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Return to Driving Post Spinal Cord Injury

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BACKGROUND

In 2014, 2.81 million traumatic brain injury (TBI)-related emergency department (ED) visits and hospitalizations occurred in the United States (US) (Average Annual Value [AAV]: 1.5 million) (CDC, 2019). Experts at the National Spinal Cord Injury Statistical Center (NSCISC) report an estimated 12,000 new SCI cases per year based on US population. Craig Hospital (CH) in Englewood, Colorado (CO) is a renowned nonprofit rehabilitation hospital specializing in the neuro-rehabilitation and research of patients with SCI and TBI, treating an annual average of 475 inpatients (IP) and 2,000 outpatients from CO and throughout the US (CraigHospital.org, 2020). CH's Adaptive Transportation (AT) department employs 3 occupational therapists (OT) who are Certified Driver Rehabilitation Specialists (CDRS) that specialize in planning, developing, coordinating, and implementing driving services for individuals with disabilities.

CLIENT HISTORY

G.D. (client) is a 51-year-old male process engineer manager from Idaho, who sustained an acute spinal cord injury (SCI) secondary to a mountain bike accident, resulting in ASIA Impairment Scale A motor-sensory complete T2 paraplegia. Client completed IP rehabilitation at CH for SCI model systems specialty, medical management, nursing care, and multidisciplinary rehabilitation from September 2019- December 2019, prior to receiving OP services at CH outpatient SCI rehabilitation program. Client expressed interest in returning to driving and was referred by his OT to CH's AT Department for behind-the-wheel (BTW) driver evaluation from an OTR/L, CTRS.

RESEARCH QUESTION

What is OT's role in driver rehabilitation?

METHODS

**Intake: ***OTR/L, CDRS and OTS (driver rehab team)

- Driver rehab team confirmed M.D. order to evaluate and treat.
- PMH, medical dx, medications, pain, wheelchair model, transfer status, driver's license status, current vehicle model reviewed; OTS performed MMT and sensory testing
- Short and long-term goals established/recorded
- Adapted equipment (AE) appropriate for BTW evaluation demonstrated (hand controls: left mount push/rock electric throttle; steering device: steering knob; securement device: torso belt).
- Proof of Idaho driver's license, and signed consent-to-drive and medical clearance forms.
- **Vision Screening:**
- Near and far visual acuity, peripheral vision, color perception, eye fusion, lateral and vertical phoria, and road-sign recognition assessed.
- Vision WNL

**Pre-drive simulation: ***Via STISIM Drive® Simulator

- Oriented client to BTW expectations
- Assess client's processing speed, divided attention, and decision-making during a variety of simulated hazards and road conditions.

BTW Drive #1:

- Client oriented to trainer vehicle, cross-leg seating method, torso-belt application, cushioning bony prominences and weight-shifts.
- BTW began in low-stress residential driving environment and progressed to complex command-following and 'hazard' avoidance maneuvers in driving range.
- Routine weight-shifts practiced throughout each BTW evaluation.

BTW Drive #2:

- BTW began in moderate-stress residential environment; progressed to complex residential, multi-lane, and business environments driving environments.
- Focus on developing familiarity of motor patterns necessary for driving with AE.

BTW Drive #3:

- BTW began in complex business environment and progressed to interstate lane merges.
- CDRS provided contact information for Idaho state DMV and local CDRS.
- Rx for vehicle modifications, medical clearance form and letter of completion sent to M.D. for signature.

RESULTS

G.D. demonstrated safe and efficient defensive driving skills throughout all dynamic driving environments and passed BTW driving evaluation with AE. Deemed medically prudent to return to driving and discharged from AT driving program. M.D. co-signed medical clearance form, letter of completion, and Rx for AE in client's pickup truck (left-mount push/rock hand controls, steering knob, torso belt, transfer seat and w/c loader) and sent to Idaho DMV. Once notified, G.D. went to DMV to receive new driver's license with restrictions listed (automatic transmission, hand controls, steering device). G.D. contacted a local National Mobility Equipment Dealer Association (NMEDA) certified mobility dealer for AE installation. G.D. is now able to drive safely and independently with AE.

Limitations:

- Client's funding (No workman's comp.; DVR)

BOTTOM LINE FOR OT

OT's are experts in performing activity analysis and client-centered care to enable clients to return to performing meaningful functional activities of daily living (ADL) and instrumental ADLs (IADL), including the IADL "Driving and community mobility" (D&CM) (AOTA, 2014). D&CM enables clients to plan and move within their communities using private or public transportation, by driving, walking, bicycling, or accessing and riding buses, taxis or other transportation systems. To address a client's D&CM needs, *all* OT's must:

•Begin dialogue early and frequently to identify client's D&CM needs and goals

•Utilize standardized assessments to evaluate and address visual, motor, sensory, and cognitive performance deficits to determine if driving is a risk for a client (Davis & Dickerson, 2017)

•Be knowledgeable of alternative modes of transportation and resources within client's community

•Establish relationships with local CDRS and refer borderline clients when indicated (Davis & Dickerson, 2017)

When BTW evaluation by a CDRS is indicated, CDRS have the credentials and expertise to comprehensively treat and prescribe AE that enables clients to access their community.

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