Driving Rehabilitation

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Presenter:
Amy Lane
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Driving Rehabilitation

Amy Lane OTR/L CDRS  
School of Health and Rehabilitation Sciences  
Department of Rehabilitation Science and Technology

The Driving Facts

• Driving is an Instrumental Activity of Daily Living—a cornerstone for independence in our society
• Rite of passage, symbol of autonomy and independence
• After injury or illness, safe community mobility/driving skills can be impaired
• Lack of ability to safely move in the community can lead to isolation, depression*, loss of function

Medical conditions and age related changes can affect driver competence

Older Drivers: What’s the Concern?
Older Drivers: What’s the Concern?

- In 2007, 31 million licensed drivers ages 65+ in the United States-19% increase from 1997.

- Rely on automobile transportation while living in suburban or rural communities-outside public transportation systems.


Older Drivers: What’s the Concern?

- Older drivers are safe drivers and self-regulate their driving

- Not all older drivers know when to restrict or cease driving (self reporting not reliable)

Driving and Alzheimer’s/Dementia

- **Warning signs**
  - Driving too slowly, doesn’t observe signs or signals
  - Difficulty interpreting traffic situations and predicting changes
  - Failure to yield
  - Easily frustrated or confused, frequently gets lost
  - Needs instructions from passengers

Brain Injury and Driving

- **Physical, cognitive and emotional changes post injury are multi-faceted and complex**
  - Speed too fast or too slow
  - Relies on prompts, instruction from others
  - Loses attention, lacks vigilance
  - Doesn’t observe signs, signals, speed limit
  - Easily frustrated, confused
  - Near misses, collisions
  - Blames others, lacks insight into errors/deficits
Brain Injury and Driving

- Restriction of driving remains a greater concern for clients than any other functional limitation\(^1\)
- Independent community mobility after discharge correlated with overall life satisfaction\(^2\)

\(^1\)C. Hopewell, Driving assessment issues for practicing clinicians, J Head Trauma Rehab 17 (2002), 48-61
\(^2\)M. Johnston, Y. Goverover, M. Dijkers, Community activities and individual's satisfaction with them: Quality of life in the first year after traumatic brain injury, Arch Phys Med Rehabil 86 (2005), 735-745

Brain Injury and Driving

- Nearly half will resume driving, 66% without any formal medical, legal or driving evaluation.*
- All rehabilitation practitioners should consider driving as an important part of the rehabilitation continuum

* M. Tamietto, et. Al., To drive or not to drive (after TBI)? A review of the literature and its implications for rehabilitation and future research, NeuroRehabil 21 (2006), 81-92
Spinal Cord Injury and Driving

• Proper evaluation and training by Driving Rehabilitation Specialist
• Consideration of functional skills, transfer ability, vehicle and adaptive equipment needs
• Adaptive equipment should be trialed prior to prescribing or purchasing

Peripheral Neuropathy and Driving

• Loss of sensation and mobility can impact driving performance
  – Steering
  – Pedal controls
• Use of adaptive equipment compensates for loss of sensory-motor control
How do we assess driver capability?

Driver Capability Assessment

- Physician’s office based assessment:
  - AMA Physician’s Guide to Assessing and Counseling Older Drivers
  - Available free at:
    - www.ama-assn.org/go/olderdrivers
    - www.nhtsa.gov
Driver Capability Assessment

- Physician’s office based-AMA
- Physician’s Guide to assessing and Counseling Older Drivers
- Driving Simulators
- Family and caregiver report

Family and Caregiver Report, Warning Signs

- Complaints of difficulty seeing at night
- More frequent dents/scratches on vehicle
- More frequent minor accidents
- Traveling much slower than the common flow of traffic
- Tendency to stay in the right lane, avoiding changing lanes
- Gets lost
Driver Capability Assessment

- Physician’s office based-AMA Physician’s Guide to assessing and Counseling Older Drivers
- Driving Simulators
- Family and caregiver report
- Self assessment
- Driver's License Bureau/Department of Motor Vehicles (DMV)

