

Fatal distraction: a case series of fatal fall-asleep road accidents and their medicolegal outcomes

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DRIVER FATIGUE OR SLEEPINESS is a widespread and serious problem within our society. Studies have attributed more than 20% of road accidents to driver sleepiness.^{1,2} Obstructive sleep apnoea (OSA), a common sleep disorder affecting about 25% of middle-aged men,³ is an important cause of driver fatigue. Drivers with OSA show a 2–7-times increased risk of motor vehicle accidents (MVAs) compared with drivers who do not have OSA.^{4,5}

In 1992, in *Jiminez v The Queen*,⁶ the High Court of Australia ruled that just because an accident is caused by a driver falling asleep does not mean that the driver had sufficient warning to stop driving. Because sleep, in this view, is involuntary, and people cannot be charged for involuntary acts, the “*Jiminez* defence” potentially enables many drivers to escape blame in the case of fall-asleep MVAs.

We describe seven fall-asleep fatality-associated MVAs that have occurred on New South Wales roads since 1995 in the setting of unrecognised or undertreated sleep disorders.

Cases

These cases (Box 1) represent consecutive referrals to the sleep disorders centres at Royal Prince Alfred Hospital (6 patients) and Westmead Hospital (1 patient), Sydney, for medicolegal opinions in fall-asleep MVAs where the driver who caused the accident survived. Drivers were aged between 30 and 60 years at the time of their MVAs. Five of the cases involved commercial drivers. For each case, police investigations did not identify the weather, road environment or vehicle mechanical condition as significant contributors to the MVAs. The contribution of alcohol was ruled out by breath or blood tests. Each subject underwent investigations (Box 2) to identify sleep disorders that might have contributed to the MVA. Each driver had at least one overnight sleep study. In six of the cases, an objective measurement of daytime sleepiness was also performed.

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ABSTRACT

- Obstructive sleep apnoea is associated with an increased risk of sleep-related motor vehicle accidents.
- Seven recent legal cases of fatal motor vehicle accidents on NSW roads are presented, where the driver who caused the accident was suffering from an unrecognised or undertreated sleep disorder.
- The legal outcomes in these cases were variable: some of the drivers have been acquitted and others have been jailed. All remained licensed to drive immediately after their accidents.
- In some of the cases, the driver was cleared of any culpable driving offence because of a defence of sleepiness or a sleep attack without warning (“*Jiminez* defence”). This appears at odds with current medical research and legal opinion in other countries.
- More research is needed to understand the relation between sleep disorders and awareness of sleepiness.
- Medical practitioners need to be aware of current advice and guidelines with respect to obstructive sleep apnoea and driving.

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Case A: Undertreated OSA and undiagnosed periodic limb movement disorder in a commercial driver

Description of accident: A’s truck ran into the back of a stationary car, killing that vehicle’s driver, and injuring two others. A reported drifting off to sleep at the time of the accident.

Relevant medical history: Several years earlier, A was diagnosed with severe OSA and commenced on continuous positive airway pressure (CPAP), but was not regularly followed up. A’s subjective compliance with CPAP was good, but A remained sleepy, to the extent that A’s spouse would frequently share any long distance driving.

Relevant test results: Sleep studies following the accident showed undertreated OSA, and a new sleep disorder (periodic limb movement disorder, in which subjects show repeated stereotyped movements, usually of the legs, in certain stages of sleep), which was also fragmenting A’s sleep. Residual severe daytime sleepiness was verified objectively.

Outcome: A’s legal case was “no billed” (ie, was not prosecuted) and A remained licensed to drive.

Case B: Undiagnosed mild OSA and upper airway resistance syndrome in a non-commercial driver

Description of accident: B’s car veered across the road and collided with an oncoming vehicle, killing that vehicle’s

1: Case details of fall-asleep motor vehicle accidents (MVAs)

