Variables Predicting Clinical Decision-Making to Drive: A Retrospective Analysis

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Introduction. Driving is a dynamic activity involving physical, visuo-perceptual, and cognitive skills. There are multiple domains to assess in persons returning to drive –visual, cognitive, motor, and on-road assessments. It is recommended to perform an on-road driving assessment based on a battery of off-road tests. The objective was to identify the most important tests from the battery of tests that best predict the recommendation for an on-road driving assessment in our Driving and Mobility Services (DMS) Clinic.

Methods. A retrospective analysis of our driving service data was gathered from 2017 to 2019. We analyzed data from 98 patients (65 men; mean age 68.8±14.2 years). The patients were referred to the DMS by clinical departments in the University of Kansas Health System. Four key functions that were extracted from the dataset were: vision, motor function, cognition, and simulated driving assessments.

Results. A backward linear regression identified possible predictors of the outcome, the clinical decision to drive. The analysis showed that the Montreal Cognitive Test (OR = 1.17, p = 0.01), break reaction time (OR = 0.12, p = 0.002), history of at-fault collision in the past five years (OR = 0.16, p = <0.001), Trail Making Test A (OR = 0.96, p = 0.01), Road Sign Recognition Test (1.42, p = 0.005), Dot Cancellation Test (OR = 0.97, p = 0.03) had the most influence on our decision to recommend a practical driving assessment or not; 52.9% of variance in the decision was explained by the model.

Conclusions. Among several physical, visual, cognitive, simulator-based assessments, we were able to identify the top six variables that were predictive of clinical decision-making to permit driving.