Dementia and Driving: Geriatric Assessment

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Introduction: Scope of the Problem

Prevalence/cost of Alzheimer’s Disease/Dementia:

1. 10% of the population over age 65
2. 15-20% population over 75:
3. 1-2% at age 65, with the percentage doubling every 5 years
4. 5-6 million current cases
5. Number of cases doubling over the next 20-30 years
Driving and the Elderly

• 37 million drivers over age 65 (18% increase since 1996)
• 2008: 84% seniors still driving
• Driving represents 90% transportation outside of home
• 2002 Am J Public Health: on average we are unsafe drivers last 6 years (men) and 10 years (women) of our driving years
Consequences of Driving Loss

- Decreased socialization/activity level
- Increased depression
- Increased risk of Nursing Home Placement
- Caregiver burden: overwhelming use of family/friends
- Despite efforts: great resistance, limited use of mobility services
Geriatric Assessment Clinic Experience

- 25-45% patients referred for dementia assessment still driving
- Poor outcome based data on assessment and intervention
- Classic model of driving assessment focused on physical issues: seizures, vision impairment, CVA and physical disability
Washington University Study

- 527 clinic patients positive for dementia
- 28% still driving
- 57% not driving; still with license
- 15% license surrendered
- 18% dementia pts still driving positive for crash in past year
Why do dementia patients reduce driving?

- 85% driving conditions: weather/darkness
- 15% health issues
- 0% worsening memory/cognition
Why Do Dementia Patients Stop Driving?

- 20-30% physician
- 20-30% family
- 15-25% accident
- 10-20% general health
- 5-10% MVA
- 5-10% other
Goals of Geriatric Assessment

• Diagnosis
• Staging
• Treatment: Cognitive Medications
• Treatment: Neurobehavioral Complications
• Management Medical Co-morbidities
• Medication Review
• Functional /Mobility/Sensory Review
Goals of Geriatric Assessment

- Education /Community Resources
- Safety Evaluation: DRIVING
Cholinergic System

Window of Vulnerability

Symptom Threshold
Disability Threshold
Death

100%

Time (Years)

0 10 20
Differential Diagnosis of Dementia

- Normal Aging vs. Normal Aging Plus
- Normal Aging Plus vs. MCI
- Subtypes of MCI
- MCI vs. Dementia
- Problem /Challenge: each syndrome overlaps with the next; there is no absolute test to mark where one ends and the next begins
Differential Diagnosis of Dementia

- Normal Aging: Frustrating but not disabling
- Key Feature: brain is a slower and less efficient computer
- Senior moments: information there but slower to access
- Language/ acquired skills relatively preserved
Rate of Memory Deterioration

- Normal Aging: age 30-55 (25yrs): 10% deterioration in memory (5 pts on CVLT)
- 55-67 (12 years): 10%/5 pt drop
- 67-82 EVERY 5 years: 10%/4-5 pts
- Alzheimer’s Disease: 10% drop per year
Differential Diagnosis of Dementia

- Concept; Normal Aging Plus
- On top of normal aging: any process that destroys more neurons can magnify effects of normal aging
- Most common: vascular risk factors including diabetes, hypertension, elevated cholesterol
- Head trauma / heavy alcohol use
Differential Diagnosis of Dementia

• Normal Aging Plus vs. MCI

• MCI: cognitive deficit is more than subjective: measurable impairment on neuropsychologic testing: generally below the 10% compared to your age and education matched peers

• Still functionally intact: no disability
Differential Diagnosis of Dementia

• MCI vs. Dementia
• Dementia: impairment in memory and at least one other cognitive domain
• Key is disability ; loss of function
• Below 5% in memory and one other cognitive area compared to age and education matched peers
Differential Diagnosis of Dementia

- Alzheimer's Disease: most common: at least 50% of dementia is Alzheimer’s
- 20-30% vascular vs. mixed Alzheimer’s/Vascular
- 10-15% Lewy Body Dementia
- 5-10% Frontal –temporal Dementia
- 5-10% rare/reversible
Differential Diagnosis of Dementia

