

## Driving and Dementia

### ANZSGM Position Statement

About the Australian and New Zealand Society for Geriatric Medicine (ANZSGM)

The ANZSGM is a society of medical practitioners engaged in the practice of Geriatric Medicine or related disciplines. Membership of the Society is open to registered medical practitioners who demonstrate a commitment to clinical practice, research, education and administration in Geriatric Medicine and allied specialties and to those undergoing training in these fields.

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1. The rising prevalence of dementia due to the ageing population probably has resulted in an increasing number of drivers with dementia on Australian and New Zealand roads. Professionals involved in the assessment and management of people with dementia share legitimate concern regarding the capacity of these people to drive safely.
2. Evidence is mixed that older drivers have an increased crash rate and this probably also applies to people with dementia. It is accepted that people with moderate or severe dementia are unsafe to drive. However, some people in mild stages of dementia may drive safely, at least for a limited time after disease onset.
3. A variety of cognitive skills are required for safe driving including attention, concentration, visuo-spatial perception and scanning, geographical orientation, information processing and problem solving, judgement, reaction time and co-ordination.
4. Other medical illnesses and impairments can compound any deficits related to cognitive impairment. These include visual and hearing impairment, stroke, sleep disorders, restricted mobility or co-ordination due to other neurological or joint diseases, and effects of alcohol or medication.
5. Driving capacity is task specific and deserves individualised assessment of the relevant functional skills. Performance on a standardised assessment with an on-road driving component (where indicated) by a suitably trained professional is accepted as the preferred method.
6. Neuropsychological results generally do not sufficiently or consistently correlate with on-road driving performance, or crash risk, but may assist in detection of specific deficits, such as executive dysfunction.
7. While driving ability is impaired in all people with moderate to severe dementia, some forms of dementia associated with prominent frontal lobe and executive dysfunction or motor symptoms (frontotemporal lobar degeneration, frontal variant of Alzheimer's disease, some forms of vascular dementia, dementia with Lewy bodies, Parkinson's Disease with dementia) may increase driving risks. Associated impairment in planning, organisation, problem solving, judgement, insight and impulse control are all critical factors affecting driving safety. Some cognitive screening tools (e.g. Mini Mental Status Examination) do not include assessment of frontal lobe or executive function. Cognitive deficits, and other non-cognitive risk factors, may therefore remain undetected when patients are screened with standard tools.
8. Overall, the onus of notifying the licensing authority of a medical condition that may affect driving is placed upon the person with the health condition.

In New Zealand medical practitioners have two main legal obligations relating to fitness to drive under

transport legislation. The law requires:

- Health practitioners to advise Waka Kotahi NZ Transport Agency (via the Chief Medical Advisor) of any individual who poses a danger to public safety by continuing to drive despite being advised to cease.
- Health practitioners to consider [Medical Aspects of Fitness to Drive](#) when conducting a medical examination to determine if an individual is fit to drive.

Australian doctors are not legally obliged to report patients with a diagnosis of dementia, except in SA and Northern Territory which legislate an obligation to report to the transport authority any individuals who the practitioner believes are unfit to drive as a result of physical or mental impairment.

9. The current Austroads guideline, [Assessing Fitness to Drive](#), suggests individuals should not drive if there is significant impairment of memory, visuo-spatial skills, insight or judgement, or if problematic hallucinations or delusions occur. Neither the Australian nor the New Zealand guidelines clarify cut-off levels of impairment nor do they give recommendations for testing.
10. It is important not to discourage assessment and diagnosis of memory problems and cognitive impairment by compulsory license suspension for all people with a diagnosis of dementia. Mild dementia may be diagnosed based on the presence of functional deficits other than driving ability. The diagnosis of mild dementia is difficult to operationalise in a standardised way. The definition of functional loss may vary from one clinician to another. It is therefore not reasonable to justify licence suspension based solely on a diagnosis of mild dementia. However, mild cognitive impairment may be associated with impaired driving ability in some people.
11. While licence suspension should be mandatory where individual and public road safety is clearly at risk, the impact on individuals of driving licence cancellation should be acknowledged and attempts made to minimise the consequences. These can include loss of mobility and autonomy, social isolation, loss of confidence, depression and a negative economic impact. It can also impact a family member who is reliant on the person with dementia to provide transportation.
12. There is a need to consider both public road safety and the right of those with dementia to make autonomous decisions, but public safety interests must remain paramount. When there is a significant risk to the public there is a legitimate reason for breach of clinical confidentiality, which is supported by law, providing reporting of a driver is made in good faith with reasonable doubts about their road safety. Documentation in clinical notes should include the reasons for safety concern, results of objective cognitive testing, relevant discussions with patients and relatives, together with agreed outcomes and actions. Doctors are obliged to inform patients with dementia of their responsibility to report the diagnosis of dementia to the driver licensing authority (and note that they have informed them in the clinical record).

