

## **Drugs & driving: the place of medication reviews in improving safety for older road users**

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- **Drivers over 75 years of age take on average, almost half a second longer than middle-aged drivers to brake.**
- **Victorian drivers over 75 years of age accounted for 9% of driver deaths from 2000-2008.**
- **The proportion of Australian drivers aged over 65 years of age in 2006 was 14%; in 2042 it is predicted to be 25%.<sup>1</sup>**

Whilst many factors contribute to safety on the road, driver health is an important consideration and drivers must meet certain medical standards as detailed in *Assessing Fitness to Drive* to ensure that their health status does not increase the risk of a crash in which they or other road users may be killed or injured.<sup>2</sup> Medication is a difficult area to deal with in older people particularly as many of them require continuing medication.

#### **Older drivers**

Some countries have set relicensing requirements once a person reaches 80 years of age. This is not the case in Australia. There is a large variation in functional ability, medical conditions, and cognitive decline. Suspicions may be raised by family members or circumstances with minor crashes, forgetfulness or unusual behaviour.

The loss of a driving license to an older person is devastating. A person who makes their own decision to cease driving is likely to adjust to alternative transport with less impact on their quality of life. Unfortunately many older people do not recognise loss in driving skills and attempts by well meaning relatives and health professionals to assist the process are rejected. The task for a general practitioner to tell a lifelong patient that they can – or should no longer drive is not easy. The use of assessments such as specialist occupational therapists or license retesting may be appropriate with particularly difficult patients and may also result in car modification for some people to assist them to maintain independence .

Increased education of the community is required to encourage older people to make the decision themselves and to slowly restrict driving to local areas during daytime hours.

Crash statistics show that while the number of older driver crashes is relatively few, as a road user group they do tend to be over-represented in fatal and serious injury crash rates.<sup>3</sup> Drivers aged 75 years and over accounted for 9% of driver deaths (2000-2008).<sup>3</sup> Older drivers tend to drive less often and shorter distances than younger drivers. When examining fatalities per kilometre travelled, drivers aged 75 and over are more than four times more likely to be involved in a casualty crash than the lowest risk age group.<sup>1</sup> This seems to be due to a number of factors but a number of health conditions seem to have been associated with an increase in risk including:

- *visual acuity*
- *decreased cognition*
- *dementia*
- *some cardiovascular conditions*
- *chronic obstructive pulmonary disease*
- *cerebrovascular accidents*

- *transient ischaemic attacks*
- *insulin-dependent hypoglycaemia*
- *severe arthritis.*

Differentiation should be made between temporary conditions affecting driving ability in the short term, eg. mydriatics, general anaesthetic, fractures etc or serious conditions likely to affect driving in the medium to long term, eg. cardiac events, cerebrovascular accidents, neurological etc.

### **Medical conditions**

The following are some comments about several specific medical conditions and their impact on driving:

- **Diabetes**

The major cause of driving impairment in patients with diabetes is hypoglycaemia. Drivers should be advised to check blood glucose before driving, recognise early warning signs and keep glucose in the vehicle. End organ damage will also affect driving skills eg peripheral neuropathy, reduced vision, cardiovascular complications.<sup>4</sup>

- **Cardiovascular disease**

Cardiovascular disease is not a major cause of crashes as usually there is a short warning which allows a driver to pull off the road. There is some evidence that increased diastolic blood pressure (>95mmHg), recurrent syncope, two or more transient ischaemic attacks may increase risk.<sup>2,5</sup>

- **Epilepsy**

Seizure risk is the criteria for licensing.<sup>2</sup> Due to medical management the crash risk attributed to fitting drivers is low, however under-reporting may make the data accuracy dubious. Seizures may be exacerbated by sleep deprivation, excess alcohol and psychological stress.<sup>5</sup>

- **Psychiatric conditions**

Behavior disorders, alcohol and drug abuse, psychiatric conditions and organic brain syndromes presenting as dementia or psychiatric disorders all require individual assessment as to fitness to drive. Many of the drugs used also have sedative effects.

- **Dementia**

*Many people with dementia, particularly men refuse to give up driving and may continue to drive even when advised not to and their driving licenses have been cancelled.* There is strong evidence that the risk of motor vehicle accidents for drivers with dementia is significantly greater than that for age-matched, cognitively normal drivers.<sup>6</sup>

- **Sleep disorders**

Conditions that lead to falling asleep at the wheel include obstructive sleep apnoea, narcolepsy, chronic insomnia, chronic fatigue syndrome and the adverse effects of medication all of which lead to higher risk of crashes.<sup>7</sup>

- **Visual function**

Several eye conditions may affect driving ability including cataracts, diabetic retinopathy, glaucoma, macular degeneration and visual acuity.