Medical Guidelines for Department of Motor Vehicles*

- DMVs are tasked with determining whether or not individuals are functionally able to drive safely.
- Balancing public safety and individual driving privileges is challenging

Medical Recommendations for Department of Motor Vehicles*

- Vision
- Physical Limitations
- Diabetes
- Seizures
- Sleep Disorders


Driver Capability Assessment

- Physician’s office based-AMA Physician’s Guide to assessing and Counseling Older Drivers
- Driving Simulators
- Family and caregiver report
- Self assessment
- Penn DOT Driver's License Bureau
- Referral to Driver Rehabilitation Specialist
Driving Rehabilitation

- A Driver Rehabilitation Specialist “plans, develops, coordinates, and implements driving services for individuals with disabilities”.
- A CDRS obtains certification from the Association for Driver Rehabilitation Specialists (ADED) by fulfilling education and experience qualifications and passing a certification exam.

What does a Driving Rehab program do?
Driving Program Process

- Referral
- Driving and medical history
- Pre-driver’s evaluation
- On-road evaluation
- Recommendations
Clinical Assessment

- Vision Screen
- Visual-Perceptual Assessment
- Cognitive Screen
- Communication and Behavior Observations
- Motor/Mobility Skills (including wheelchair or mobility device)
- Knowledge of Driving
Pre-Driver’ s Evaluation

- Vision Screen
  - Vision history
  - Corrective lenses
  - Visual acuity
  - Visual fields
  - Ocular-motor skills

- Visual-Perceptual Assessment
  - MVPT

- Cognition
  - Includes: attention, following directions, awareness of deficits, processing and reaction time, memory
  - Trail making Part A and B
Pre-Driver’s Evaluation

- Communication and Behavior
- Knowledge of Driving
- Motor and Mobility Skills

On-The-Road Evaluation

- Optimal method to assess driver capability
- Completed within the context of a real traffic environment.
Evaluation Results

- Should not drive, counseling, review options
- Additional training
- Re-evaluation
- May resume driving with restrictions
- No concerns, may resume driving
- State re-test

What vehicle modifications and technologies are available?
Vehicle Options
Vehicle Options: Side entry mini-van

Vehicle Options: Rear entry mini-van
Vehicle Options:
Full size van, side entry lift

Vehicle Options:
Freedom Motors-Honda Element
Vehicle Options: Freedom Motors PT-Cruiser

Toyota Scion-Freedom Motors
Vehicle Options: Goschichi

Martin Conquest Trike
How to (not) transport your w/c
University of Pittsburgh
Department of Rehabilitation Science and Technology

Driving Rehabilitation

December 2012
ATRS-Freedom Sciences
Wheelchair Securement Systems & Occupant Restraint
Wheelchair Securement

• 4-point tiedown systems are NOT designed for independent use

• Automated docking systems allow independent securement for wheelchair-seated drivers
  – EZ-Lock
  – Permolock
  – QLK
  – Dock ’N Lock

Ride-Safe brochures are available from:
University of Michigan Transportation Research Institute
umtridocs@umich.edu
Seating and Seat Base Options
Adaptive Equipment

- **Primary Controls** - Gas, Brake, Steering
- **Secondary Controls** - Headlights, Turn Signals, Windshield Wiper, Wash/Spray, Horn, etc...
High-Tech Driving Systems
Technological Advances

- Intelligent Transportation Systems (transportation infrastructure)
- Advances Driving Systems (automotive industry)

Intelligent Transportation Systems

- Timed traffic signals
- Real time traffic updates
- Interface between vehicle and traffic environment
Advanced Driving Systems

- Command Centers with natural voice recognition systems
- Semi-automated parallel parking
- Autonomous cruise control
- Lane departure warning
- Blind zone assist (lane changes or backing up, cross traffic)
- GPS- learns driver preferences

Thank You!

Amy Lane, OTR/L CDRS
Center for Assistive Technology
Department of Rehabilitation Science and Technology

Phone: (412) 864-3068

akl7@pitt.edu