Australian and New Zealand Society for Geriatric Medicine

Position Statement No. 11

Driving and Dementia

Revised 2009

1. The rising prevalence of dementia in association with the ageing of the population has resulted in an increasing number of drivers with dementia on Australian roads. Professionals involved in the assessment and management of dementia share legitimate concern regarding the capacity of dementia sufferers to drive safely.

2. Evidence is weakening 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 which has been suggested to be up to three years.

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, cerebrovascular disease, 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 standardized occupational therapist assessed on-road driving test is accepted as a “gold standard” assessment.

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. Some forms of dementia are associated with prominent frontal lobe and executive dysfunction. These include primary frontotemporal dementia, frontal variant of Alzheimer’s disease and some forms of vascular dementia, particularly extensive small vessel cerebrovascular disease. 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. MMSE) do not include assessment of frontal lobe or executive function. Cognitive deficits may therefore remain undetected when patients are screened with standard tools.

8. Dementia with Lewy Bodies (DLB) is associated with significant fluctuations in attention, alertness and cognition. In addition prominent impairment in visuo-spatial

perception, parkinsonism and florid hallucinations are all likely to affect the ability to drive safely.

9. In New Zealand medical practitioners have two main legal obligations relating to fitness to drive under transport legislation. The law requires:

- Medical practitioners to advise The Agency (via the Chief Medical Advisor) of any individual who poses a danger to public safety by continuing to drive when advised not to (section 128 of the Land Transport Act 1998 – see section 1.4) www.transfund.govt.nz/licensing/**medical-aspects**/index.html

- Medical 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. Legal obligations vary in different states and only SA and Northern Territory legislate a mandatory 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. However, doctors can still face a civil lawsuit.

10. The current *Austroads Guidelines* for assessing fitness to drive suggest individuals should not drive if there is significant impairment of memory, visuo-spatial skills, insight or judgement or if problematic hallucinations or delusions occur. Cut-off levels of impairment are not further clarified and recommendations for testing not specified.

11. 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.

12. 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.

13. There is a need to consider both public road safety and the right of those with dementia to make autonomous decisions, but public interests must remain paramount. This situation is a legitimate reason for breach of clinical confidentiality and 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 legal duty to report their illness to the driver licensing authority (and note that they have done so in the clinical record).

14. In assessing the likely safe driving capacity of patients with cognitive impairment, recent accident record or minor car damage and the reports of relatives can be helpful in raising concern about driving practices. Reluctance by peers and family to drive in the car as a passenger is a useful pointer to potential safety issues. This does not reliably detect concerns however, as in some situations relatives defend patient's driving skills, despite evidence to the contrary.

15. Formal restrictions on a driving licence can be unsuccessful for individuals with dementia because 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.

16. 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 a significant percentage continue to drive despite driving licence suspension. In some cases it is necessary to restrict access to a drivable vehicle.

17. 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.

18. Regular review (at least 6 monthly) of safe driving capacity is required in patients who retain a driving licence in early dementia, with particular attention given to behaviour, insight and progression of the cognitive impairment.

19. Recommended future strategies to address the problem of driving in dementia include:

- Education and training programs for GPs to encourage early and accurate dementia assessment and diagnosis;
- Development of practically useful *Austroads Guidelines* (a new edition of these Guidelines is expected in 2010);
- Development of driving assessment tools for use by GPs. This should include a brief psychometrically sound screening cognitive test, capable of sensitively and specifically predicting on-road driving performance.
- Increased availability and subsidy of on road driving assessment by occupational therapists for patients with cognitive impairment.
- Provision of an independent arbitration panel to remove the difficult and punitive task of licence cancellation from the general or specialist medical practitioner whose primary role is patient support.
- Community education programs to flag the effects of dementia and other physical disabilities on driving safety particularly in older drivers
- 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.

This Position Statement represents the views of the Australian and New Zealand Society for Geriatric Medicine. This Statement was approved by the Federal Council of the ANZSGM on 6 September 2009.
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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, 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 accidents (most accidents 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 recently 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 the 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 include memory impairment and at least one of the following: 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, the association of dementia with higher crash rates has been challenged. A recent systematic review concluded "drivers with dementia are poorer drivers than cognitively normal drivers, but studies have not consistently demonstrated higher crash rates" (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 patient at his/her highest functional level. From a patient's perspective this often includes the continued provision to drive. Geriatricians in Australia are not legally required to report drivers with dementia, 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). Medical responsibility for driving safety in dementia is a controversial area. In recent surveys, most geriatricians saw their role as one of providing advice on driving to patients and their families, only a minority agreeing with the notion of mandatory reporting to relevant authority (17). In Australia however, there is pressure to adopt a similar approach to that used in some US states where physicians are required to report a diagnosis of dementia to the state motor vehicle authority which in some areas results in mandatory licence suspension (18, 19). Many doctors resist the pressure for mandatory licence cancellation on diagnosis, acknowledging the evidence linking early dementia with accident risk is tenuous, and the social consequences for patients significant. However, doctors are obliged to inform patients with dementia of their legal duty to report their illness to the driver licensing authority (and note that they have done so in the clinical record). The Australian situation is controversial and doctors can still face a civil lawsuit although reporting is not mandatory (20).

