Driving and Dementia

Richard Marottoli, MD, MPH

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Conflict of Interest Disclosure

I have no financial relationship or any real or apparent conflict(s) of interest that may have a direct bearing on my presentation.
Key Points

- Fix what you can, monitor the rest
- Begin discussions/planning early, come back to it often (‘plant the seed’)
- Enlist allies
- Be transparent re rationale, evidence; foster autonomy

Most older drivers safe, adjust driving habits as they age

- Drive less often, fewer miles
- Avoid uncomfortable/threatening situations: night, rush hour, bad weather, highways, unfamiliar areas

Is adjustment appropriate, excessive, inadequate?
Decreased road fatalities in recent decades encouraging

- Fewer crashes, improved survival
- Possibly reflects improvements in vehicles, roads, health, medical care

IIHS, 2010
Mr. R.
74 year old gentleman with stage IV kidney disease, diabetes, hypertension, depression

- Initially able to recall conversation, meds, BPs, weights
- Progressive decline in memory with poor motivation, daytime somnolence
Treatment initiated

• Antidepressant
• Erythropoietin for anemia

Further cognitive decline

• Dependent in IADL
• Driving-ran red lights, wife afraid to ride with him
• Scored 18/30 on MMSE
• Advised to stop driving
Dialysis started

• Initial cognitive improvement–MMSE 22/30

• Subsequent cognitive decline
• Started driving again

Geriatric evaluation

• 19/30 MMSE
• Deficits in higher level cognition-attention, executive function, psychomotor speed, information processing speed.
• Dementia diagnosed
• Discontinue driving reinforced
• Family present and will implement

What to Evaluate

• Driving history
• Driver factors
  - Medications/alcohol use
  - Medical conditions
  - Functional impairments
  - Awareness
• Driving performance
• Other factors – vehicle, environment
Driving History

- Does the patient drive?
- How often -- days/week or mileage
- What reasons -- shop, Dr. appointment, bank, religious services, visit, trips, pleasure
- Circumstances – at night, bad weather, highway, rush hour/heavy traffic, unfamiliar areas
- Adverse Events - crashes, moving violations, near misses, lost in familiar areas
- Patient or family/friends concerned/uneasy about driving?
- Use/availability of alternative sources of transportation

Medications/Alcohol Use

- Alcohol use less role in crashes c/w younger drivers
- More medications taken
- More sensitive to effects
- Central-acting agents of particular concern
- Analgesics, antidepressants, antihistamines, antipsychotics, anxiolytics, muscle relaxants, sedative-hypnotics
3 Ds of Drugs/Driving

1. Dosing
   • Start at lowest possible dose
   • Time to least likely affect driving

2. Duration
   • Avoid driving initially (and at dose change) if possible

3. Documentation
   • Advise regarding above and potential SE
   • Document discussion in record

MEDICAL FACTORS POTENTIALLY AFFECTING DRIVING SAFETY

Dementia
Neurological – Stroke/TIAs, Parkinson’s disease, seizures
Cardiac – Angina/MI, CHF, arrhythmias/defibrillators
Diabetes
Arthritis/Musculoskeletal
Ophthalmological – cataracts, glaucoma, macular degeneration, diabetic retinopathy
Other – Syncope, sleep apnea, psychiatric
Combinations
• With other conditions
• With medications/alcohol use
Plan for Older Drivers’ Safety

- Screening for Risk
- Clinical Assessment
- In-depth Evaluation
- Results & Outcomes about Driving
Functional Abilities

- Sensory
- Cognitive
- Physical

Vision

- Acuity
- Fields
- Contrast sensitivity
Physical

- ROM – neck, trunk, shoulder, hip
- Speed of movement – UE, gait
Cognition

- Global
- Visuospatial ability
- Attention
- Executive function
- Information processing speed

Number Cancellation Test

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Norm: ≥ 25/60 sec
Mr. R: 9
Norm: ≤ 180 sec to complete
Mr. R: 180 sec 6/25 completed
Dementia

- Limited number of studies, particularly on crash risk
- Small sample sizes, varying tests
- Data mostly for driving performance
- Worse cognition, worse driving performance
- No single test/battery consistently predictive
- Global cognition, memory, attention, executive function, visuo spatial ability

Am J Geri Psych 2017, 25:1376;
**Awareness**

- Aware of functional deficits
- Acknowledge driving difficulties, adverse events
- Adjust exposure/driving patterns accordingly

**Driving Performance**

1) Have family/friend ride with patient
   - Operation of controls
   - Interaction with traffic, pedestrians
   - Obey signals, rules of road
   - Level of attention
2) Professional evaluation
   - Specially trained therapist or evaluator
   - Off-road evaluation – simulator: best for very high risk
   - On-road: above parameters more formally assessed
Potential Intervention targets