Case (diagnosis)	Overnight sleep study	MSLT or MWT	Accident outcome	Legal outcome	Remained licensed?
A (OSA and PLMD)	With continuous positive airway pressure: AI, 30; AHI, 10; PLMI, 20	MWT20, 4.75 min	2 vehicles; 1 fatality; 2 others injured	No-billed	Yes
B (OSA and UARS)	AI, 41; AHI, 10	MSLT, 9.4 min	2 vehicles; 1 fatality; 2 others injured	No-billed	Yes
C (sleep deprivation)	AHI, 2.4; AHI, 1	MWT40, 40 min	4 vehicles; 5 fatalities; several others injured	Acquitted	Yes. Later withdrawn by RTA and then contested in court
D (OSA)	AHI, 30	MWT40, 11 min	6 vehicles; 2 fatalities; 12 others injured	Found guilty; jailed	Yes
E (idiopathic hypersomnolence)	AHI, 0.4	MWT20, 8 min	5 vehicles; 1 fatality; 2 others injured	Pleaded guilty	Yes
F (OSA)	AHI, 23	MSLT, 5.5 min	3 vehicles; 2 fatalities	Pleaded guilty; jailed	Yes
G (OSA)	AHI, 17	Not performed	2 vehicles; 1 fatality	Found guilty; jailed	Yes. Later withdrawn by judge

OSA=Obstructive sleep apnoea. PLMD=Periodic limb movement disorder. RTA=Roads and Traffic Authority. UARS=Upper airway resistance syndrome. Normal ranges: apnoea-hypopnoea index (AHI), 0–5/hour; arousal index (AI), 0–10/hour; maintenance of wakefulness test 20 minute protocol (MWT20; sleep onset as the first occurrence of one epoch of any stage of sleep), 11–20 min; maintenance of wakefulness test 40 minute protocol (MWT40; sleep onset defined as three consecutive epochs of stage 1 sleep or any single epoch of another sleep stage), 19–40 min; multiple sleep latency test (MSLT), 10–20 min; periodic limb movement index (PLMI), 0–5/hour.

driver and seriously injuring the passenger. B has no recollection of the period immediately preceding the accident and there was no evidence of any evasive action taken. B reported eight hours sleep the night before the accident, and 5.5 hours sleep two nights previously.

Relevant medical history: Clinical evaluation after the accident noted that B infrequently snored, was sleepy during the day, and was obese.

Relevant test results: After the accident, B’s diagnostic sleep study showed a high arousal index. The arousals were partly due to OSA events, but mostly due to more subtle obstructive events that did not reach the scoring criteria for OSA (upper airway resistance syndrome).⁷ Pathological daytime sleepiness was confirmed.

Outcome: B’s legal case was no billed and B remained licensed to drive.

Case C: “Sleep attack” in a non-commercial driver

Description of accident: C’s vehicle veered into the path of an oncoming vehicle, killing multiple occupants in that vehicle. C reported having fallen asleep suddenly at the time of the accident. C also reported being “slightly sleep deprived” in the preceding week, but did not recall being drowsy before the accident.

Relevant medical history: C’s history did not suggest an untreated sleep disorder or a problem with daytime sleepiness.

Relevant test results: After the accident, two overnight sleep studies and an objective test of daytime sleepiness failed to show any abnormalities.

Outcome: In the absence of any other medical explanation, C’s legal counsel argued that cumulative sleep deficit from inadequate sleep during the preceding week could have caused C’s “sleep attack”. C was acquitted and contested his licence suspension by the Roads and Traffic Authority (RTA).

Case D: Undiagnosed OSA in a commercial driver

Description of accident: D’s truck collided with and over-rode a car which was stopped in a line of traffic, killing two people and damaging five cars. There was no evidence of braking before the accident. Two witnesses testified D to be leaning and apparently looking to the left at the time of the accident.

Relevant medical history: Medical assessment after the accident revealed a long history of snoring, witnessed nocturnal apnoea, and an easy ability to doze when inactive. D recalls sleeping six hours the night before the accident.

Relevant test results: Sleep studies after the accident showed D had severe OSA. Daytime sleepiness was objectively confirmed.

Outcome: D was found guilty of culpable driving and was sentenced to prison. D remained licensed to drive immediately after the accident.

Case E: Undiagnosed idiopathic hypersomnolence in a commercial driver

Description of accident: E caused a five-vehicle, one-fatality accident by failing to stop on approaching a line of traffic in a roadwork zone. E’s accident occurred in the evening towards the end of a 16-hour working day. Just before E’s accident, E had rested and had had dinner at home.

Relevant medical history: E reported being excessively sleepy since childhood, more so than peers. E even felt that an inability to stay awake during class had impaired education. E noted that, compared with other truck drivers, E needed to pull over more than average to nap. On one occasion, E had fallen asleep driving, but no accident had ensued.