Drivers are obliged to inform the licensing authority of any condition likely to affect their ability to drive. Failure to report can have adverse consequences in the event of a crash found to be caused by an unreported medical condition.<sup>2</sup> It is appropriate to focus for GPs on the disabling health condition rather than the medication in deciding to recommend who should or should not drive. Medications with definite impairment potential will of course override this principle.

### **Impact of medicines**

Many medicines have the potential to impair driving skills due to sedation, lethargy, dizziness, and blurred vision. Other drugs that may adversely affect driving include those with effects on balance, vision, judgment, aggression/risk-taking or psychomotor co-ordination. The issue is further complicated by road users omitting to take prescribed medication, doubling up, confused with generic medicines, taking medication at inappropriate times, polypharmacy, taking alcohol with medicines or taking additional non-prescription medicines or complementary medicines and then driving- oblivious to these potential dangers.

The Home Medicines Review<sup>8</sup> (HMR item 900), funded by the Federal Government, provides the opportunity for medical practitioners and pharmacists to advise patients of the effects of alcohol and

drugs on driving impairment and to promote the therapeutic use of drugs that do not impair driving performance. The level of knowledge about prescription medicines that can impair driving is low.<sup>9, 10</sup> Emphasis in the media should not only be placed on analgesics, benzodiazepines and prescription stimulants but on the safe use of all medicines. An Australian study conducted by the Australian Drug Foundation has found that 27 per cent of respondents admitted to driving while taking drugs that can cause drowsiness, dizziness or clumsiness even after medical advice not to drive.<sup>9</sup>

### Drugs which may impair driving skills

Alcohol continues to be the most prevalent drug causing road trauma. In Australia its prevalence in road fatalities is 25-30% depending on the jurisdiction. The average blood alcohol concentration in fatal accidents is over 0.15%.<sup>11</sup> Many crash-involved drivers in whom drugs are detected have also used alcohol. In driver fatalities, 9% test positive to both alcohol and at least one other drug.<sup>12</sup> In these cases, drug use may have contributed to elevated crash risk, but it is clearly not the only causal factor. Drugs such as sedating antihistamines, benzodiazepines, some antidepressants, and antipsychotics are estimated to have driving impairment equivalent to over 0.05% blood alcohol concentration.<sup>13</sup> Road accident data shows that alcohol either alone or combined with cannabis, amphetamines and other stimulants, benzodiazepines and opioids such as morphine, codeine and methadone were the most common drugs detected in fatally injured drivers.<sup>12</sup> Benzodiazepines were found in about 16% of injured drivers taken to hospital, including 30% of women over age 65 years of age.<sup>12</sup> A recommendation of abstinence from alcohol ingestion when using these drugs and driving should be given serious consideration.

The actual, rather than the potential, impairment of the driver are determined by the individual reaction to the medication, development of tolerance, medical conditions, other medications and the time between taking the medication and driving.

The 120 or so other drugs that require a mandatory warning label for sedation are listed in Appendix K of the Schedule in the Standard Uniform Scheduling of Drugs and Poisons.<sup>14</sup> Difficulties arise for persons with CALD (culturally and linguistically diverse) backgrounds. In addition to sedation, other side effects may affect the ability to drive safely, eg dizziness, blurred vision as listed in Table 1.

<i>Medication class</i>	<i>Examples</i>	<i>Comment</i>
<b>Analgesics</b>	eg opioid analgesics – buprenorphine, codeine, dextropropoxyphene, fentanyl, hydromorphone, methadone, morphine, oxycodone, pethidine, tramadol	May cause sedation and miotic effects. Doses >20mg of codeine may impair driving
<b>Antiarrhythmics</b>	eg flecainide, mexiletine	Caution when being stabilised
<b>Antibiotics</b>	eg norfloxacin, ciprofloxacin, minocycline, griseofulvin	May cause dizziness
<b>Anticholinergics</b>	eg oxybutynin, tricyclics and antihistamines with anticholinergic properties.	May cause dizziness, sedation, or blurred vision
<b>Anticonvulsants</b>	<b>Anticonvulsants</b> eg carbamazepine, clonazepam, gabapentin, phenytoin, sodium valproate, vigabatrin	Impairment through sedation may occur but usually only in early stages of treatment. Ability to reduce fitting will benefit drivers. Care with dosage changes
<b>Antidepressants</b>	Concern with tricyclics eg amitriptyline, clomipramine, doxepin, dothiepin, imipramine, trimipramine; mianserin, mirtazapine	SSRIs eg citalopram, escitalopram, paroxetine, sertraline, SNRIs eg desvenlafaxine, duloxetine, venlafaxine, are less likely to cause sedation or impair driving skills- may improve driving performance.
<b>Antidiabetic agents</b>	eg insulin, sulfonylurea agents	Good diabetes control and avoidance of hypoglycaemia.

