Return to driving after stroke

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UPMC: Stroke, Concussion, outpatient follow up, EMG, Transitional Rehab Unit
STROKE RECOVERY

- Bed mobility
- Self feeding
- Swallow
- Transfers in and out of bed
- Toilet transfers
- Bowel and bladder continence
- Grooming
- Dressing
- Standing
- Ambulation
- Bathing
- Communicating basic needs

- Curb, ramp, stairs
- Community distances
- Problem solving
- Multitasking
- Appointments
- Cooking
- Money management
- Medication management
• When can I return to work?
• When can I drive?
Section 1518(b) Pennsylvania Vehicle Code

all physicians and other persons authorized to diagnose or treat disorders and disabilities must report to PennDOT any patient 15 years of age or older who has been diagnosed as having a condition that could impair his/her ability to safely operate a motor vehicle.
PennDOT Medical Advisory Board

Responsible for the formulation of physical and mental criteria

Neurologist
Cardiologist
Internist
General practitioner
Ophthalmologist
Psychiatrist
Orthopedic surgeon
Optometrist
PennDOT
PA Department of Health
Pennsylvania State Police
Physical Criteria:
- Visual acuity less than 20/70 (after correction) and field of vision standards
- Hearing requirements (for school bus drivers only)
- Seizure disorder
- Unstable diabetes
- Cardiovascular conditions
- Cerebral vascular insufficiency
- Periodic episodes of loss of consciousness and/or awareness
- Loss or impairment of joint or extremity
- Rheumatic, arthritic, orthopedic, muscular, vascular or neuromuscular disease expected to last longer than 90 days
- Use of any drug or substance that is known to impair skill or function

Mental Criteria:
- Cognitive impairments
- Inattentiveness to the task of driving because of, for example, preoccupation, hallucination or delusion
- Contemplation of suicide, as may be present in acute or chronic depression or in other disorders
- Excessive aggressiveness or disregard for the safety of self or others or both, presenting a clear and present danger
My approach
Neurological exam

- Motor
- Sensation
- Visual fields
- Extraocular movements
- Vestibular function
- Problem solving
- Reaction time
• Beware the right hemispheric stroke
• Visuospatial function
• Homonymous hemianopsia
• Neglect
Center for Assistive Technology
Rationale:

1. driver confidence
2. family confidence
3. medical-legal perspective
The Cost

- Not covered by insurance in this region
- “driving is not medically necessary”
- Returning to work - OVR.

- OT pre-drivers assessment
  - Clinical assessment $165
- Behind the wheel driving evaluation $235
- So total is $400.

- $125/hour for additional training.
Clinical assessment

- Pre-drivers assessment
- Trail making part B
  - highly predictive
  - divided attention
  - visual scanning
Conclusions: The Road Sign Recognition, Compass, and TMT B are clinically administrable office-based tests that can be used to identify persons with stroke at risk of failing an on-road assessment.

Neurology® 2011;76:747–756
Adaptive Driving Controls

Left hemiparesis:
- spinner knob on right side
- mechanical turn signal cross over (attach to vehicle to the right side)

Hand controls:
secondary controls for windshield wipers
Rapid access (turn signal, sprayer)
Non rapid access (window controls, headlights)

Photos courtesy of Veigel Rehamotive
Adaptive Driving Controls

- Left foot accelerator (right hemiparesis)
Adaptive Driving Controls

- Ranges from $100 to thousands
- Sometimes grants or zero-low interest loans from PATF (PA assistive technology fund) (have gotten vehicles funded)
“Funny” driving tales
Clearance to return to driving

• With any equipment, need to go back for PennDot state driving test with properly coded equipment
• Just like glasses
• Penn Dot will send a Gen Neurological form to pt to get filled out to take the test (doc to write “needs to be retested with the equipment”). Once passed will do the state test with the CAT vehicle, then work to install equipment.
Clearance to return to driving

• If already reported, then needs Gen Neurological form to be filled out-
  • “needs to be retested with the state” if ok to just take the state test (NO concerns re: VS/cognition) which is very simple.
  • Ideal: clear via gen neuro form but strict instructions to eval with CAT. Con: burden on doc.
  • If there are issues that need increased eval, dual control permit (learner’s permit) only allowed to drive in a vehicle with dual controls. Issued to the driving school - if safe to drive, still has to go back for knowledge and driving test.
Driver retraining

- Baseline habits
- Driving therapy
Aphasia

- Recognize road signs
- Evaluate situations while driving - can understand signs based on shape, size, color even with receptive aphasia. (except Stop except right turns, keep moving.)
- If okay then proceed with a more challenging driving route.
- National Aphasia Association has cards to print out. Says “I have aphasia, “I understand you but cannot communicate”, definition, and 5 contact information”
Vision

• Quadrantanopsia is okay. Needs 120 degrees of visual horizontal axis (even superior quadrantopsia)

• *Vision requirements*. A person shall have a combined field of vision of at least 120° in the horizontal meridian, excepting the normal blind spots.
Driver Rehabilitation Specialist

- Center for Assistive Technology
- Latrobe, Johnstown (Brant’s), Erie, WV. Ohio (2 hour radius)
- ADED Association for Driver Rehabilitation Specialist
Final Thoughts

- Driver readiness is dynamic and ever-changing.
- Clinical assessment is a great START.
- Give them a chance for behind the wheel. People can surprise you (both ways). When they are determined to not be safe - is this permanent or chance for remediation?
Final Thoughts

• Driving is an over-learned task - may do really well
• Family support is huge
Resources

• Dmv.pa.gov mature drivers.
• http://www.pacode.com/secure/data/067/chapter83/s83.3.html
• Center for Assistive Technology
• ADED Association for Driver Rehabilitation Specialist
• Office of Vocational Rehabilitation
• Veigel Rehamotive