Relevant test results: After the accident, E’s overnight sleep study did not show a sleep disorder, but a maintenance of wakefulness test confirmed an inability to stay awake. E’s

2: Measures of sleep disorders

Maintenance of wakefulness test (MWT): An objective measurement of daytime sleepiness. This consists of four trials, two hours apart, in which the subject is seated in a dark, quiet room, in a comfortable chair, and instructed to stay awake. The subject is monitored polysomnographically for sleep onset. If the subject falls asleep in any of the trials, the time to sleep onset is calculated, and compared with the normal range.

Multiple sleep latency test (MSLT): An objective measurement of daytime sleepiness. This test is similar to the MWT, but the subject is asked to fall asleep, rather than stay awake, and the time taken to do so is measured.

Apnoea-hypopnea index (AHI): The number of times in each hour of sleep that subjects have absent or reduced breathing due to upper airway closure or narrowing. A measure of the severity of obstructive sleep apnoea.

Arousal index (AI): The total number of arousals on electroencephalogram (EEG) per hour of sleep (a measure of the fragmentation of the sleep).

Sleep study (polysomnography): An overnight test to identify sleep disorders. Sleeping subjects are monitored to record chest and abdominal wall movement, airflow at the mouth and nose, blood oxygen level, muscle tone, eye movements, heart rate and EEG.

confirmed longstanding excessive daytime sleepiness, together with negative sleep study, suggests a diagnosis of idiopathic hypersomnolence.

Outcome: E pleaded guilty to culpable driving. E remained licensed to drive immediately after the accident.

Case F: Undiagnosed OSA in a commercial driver

Description of accident: F's semi-trailer collided with the back of a car that was stopped at traffic lights, killing two people. F has no recollection of the period immediately preceding the accident.

Relevant medical history: F gave a long history of sleep talking and occasional sleep walking. In the two years immediately before the accident, F's spouse had become aware of worsened snoring and apnoea during F's sleep. During this time, F described a problem with daytime sleepiness, including frequently taking pseudoephedrine while driving.

Relevant test results: After the accident, a sleep study showed moderate OSA. F's daytime sleepiness was also objectively confirmed. F's urine tested positive for amphetamines at the time of the accident.

Outcome: F pleaded guilty to a culpable driving offence and was jailed. F remained licensed to drive immediately after the accident.

Case G: Untreated OSA in a commercial driver

Description of accident: G's truck veered into the side lane on a major freeway after G fell asleep, killing a cyclist. G's accident occurred in the morning, after G had driven interstate overnight.

Relevant medical history: G had been assessed for OSA nine months before the accident. At that time, G described a history of almost dozing off while driving on a few

occasions, in addition to other symptoms suggestive of OSA. G was warned that untreated OSA is associated with an increased risk of MVAs and a sleep study was arranged. This confirmed OSA, but G failed to attend a follow-up appointment, even when reminded to do so by letter.

Relevant test results: G's diagnostic sleep study before the accident showed moderate OSA.

Outcome: A judge jailed G for three years and withdrew G's driver's licence for five years.

Discussion

In each of these seven cases, the driver who caused the accident suffered from an unrecognised or undertreated sleep disorder. The nature of many of the accidents suggests inattention, with the vehicles crashing into the back of stationary cars or veering across the road, while showing little or no preventive action (eg, braking). This inattention could have causes other than the driver having fallen asleep. However, neurological clinical assessment or tests did not suggest neurological causes for any of the accidents. When taken together with the drivers' clinical histories and sleep investigations, we feel that each episode of inattention was most likely due to sleep or sleepiness. Although untreated sleep disorders could explain these possible episodes of sleep, inappropriate work and sleep schedules may also have contributed, especially for the commercial drivers.

The legal outcomes varied, despite similar circumstances. For instance, both A and G had known diagnoses of OSA and continued to drive while sleepy; A was no-billed, but G was jailed. As a second example, B had undiagnosed OSA, and a history of excessive daytime sleepiness, and was no-billed, whereas D also had undiagnosed OSA, denied awareness of excessive daytime sleepiness, and yet was jailed. These apparent judicial inconsistencies might relate to current difficulties in apportioning blame to OSA in fall-asleep MVAs. Although drivers with OSA as a group show increased sleepiness and driving accident risk, many individuals with OSA may be safe drivers.⁸ However, there are no clear clinical markers or laboratory tests that can identify which drivers with OSA are at higher or lower risk of causing an accident.⁹