Are drivers who have dementia at greater risk of motor accidents?

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 dementia patients, and age and gender matched controls. Several studies have shown a substantially higher accident risk than age-matched controls (21-25) while other well conducted studies have shown no association or only weak effects (26-28). Some 50% of drivers with dementia stop driving within three years of diagnosis, the risk of a motor accident increases

with the duration of driving after disease onset, and 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 neurotic 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. Fitten and colleagues (30) examined the on-the-road, behind-the-wheel performance of 15 patients with mild AD and 12 patients with mild vascular dementia. Compared to age and gender matched control groups, the groups with AD and vascular dementia had lower mean scores on the driving test and made more errors in complex stages of the driving course. However, Hunt and colleagues (31) found that while 40% of drivers with mild AD were unsafe drivers, some others were entirely safe. Similarly, Fox and colleagues (32) reported that of 19 licensed drivers with probable AD, 63% failed on-road evaluation, while 37% were judged to be safe drivers. 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 that dementia adversely affects driving performance even in its mild stages, although some patients may drive safely after disease onset. Therefore, the diagnosis of dementia alone is insufficient justification for driving cessation. Based on a systematic review Breen and colleagues have recommended that people with dementia can drive for up to three years after diagnosis (33).

Can at risk drivers with dementia be identified?

Dementing diseases 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 its evolution. There are sufficient data to suggest that visuo-spatial processes are impaired in patients with dementia compared to age and gender matched controls (30, 34). 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. Empirical evidence suggests that deficits in selective attention, in particular, are specific to impaired driving performance in even the early stages of AD (3, 35). Judgement applies not only to the driving task, but also to the awareness of deficits, making compensatory behaviour possible. Memory is 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 neuropsychological battery, which can highlight deficits implicating impaired driving behaviours in older people with dementia, is necessary. 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 neuropsychological assessment measures of fitness to drive (36). However, a body of evidence indicates that driving performance may not be predicted by results of neuropsychological tests or even comprehensive neuropsychological test batteries. Such tests remain insufficiently informed by current understanding of neuropsychological functions. They still often reflect a bias towards application of IQ-related neuropsychological performance to 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 (37). 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 (36, 38). In contrast, traffic interactive performance based road tests provide a reliable and valid functional assessment of driving ability (31, 36). 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. Without a conclusively validated in-office screening protocol geriatricians must rely on a multidisciplinary approach to make clinical judgments about drivers who meet criteria for dementing illness. 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 task reported by the patient or close relative: new impairments in activities of daily living reflecting several areas of cognitive decline, the presence of further medical conditions that appear to increase crash risk further, and the inability or unwillingness to drive in low-risk settings. In addition recommendations from neuropsychologists, psychologists, and occupational therapist driver on-road evaluations may be used in the decision making process. 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 (29, 34). Insight into safety risk is often impaired even after failing the road test and undergoing counselling in relation to their safety behind the wheel (38, 40). Even when the driving risk is considered acceptable, it is recommended that each case be reviewed periodically, according to the patient's rate of decline or onset of new symptoms. It is also possible to limit the driving of such patients to daytime driving in familiar environments, in good weather, and with restricted mileage. Older people with dementia should be encouraged to develop plans to transition from driving to safe transportation (41).

If driving is contraindicated?

Withdrawal of a driving licence represents a very serious breach of personal liberty 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 and the availability of community buses provided by local governments 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 is often considerable resistance to such directives from both patients and their carers, due to the consequent restrictions on mobility and independence. Consequently compliance with enforced driving cessation may be problematic (32, 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 and to develop insight into the need to give up 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 sharing the diagnosis of dementia with the patient.

Future considerations

More research efforts are needed to determine the accident risk of older people with various degrees of dementia. Further development of neuropsychological screening tools that can categorise cognitively impaired drivers into risk categories is needed. 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, geriatric, rehabilitation and driving assessment clinics will be faced with the difficult decision of how to evaluate driving impairment in the older people with dementia.

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