medical certificate until that has been cleared.

What if I don't agree with a decision concerning my history of OSA?

You are always able to seek review of CAA medical certification decisions. For further in- formation on review / appeal options you may wish to consult MIS 005 'What Are My Review Options?'¹ or the medical section of the CAA website².

¹ <https://www.aviation.govt.nz/assets/publications/medical-information-sheets/mis005-what-are-my-review-options.pdf>

² <https://www.aviation.govt.nz/licensing-and-certification/medical-certification/>

Looking at the law

Civil Aviation Rule Part 67: Medical Standards

Rules 67.103(b) (Class 1), 67.105(b) (Class 2), and 67.107(b) (Class 3) contain the main medical standard that relates directly to fatigue and indirectly to OSA. Those standards include a reference to the term 'aeromedical significance' which is expanded further in Rule 67.3(a): "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".

In the class 1 medical standards rule 67.103(b) requires that an applicant –

(1) have no medical condition that is of aeromedical significance; and

(2) without limiting paragraph (b)(1), have no history or diagnosis of any of the following specific medical conditions, to an extent that is of aeromedical significance:

...

(vi) a condition that induces fatigue;

...

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