<b>Antiemetics</b>	eg metoclopramide	Possible drowsiness
<b>Antigout agents</b>	eg allopurinol	Allopurinol may cause drowsiness
<b>Antihistamines</b>	<b>First-generation</b> eg doxylamine, dexchlorpheniramine, diphenhydramine, promethazine, trimепразине <b>Second-generation</b> eg cetirizine, desloratadine, fexofenadine, levocetirizine, loratadine,	<b>First-generation</b> –sedating antihistamines may impair driving  Less risk but some may still cause sedation
<b>Antihypertensive agents</b>	eg beta-blockers, alpha-blockers, ACE Inhibitors, All receptor antagonists, Calcium channel blockers, methyl dopa, clonidine	Some beta-blockers may cause sedation, lethargy All may cause dizziness Care with change of regimens
<b>Anti-Parkinsonian</b>	eg amantadine, benzhexol, benztropine, levodopa	Driving ability may decrease due to condition
<b>Antipsychotics and phenothiazines etc</b>	eg amisulpride, chlorpromazine, clozapine, haloperidol, olanzapine, pericyazine, quetiapine. Others: prochlorperazine,  Lithium	All antipsychotic drugs, if given in sufficiently high doses have sedative effects- variation within class. Enhancement of mood and mental state may benefit drivers. Warn whilst being stabilised  muscular weakness, drowsiness
<b>Benzodiazepines and other sedatives</b>	Alprazolam, clonazepam, diazepam, flunitrazepam, nitrazepam, oxazepam.  Others: zolpidem, zopiclone	Misuse potential is a concern, high incidence in accident data, enhanced effect with alcohol. Accumulation, long half-lives, tolerance, dependence and polypharmacy complicate recommendations. The risk of collision is doubled for patients taking benzodiazepines especially in the first two weeks of treatment <sup>18</sup>
<b>CNS stimulants</b>	Amphetamines, diethylpropion, methylphenidate, phentermine, phenylephrine, pseudoephedrine	All may increase aggression. (NB. Current data cannot distinguish stimulant use from fatigue as a contributor to accidents. Care with rebound fatigue)
<b>Eye drops, and eye ointments</b>	eg timolol, pilocarpine,	May affect vision, also have systemic effects. May cause blurred vision
<b>Herbal products</b>	eg passiflora, scullcap, St John's wort, valerian etc .	May cause sedation
<b>Illicit drugs</b>	eg cannabis, amphetamines, cocaine, heroin.	Alteration of driver behaviour
<b>Methadone</b>		May drive if stable. Warn about effects of dosage changes
<b>Muscle relaxants</b>	Eg baclofen, dantrolene, orphenadrine	Moderate risk
<b>NSAIDs &amp; COX-2 Inhibitors</b>	eg celecoxib, diclofenac, meloxicam, naproxen, etc	Some may cause sedation, dizziness. These side effects are dose dependant

Table 1: Some classes of drugs that may affect driving skills [2, 4, 15,16, 17, 18]

At the Australia Drug Foundation seminar on Drugs and Driving in April 2010 Dr Gowan in her presentation proposed not only an annual medication review for older road users, but zero alcohol and the possibility of a voluntary 'S' plate for Seniors to start at age 85. This has caused national publicity in the "Sunday Age" Channel 7 and numerous radio interviews with much debate. The Australian Drug Foundation consumer information and further information papers for health professionals [www.druginfo.adf.org.au](http://www.druginfo.adf.org.au).<sup>13,19</sup>

**The main message is :**  
**Ask your doctor and pharmacist if the medicine may affect driving. If so check for alternatives either for your medicine and consider alternatives for driving**

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