- Medical conditions/medications
- Functional impairments
  - Vision
  - Cognition
  - Physical ability
- Driving performance

Intervention Studies

Medical conditions
- Cataract (Owsley, 2002)

Functional abilities
- Vision – cataract (Owsley, 2002)
- Cognition – processing speed (Roenker, 2003; Ball, 2007; Edwards, 2009; Ball, 2010)
- Physical ability – flexibility and speed of movement (Marottoli, 2007)
Education

• Driving ability
  – Classroom and on-road training (Marottoli, 2007; Bedard, 2008)
• Self-awareness (Eby, 2003; Owsley, 2003)
• Raising the issue
  – Dementia Caregivers (Stern, 2008)
  – Health Professionals (Meuser, 2010)
• Community mobility after cessation (Liddle, 2014)

Implications

• If know who’s at risk, may be able to intervene
• Interventions may improve drivers’ awareness of capabilities/limitations, driving performance, crash risk
• Availability of effective interventions may help to improve perception of the issue and involvement by drivers, families, and clinicians
Caveats/Questions

- What is the ultimate effect on safety?
- What is the effect on exposure?
- Will more intense interventions or targeting higher risk populations result in greater or lesser benefit?
- How do we deal with multiple risk factors?

What To Do With the Information

- Advise regarding continued driving, limitation, cessation
- Interventions to enhance/prolong driving
  - Fix remediable factors
  - Adapt to others – performance evaluation, special equipment, driving lessons
  - General knowledge – refresher course
- Reporting to your licensing agency
Factors Contributing to Driving Cessation

Medical problems (neurological, visual disorders)
Anxiety
Less need
Increased cost
Advised to stop
Adverse event
Availability of alternative transportation
Consequences of Cessation

- ↑ depressive symptoms (Marottoli, 1997; Fonda, 2001; Ragland, 2005)
- ↓ activity participation (Marottoli, 2000)
- ↑ nursing home placement (Freeman, 2006)
At the Crossroads
Family Conversations about Alzheimer's Disease, Dementia & Driving

We need to talk ...
Family conversations with older drivers
<table>
<thead>
<tr>
<th>Warning Signs for Older Drivers</th>
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<tr>
<td>1. Decrease in confidence while driving.</td>
<td>16. Uses a &quot;copilot.&quot;</td>
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<td>2. Difficulty turning to see when backing up</td>
<td>17. Bad judgment on making left hand turns.</td>
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<td>5. Other drivers often honk horns.</td>
<td>20. Moving into wrong lane.</td>
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<td>8. Hitting curbs.</td>
<td>23. Ticketed moving violations or warnings.</td>
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<td>9. Scrapes or dents on the car, mailbox or garage.</td>
<td>24. Getting lost in familiar places.</td>
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<td>10. Increased agitation or irritation when driving.</td>
<td>25. Car accident.</td>
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<td>11. Failure to notice important activity on the side of the road.</td>
<td>26. Failure to stop at stop sign or red light.</td>
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<td>12. Failure to notice traffic signs.</td>
<td>27. Confusing the gas and brake pedals.</td>
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<td>13. Trouble navigating turns.</td>
<td>28. Stopping in traffic for no apparent reason.</td>
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<td>14. Driving at inappropriate speeds.</td>
<td>29. Other signs</td>
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<tr>
<td>15. Not anticipating potential dangerous situations</td>
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### Additional Resources

National Highway Traffic Safety Administration  

GeriatricsCareOnline:  [http://geriatricscareonline.org](http://geriatricscareonline.org)

American Occupational Therapy Association  
[http://www.aota.org/Practice/Productive-Aging/Driving.aspx](http://www.aota.org/Practice/Productive-Aging/Driving.aspx)

NIH SeniorHealth  
[http://nihseniorhealth.gov/olderdrivers/howagingaffectsdriving/01.html](http://nihseniorhealth.gov/olderdrivers/howagingaffectsdriving/01.html)

Administration for Community Living  
[http://www.acl.gov/Get_Help/Help_Older_Adults/Index.aspx](http://www.acl.gov/Get_Help/Help_Older_Adults/Index.aspx)

Association for Driver Rehabilitation Specialists  
[http://aded.site-ym.com/?page=725](http://aded.site-ym.com/?page=725)
Summary Approach

• Ask about adverse events, difficulties
• Assess medical conditions, medications/alcohol use, functional impairments; intervene if possible
• Have family member ride with them
• Consider referral for formal evaluation of driving performance or geriatric assessment
• Discuss options/alternatives with patient, family

• Discuss why recommendation made, why change needed
• Ideally, allow patient to make decision
• Enlist support/enforcement of family/friends
• Identify alternative sources of transportation
• Maintain mobility/activity as much as possible
Thank you!

Questions/comments:
Richard.Marottoli@yale.edu