13. In assessing the likely safe driving capacity of patients with cognitive impairment, a record of recent accidents or minor car damage and the reports of relatives can be helpful in raising concern about driving practices. Reluctance by peers and family to travel in the car as a passenger may be a useful pointer to potential safety issues. However this does not reliably detect concerns, as in some situations relatives defend patient's driving skills, despite evidence to the contrary.
14. Formal restrictions on a driving licence can be unsuccessful for individuals with dementia because some patients are unlikely to remember the restrictions. A driving companion or co-pilot is not a recognized safe practice for reducing driving safety risk in dementia.
15. Evidence suggests that patients with dementia generally lack insight regarding road safety concerns. They are unlikely to be able to self-monitor their safety, and some continue to drive despite driver licence suspension. In some cases it is necessary to restrict access to a drivable vehicle.
16. Frank discussion with patients with dementia and their primary caregivers/family soon after diagnosis, at an early stage of their illness, can raise awareness of the potential impact on driving safety. Appropriate explanation and encouragement to gradually restrict and voluntarily relinquish driving is effective in the majority of patients, particularly if addressed at an early stage of disease and sensitively handled.
17. Regular review (at least 12 monthly) of safe driving capacity is required in patients who retain a driver licence in early dementia, with particular attention given to behaviour, insight and progression of the cognitive impairment. More frequent review is justified in people with rapidly progressive dementia.
18. Recommended future strategies to address the problem of driving in dementia include:
  - Education and training programs for general practitioners and other health professionals to encourage early and accurate dementia assessment and diagnosis.
  - Development of practically useful *Assessing Fitness to Drive* (the most recent edition applies from June 2022).
  - Further development of fitness for driving assessment tools for use by general practitioners and other health professionals. This should include brief psychometrically sound screening cognitive tests, that can be used together with assessments of sensory and motor function.
  - Increased availability and subsidy of specific on road driving assessment by suitably trained occupational therapists and driving assessors for patients with cognitive impairment. This would be assisted by a relevant Australian Medicare item number and a suitable funding mechanism in New Zealand.
  - Community education programs to increase awareness of early dementia, to reduce stigma associated with diagnosis, and to give people living with dementia the time needed to plan how they will retire from driving.

- Provision of improved transport options for non-licensed older individuals including taxi subsidy for patients with dementia in addition to those with a physical disability.

## Background paper

### Introduction

Increases in active life expectancy and reductions in age specific mortality, brought about by improvement in public health and lifestyle have led to a dramatic increase in the proportion of older people in the community (1). The older driver, therefore, probably represents an expanding segment of the driving population (2- 3). Driving is an instrumental activity of daily living, one associated with personal independence, interpersonal contact, and status or role in both the family and social setting (4-7). Older adults' independence and lifestyle are crucially linked to their ability to drive. Over the past decades, attention has turned to the competence and safety of the older driver. This population has fewer car crashes (most involve men in their teens and twenties). However, when the accident rate is expressed as crash rate per kilometre driven, the older driver is a very high risk in terms of number of car accidents and the severity of injuries sustained (5, 8-9). This finding is concerning because many older people limit their driving to circumstances associated with lower risk, such as daylight driving in low-density and low-speed traffic. Normal age-related changes such as reduced dynamic visual acuity and reaction time, and difficulties with divided attention tasks, can undeniably impair driving ability. Moreover, older people tend to not recognise age-related deficits in sensory abilities, and underestimate driving dangers while overestimating their own driving skills (10). However, it has been established that there are biases that inflate the apparent risk to the older driver. The most important of these are low mileage bias and frailty bias. Drivers of any age who drive fewer kilometres have a higher crash rate and changes in health status with age make older people more susceptible to serious injury and death (11). Waller (12) first raised the question of whether age-related diseases such as dementia may account for increased risk of motor accidents. The essential feature of a dementia is the development of multiple cognitive deficits that may include memory impairment, aphasia, apraxia, agnosia, and/or disturbance in executive functioning. These cognitive deficits each cause significant impairment of social or occupational functioning and represent a significant decline from previous levels of functioning (13). Reported prevalence rates for dementia vary, but approximately 5% of the older population are affected. The prevalence increases exponentially from 1% or 2% among those aged 65 years to 60 % among 90-year-olds (14). Alzheimer's disease (AD) is the most common type of dementia, accounting for some 50%-75% of all cases. However, while the association of dementia with higher crash rates is equivocal, drivers with dementia are at greater risk of failing a performance-based on road test and of demonstrating impaired practical driving abilities (15). Geriatricians and other medical specialists are adept at providing diagnostic evaluation, functional assessment, and prognostic advice regarding AD and other dementias. Patients and their families frequently also require geriatricians to treat the disease and maintain the person with dementia at his/her highest functional level. From a patient's perspective this often includes the continued provision to drive.