- Alzheimer’s Disease: 40-60%
- Mixed Alzheimer’s/Vascular: 20-30%
- Vascular: previously estimated at 30-40% but on autopsy 70% presumed vascular dementia cases demonstrate mixed Alzheimer’s/vascular pathology; so pure vascular may be closer to 10-15%
Differential Diagnosis of Dementia

- MMSE
- 30 point standardized brief cognitive exam
- Mild dementia: 18-25/30
- Moderate 11-18 /30
- Severe: 0-11/30
- Average decline 2-3 pts/year
CDR: Clinical Dementia Rating

• 0.5: MCI mild cognitive impairment: measurable memory deficit but functionally intact

• 1: mild stage: problems with orientation, problem solving, memory, assistance with finances, high complexity tasks: 50% risk driving impairment, self care intact: mmse 18-24
CDR: Clinical Dementia Rating

• 2 moderate stage: very high risk impaired driving: at least 80-90%, high risk for crash, mmse below 18/30: should not be living independently

• 3 severe stage: complete impairment high complexity tasks; 24 hour supervision, assistance basic hygiene self care; mmse below 11/30
Clinic Driving Assessment

- Patient: poor assessors of driving skill
- Family: one questionnaire study demonstrated 83% accuracy in predicting driving assessment
- Cognitive: mmse little value above 24
  - 18-24/30: mixed results: 50% impaired
  - Below 18: high probability impairment
Warning Signs

- Driving much slower than speed limit
- Driving off road
- Problems with left turns
- Failure to yield right of way
- Failure to obey traffic signs
- Increased accidents/unexplained dents
- Getting lost/unexplained time missing
- Increased anger/confusion driving
Be Aware: Common Geriatric Risk Factors

- **Hx Falls/Syncope**
- **Vision Impairment**
- **Medication Effects: Psych meds/CNS depressants**
- **Accident rate increases 50% the week after starting benzodiazepines**
- **Drinking**
Neuropsychological Tests

• Better than MMSE: visual /attention /executive tests such Clock Draw and Trails B (above 2.5 minutes)

• Best? : more demanding tests of visual attention

• UFOV/ Useful Field of View, Driving Scenes Test/Neurological Assessment Battery, Porteus Maze Test
Formal Driving Evaluation

• Very helpful in MCI to Mild Stage to determine if patient should clearly stop driving or be referred to MVA

• Road Test vs. Simulator

• Road test generally considered highest standard

• Limitations: Anxiety/safety issues: driver, evaluator, other drivers
Physician/Clinic Approach: Be Aware of the Consequences

- Decreased socialization/activity level
- Increased depression
- Increased risk of Nursing Home Placement
- Caregiver burden: overwhelming use of family/friends
- Despite efforts: great resistance, limited use of mobility services
Physician/Clinic Recs

• Acknowledge Loss
• Arrange alternatives: focus on INCREASING ACTIVITY /MOBILITY
• Support Family and assist in referral to MVA or Driving Assessment
• Last Resort: license removal may not be end of battle: remove keys, remove or disable car( tell patient car is in repair shop)
Bottom Line

• Chronological Age is not a basis in itself to stop driving
• Overall Geriatrician Consensus is that dementia in itself should not be automatic basis to remove license
• Demonstrated incapacity to drive should be basis to stop driving
Bottom Line

- MCI/CDR: possible increased risk; assess for warning signs, consider formal driving evaluation: begin discussion of transition from driving
Bottom Line

• Through the 2-4 years of mild stage, risk increases (mmse 18-24) closely monitor for warning signs, low threshold for formal driving evaluation: continue transition from driving: short trips, daytime driving, slow roads, no rush hour, (co-pilot?)
Bottom Line

• Moderate Stage: Consensus APA, AAN, AGS, Alzheimer’s Association) probable unsafe driver and should be referred to MVA or at minimum formal driving eval

• AAN recommended that mild stage should not drive based on meta-analysis: may have underestimated severity (included more moderates in mild group)
Future

• Continue to Define Standard of Care/Consensus Statement Regarding Evaluation Guidelines, Mandatory Screening

• (currently California/Oregon/Pennsylvania have mandatory referral to MVA for diagnosis of dementia)
Future

- Establish best informant screens
- Define best neuropsychological tests
- Establish Gold Standard for Driving Evaluation Road Test /Simulator
- Need research on best methods on how to intervene