

THE NEUROLOGICAL ASSESSMENT OF DRIVING FITNESS OF PATIENTS WITH ALZHEIMER'S DEMENTIA (AD) OR MILD COGNITIVE IMPAIRMENT (MCI):

A SYSTEMATIC REVIEW OF THE EXISTING GUIDELINES

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Introduction: Cognitive impairment has detrimental effect on safe driving. Cognitive deficits and non-cognitive symptomatology of patients with AD or MCI deteriorate their driving capacity and highlight the need of a neurological assessment. Although a number of guidelines have been published, the neurologist's role on the evaluation of fitness to drive remains yet to be clearly defined.

Methods: We performed a systematic review of the existing guidelines, regarding the evaluation of driving fitness of patients with AD or MCI. The search was applied to MEDLINE (Table 1) and we initially identified 237 articles. After applying specified inclusion criteria, 18 articles were included. The flow diagram of our review is presented in Figure 1.

Results: All included articles (18/18, 100%) referred to drivers with dementia, but guidelines for drivers with MCI were found in 50% of them (9/18). The suggested initial evaluator of driving fitness is mainly the GP (50%), while a neurologist was proposed in only one article (5%). After the initial evaluation, undetermined cases may be referred to a dementia specialist (5/18, 27%). Cognitive assessment was unanimously approved as an essential part of the evaluation. However, specific neuropsychological tests and relative cut-off values were included in only 8/18 (42%) and 2/18 (11%) of the guidelines, respectively. Assessment of motor function was surprisingly suggested by only one article (5%). The main findings of our study are summarized in Table 2.

Table 1: Inclusion criteria and Search Terms

Article Type	1. Consensus statement 2. Recommendation papers 3. Guidelines 4. Review of the above 5. Expert opinion
Author(s)	1. National Committee - Authority 2. Scientific Society - International Working Group 3. Expert
Search terms	<ul style="list-style-type: none"> cognitive impairment/dementia (included terms: "dementia" OR "cognitive impairment" OR "Alzheimer's" OR "Mild Cognitive Impairment") AND driving (included terms: "driving" OR "automobile driving" OR "motor vehicles" OR "road safety") AND scientific guidelines (included terms: "guidelines" OR "consensus" OR "statement" OR "recommendation").
Subjects	1. MCI 2. AD 3. Dementia, not further specified
Driving Status	Active drivers of private vehicles
Language	English-written
Date of publication	After 2008 (Last literature search: 11/2018)

Table 2: Results (N = number of papers)

Article Type: N (%)	National Guidelines: 9 (50%) Recommendations: 5 (28%) Consensus: 3 (17%) Expert Opinion: 1 (5%)
Population: N (%)	Dementia: 18 (100%) MCI: 9 (50%)
Initial evaluator: N (%)	GP: 10 (55%) Neurologist: 1 (5%) Geriatrician: 1 (5%) Occupational Therapist: 1 (5%) Not specified: 5 (28%)
Undetermined cases should be referred to: N (%)	Neurologist: 5 (28%) Transportation Authority: 3 (17%) Practical Driving Assessment: 1 (5%) Not specified: 9 (50%)
Neurological Assessment must include (recommendations): N (%)	Assessment of cognitive functions: 18 (100%) Specific neuropsychological tests: 8 (42%) Defined cut-off values: 2 (11%) Assessment of motor function: 1 (5%)

Conclusions:

- Definite directives regarding neuropsychological tests and cut-off values, are lacking in the majority of the included articles.
- Assessment of motor function is lacking in the guidelines. However, a significant number of patients with MCI/Dementia present also motor signs (e.g. extrapyramidal or pyramidal signs in patients with Vascular Dementia, Normal Pressure Hydrocephalus or Corticobasal Syndrome).
- The role of the Neurologist in the assessment of fitness to drive is markedly under recognized.

The assessment of fitness to drive among patients with cognitive impairment is by definition interdisciplinary. Nevertheless, Neurologists should play a key role in the comprehensive assessment of driving ability in patients with cognitive disorders, assessing the two core functions of safe driving: cognition and motor function.

* This review is part of the PhD project with title "Evaluation of driving behavior of patients with MCI, Dementia or Parkinson's Disease: Diagnostic and Prognostic Markers", funded and supported by Onassis Foundation

Figure 1: Flow diagram of the systematic review