Medical practitioners in Australia are not legally required to report drivers with dementia (except in South Australia and Northern Territory), and although federal guidelines exclude a person with dementia from driving a commercial vehicle, there is no recommendation to bar all persons with dementia from driving (16). Health practitioners in New Zealand should notify the relevant authorities if the person with dementia poses a danger to public safety by continuing to drive despite being advised to cease (17). New Zealand health practitioners should consider the guideline Medical Aspects of Fitness to Drive (18) when conducting a medical examination to determine if an individual is fit to drive. The guideline states individuals should not drive on a private licence where cognitive impairments may affect an individual's ability to drive safely and that individuals with dementia are not permitted to hold a commercial licence.

Medical responsibility for driving safety in dementia is a controversial area. In surveys, most geriatricians saw their role as one of providing advice on driving to patients and their families, with only a minority agreeing with the notion of mandatory reporting to relevant authority (19). Many doctors resist the pressure for mandatory licence cancellation on diagnosis, acknowledging this may prevent patients seeking support, the evidence linking early dementia with accident risk is tenuous, and the social consequences for patients are significant. However, doctors are obliged to inform patients with dementia of the patient's legal duty to report their diagnosis to the driver licensing authority (and note that they have given this advice in the clinical record). The Australian situation is controversial and doctors can still face a civil lawsuit even though reporting is not mandatory (20).

### [Are drivers who have dementia at greater risk of motor vehicle crashes?](#)

The evidence linking dementia with an increase in traffic accidents is mixed. The driving behaviours of people with dementia have received empirical scrutiny mostly through retrospective reports of crash rates among people with dementia, and age- and gender- matched controls. Several studies have shown a substantially higher accident risk than age- matched controls (15, 21-25) while other well conducted studies have shown no association or only weak effects (26-28). The risk of a motor vehicle accident increases with the duration of driving after disease onset, and many drivers with dementia stop driving within several years of diagnosis. Males are at increased risk for crash (29). Neuropathological examinations on 98 older drivers killed in traffic accidents indicated that 33% of these drivers had neuritic plaque scores that make a histological diagnosis of dementia certain, and a further 53% of drivers had incipient dementia (14). This raises the possibility that more accidents involving older people are attributable to dementia than indicated by the previously described retrospective studies. There are few prospective studies on actual driving performance of people with dementia. A recent systematic review concluded that the evidence with reference to an increased rate of crashes was mixed (15).

In addition, there is evidence that driving abilities in specific types of dementia (for example, frontotemporal lobar degeneration, frontal variant of Alzheimer's disease, some forms of vascular dementia, dementia with Lewy bodies, Parkinson's Disease with dementia) may be associated with greater risk (31). Mild cognitive impairment may be associated with impaired driving performance (31),

particularly if there are also non-cognitive risk factors (32).

There is a consensus that patients with moderate or severe dementia should not be driving (14) but there is less guidance in the literature for risk in early dementia. It would seem although dementia often adversely affects driving performance even in its mild stages, some patients may drive safely after disease onset. Therefore, the diagnosis of dementia alone is insufficient justification for driving cessation.

## Can at risk drivers with dementia be identified?

Dementias cause impairments of visuo-spatial skills, attention, judgement, and memory, which are all important functions for safe driving. Visuo-spatial skills are needed for a multitude of tasks such as appropriate positioning of the vehicle, estimating distances, and interpreting traffic situations and predicting their evolution. There are sufficient data to suggest that visuo-spatial processes are impaired in patients with dementia compared to age and gender matched controls (29). Selective, divided, and sustained attention is necessary, for example to detect potential hazards, to deal with competing stimuli at intersections, and to maintain optimal vigilance during trips. Evidence suggests that deficits in selective attention in particular are specific to impaired driving performance in even the early stages of Alzheimer's dementia (34). Judgement applies not only to the driving task, but also to the awareness of deficits, making compensatory behaviour possible. Memory is almost always impaired in dementia. Intact immediate and short-term memory functions enable the driver to retain information obtained, for example, when glancing at the rear-view mirror. Memory deficits (often combined with visuo-spatial impairments) can contribute to getting lost and may then lead to driving errors and violations. Although language does not appear to affect driving performance directly, it influences the strategic (e.g. choice of route) and tactical (anticipatory manoeuvres when seeing traffic signs) decisions of the driver (14).

