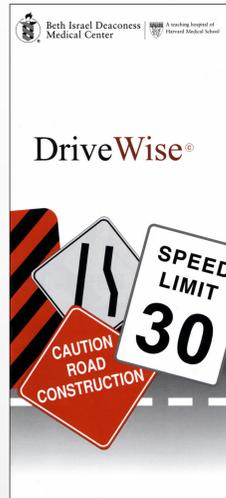




Are Parkinson's Patients Safe to Drive? How Can the Clinician Decide?

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ABSTRACT

DriveWise is a hospital based program providing driving assessment and remediation. With grant support from the National Parkinson's Foundation we developed an educational video entitled "Driving with Parkinson's: The Crossroads of Independence and Safety" to promote the driving safety of the patient with Parkinson's Disease (PD). In the 12 minute film we discuss specific neurological and neurocognitive aspects of PD that compromise driving skills. The film highlights salient emotional issues that emerge when the issue of continued driving is called into question. We present data on PD patients who have undergone DriveWise assessment, highlighting risk factors useful in the prediction of driving competence. A streamlined method for taking a driving history is presented.

BACKGROUND

There is a general lack of consensus regarding how to assess driving skills of patients with PD. A number of investigations have shown that PD patients have poor driving functions due to motor deficits (e.g., axial rigidity, postural instability), visual problems (e.g., diminished contrast sensitivity, decreased visual analysis) and/or cognitive inefficiencies (Grace et al., 2005). Variability in levels of alertness and functional status of PD patients undermines driving safety (Amick et al., 2007).

DriveWise, a multi-disciplinary assessment program, was developed to address the needs of PD patients and others with medical conditions that compromise driving. DriveWise includes counseling, office based testing, and a road test. Decisions about driving are made on the basis of a functional skill analysis rather than on the basis of age or diagnosis. To date, approximately 500 individuals, aged 19 through 95, have been assessed through DriveWise. Of this group, 24 have presented with motor and cognitive symptoms related to PD.

METHOD

Each PD patient met with a clinical social worker for a discussion of their driving history and their concerns about possible driving cessation. Participants then underwent a brief cognitive assessment focused on visual scanning and attention. Subsequently an office based OT examination included a thorough analysis of vision, brake reaction time and traffic sign recognition. Finally, participants underwent a 45 minute standardized road test modeled after the test used at Washington University (Hunt et al., 1997). Participants were rated on a variety of driving parameters including speed, lane position, turning, and compliance with traffic signs. Outcome decisions utilized input from the entire team and outside health providers. Outcomes included Pass (with 6 month follow up testing), Fail (with counseling regarding alternative transportation), and Remediation. Remediation was recommended for drivers who had poor habits or who made minor errors that would benefit from driving lessons. The average age of the PD group was 66.88 (SD=7.47). The average MMSE score was 28.74 (SD=1.36).

RESULTS

Of the PD participants 62% passed, 17% failed, and 21% were offered remediation. 60% of the remediation group gave up driving on their own whereas the other 40% returned for re-evaluation and passed the road test. Pass/Fail groups were compared on cognitive screening and brake reaction time measures (Table 1). There was a significant between group difference with respect to performance on the Trail Making Test: (TMT; Reitan, 1958). There were no between group differences with respect to age, brake reaction time, and MMSE.

Table 1. Descriptive and Neuropsychological Test Data (Mean, SD)

	Pass	Fail
Age	66.24 (8.35)	68.43 (4.86)
Trail Making Test – A (secs)	36.29 (14.47)	101.67 (76.75) ¹
Trail Making Test – B (secs)	107.88 (49.76)	174.14 (55.41) ¹
Brake Reaction Time (secs)	.49 (.09)	.51 (.16)

¹ difference between groups p <.01



DISCUSSION

The DriveWise program rests on the premise that decisions about driving competence should be made on the basis of evidence-based assessments. Psychosocial interventions are needed when any individual's driving privileges are called into question. A significant number of PD patients were able to pass our rigorous functional analysis of driving fitness. PD patients who failed the test had more difficulty on tasks requiring them to process visual information in a rapid manner underscoring the relevance of the TMT in the prediction of road test performance (Elkin-Frankston et al., 2007; O'Connor et al., 2008; Owsley et al., 1998; Reger et al., 2004). Consistent with American Academy of Neurology guidelines (Dubinsky, et al., 2000), PD patients have DriveWise follow up examinations at six month intervals.

FUTURE DIRECTIONS

Medical providers have been encouraged to take active roles in determining the driving competence of patients with neurological disease (AMA, PolicyFinder, 2000; Dubinsky et al., 2000; Wang et al., 2003). However, many providers have neither time nor expertise to render decisions about driving competence. Physicians are particularly challenged by patients with PD whose driving abilities fluctuate. They are reluctant to end driving privileges prematurely but they also fear deadly consequences of allowing driving to continue too long. Recent DriveWise educational initiatives have the goal of disseminating important information about driving safety to a broader audience. The complex issues involved in assessing the PD driver are captured in our film "Parkinson's Disease and Driving: The Intersection of Independence and Safety." We expect that the film will be viewed by PD patients, family members and health providers who will access it on the NPF website. More recently we embarked on a project to teach health providers how to include a driving history in the medical exam. We developed a driving screening tool, 4Cs, focusing on four functional domains relevant to driving safety: Crashes, Concerns, Clinical Status, and Cognition. We believe that 4Cs will be easy to use and time efficient. 4Cs will allow the clinician in the primary care setting to identify potentially unsafe drivers who need further assessment with a road test. Our primary goals are to support the dignity and independence of each PD patient while ensuring safe driving.

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