The legal proceedings in cases A, B and C all considered the *Jiminez* defence. Legal opinion is divided on whether falling asleep at the wheel is always foreseeable or whether sleep can occur without warning. One view, still held by the Canadian and English courts, implies that ordinary people who fall asleep at the wheel are liable for their actions regardless of the circumstances. These judgements are predicated on the "prior fault" principle¹⁰ that there was a period of voluntary conduct before being asleep, when a person chose to take the risk of continuing to drive. This way of thinking was recently used in the United Kingdom to convict a driver who fell asleep at the wheel after driving while sleep deprived and caused an accident involving two trains, in which 10 people died.¹¹ In contrast, in *Jiminez v The Queen*,⁶ the High Court of Australia found that falling asleep while driving could be considered an unexpected event.

The *Jiminez* defence appears to be at odds with current medical evidence. Three studies have shown that healthy people do not fall asleep without a significant awareness of sleepiness for some time before a fall-asleep episode.¹²⁻¹⁴ These data challenge the use of the *Jiminez* defence in cases such as C's. However, it is important to note that this research on awareness of sleepiness was conducted with healthy volunteers, not patients with sleep disorders. Patients with sleep disorders may not be as aware of impending sleep. For example, patients with OSA are often only aware of the severity of their sleepiness retrospectively (ie, after treatment of their OSA).¹⁵ Studies of perception of sleepiness before sleep onset are needed for other groups, especially for people with OSA.

Although some of the drivers used the defence of falling asleep suddenly without awareness, all were allowed to continue driving until after their trials. This appears dangerous and inconsistent. Recent legislative changes in NSW have removed some of the legal constraints on licence suspension that previously handicapped the RTA in managing fall-asleep MVAs.¹⁶ The Road Transport (Driving Licensing) Regulation 1999, enacted in 2001, gives the RTA explicit power to suspend a licence if a driver has fallen asleep or has lost consciousness and caused death or injury. The licence can be suspended regardless of whether the person has been prosecuted for an offence. The courts will only allow an appeal if the person can demonstrate that he or she is medically fit to have the licence renewed.

Healthcare practitioners have a duty of care to their patients to provide advice and treatment at the prevailing, acceptable standard. A driver presenting with symptoms suggestive of OSA should be warned of the dangers of driving. The driver should also be warned about the early signs of drowsiness and the necessity to immediately stop driving if these occur. Finally, the driver should be referred to a sleep medicine specialist for assessment and further investigation. For medicolegal reasons, practitioners should carefully note advice about driving in patient records.

Previous national regulatory guidelines have been too vague about the requirements for diagnosis of OSA and its implications for driving.¹⁷ A recent review by the Australian Sleep Association advises that the guidelines be updated to recommend that drivers proven to have OSA on polysomnography and who report or are shown to have excessive daytime sleepiness should not drive until treatment is effective.¹⁸ The review also recommends that periodic review is required to ensure adequate treatment is maintained and that patients who do not comply with treatment while continuing to drive should be reported to licensing authorities. Although these recommendations on review and reporting are explicit, there is no clear evidence that every driver with OSA, with or without pathological sleepiness, has an increased MVA risk.

Current national guidelines emphasise the responsibility of individuals to notify the relevant State or Territory drivers' licensing authority of medical conditions that may affect their ability to drive safely, to comply with medical advice regarding satisfactory treatment, and to not pose a public risk.¹⁷ When an individual will not take responsibility for himself or

herself and puts lives at risk, the Australian Medical Association Code of Ethics acknowledges that a practitioner may have an obligation to breach patient confidentiality to report the situation to the appropriate authorities.¹⁹ In the case of drivers with OSA who report frequent sleepiness while driving or MVAs caused by inattention or sleepiness, we believe a practitioner is ethically compelled to report these drivers if they do not comply with treatment or follow-up. Legislation in all Australian States and Territories except Tasmania indemnifies medical practitioners in this situation.⁹

Legislators, medical practitioners and road safety specialists must recognise the changes in knowledge in this area and help to clarify the important medicolegal issues involved. In particular, the *Jiminez* defence, which is at odds with legal opinion in other countries and current medical evidence, should be re-challenged in the High Court or addressed through statute law at a State and Territory level, perhaps through the involvement of law reform commissions.

Competing interests

None identified.

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