A valid assessment battery, which can highlight deficits which underpin impaired driving behaviours in older people with dementia, is necessary for clinical assessments. A common assumption in the literature has been that understanding the driving errors of dementia patients and how they differ from those of normal older and younger drivers is important for the development of appropriate assessment measures of fitness to drive. However, a body of evidence indicates that driving performance may not be predicted by results of in-office neuropsychological tests or even comprehensive neuropsychological test batteries (35). Such tests remain insufficiently informed by current understanding of neuropsychological functions. They still often reflect a bias towards correlating IQ-related neuropsychological performance with a pass / fail status on an occupational therapy on- road driving test, with its obvious practical implication. A cross-sectional, observational study of a group of drivers with dementia directly correlated a series of neuropsychological tests with pass / fail performance on an on-road driving assessment. The Maze Task has been suggested as a valid screening method (36) although this does not have general acceptance.

A variety of driving simulators have been developed over the years that vary in complexity, cost, and the fidelity to an actual driving environment. Although the use of driving simulators is very appealing because they are safe, most evidence indicates that performance in driving simulators is not strongly

related to on road driving performance (37). However, there is increasing use of a screening assessment to risk stratify people with dementia which can reduce the requirement for on road assessments. The most widely used in Australia is the DriveSafe DriveAware tool (38).

In contrast, traffic interactive performance-based road tests provide a reliable and valid functional assessment of driving ability (39). However, there are potential problems with safety, the liability of assessors, and the reluctance of older people with dementia to participate because of fears of licence cancellation. Moreover, while a given driving assessment can be standardised and validated, this is difficult to do across different locations. In the absence of a conclusively validated in-office screening protocol, geriatricians must rely on a multidisciplinary approach to make clinical judgments about drivers who meet criteria for dementia. A recommendation to stop or restrict driving might be given to the older driver who has demonstrated at least one of the following impairments in driving tasks reported by the patient or close relative: new impairments in activities of daily living reflecting several areas of cognitive decline; the presence of additional medical conditions that appear to increase crash risk further; and the inability or unwillingness to limit driving to low-risk settings. In addition, decisions may be informed by recommendations from neuropsychologists, clinical psychologists and occupational therapists (e.g. on-road driver evaluations). These recommendations serve as guidelines and are not rigid criteria. Indeed, exceptions may be appropriate. The decision should be discussed openly with the patient, primary caregiver, and referring health professionals. Since drivers with cognitive impairment may not understand or remember the driving evaluation, recommendations should be given in writing to both the patient and primary caregiver (33). Insight into safety risk is often impaired even after failing the road test and undergoing counselling in relation to their safety behind the wheel (37, 40). Even when the driving risk is considered acceptable, it is recommended that each case be reviewed periodically by the medical practitioner, according to the patient's rate of decline or onset of new symptoms. Older people with dementia should be encouraged to develop plans to transition to other means of transportation (41).

## When driving is contraindicated

Withdrawal of a driver licence represents a very serious breach of personal autonomy and should not be undertaken lightly. In cases where driving is contraindicated, the geriatrician's role extends beyond recommending against driving (42, 43). Useful advice regarding the existence of subsidised taxi schemes, the availability of community transport provided by local governments, and how to approach friends and family for support can be helpful. Moreover, where a progressive pathology is diagnosed early, advice on plans for future mobility can be given well before restriction of driving needs to be considered. Local aged care assessment teams can sometimes help to identify alternative transport schemes. There can be resistance to such directives from both patients and their carers, due to the consequent restrictions on mobility and independence. Consequently, compliance with recommendation for licence suspension may be problematic (44, 45). A practical measure which can be taken to foster cessation of driving includes treating the issue of driving as part of a therapeutic program combining behavioural strategies and support to develop insight into the need to retire from driving while fostering a sense of autonomy (4, 6-7). Although such an approach may be hampered by the deficits of dementia, it reflects a more widespread trend towards discussing the implications of the diagnosis of dementia with the patient. Other issues to consider are the ability of family or friends to provide transport, other transport options (for example courtesy buses) and the money saved by not owning or maintaining a vehicle.

## Future considerations

More research efforts are needed to determine the accident risk of older people with various degrees of dementia. Screening tools that can identify cognitive and non-cognitive impairments and categorise individuals into risk categories need to be developed further. In-office screening may never be perfectly sensitive and specific to detect driving impairment, but it would be inefficient and costly to administer extensive assessments, including on road tests, to every patient who is suspected of having a driving impairment. Until these issues are clarified, geriatricians, general practitioners, rehabilitation and driving assessment professionals will be faced with the difficult decision of how to evaluate driving impairment in older people with dementia. Australia and New Zealand are not unique in facing this dilemma, and this position statement is consistent with recent international guideline recommendations (46).

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