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Meeting the Driving and Community Mobility Needs of Older Adults

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Course Objectives

1. Describe the contribution of driving and community mobility to health and quality of life for their aging clients.
2. Distinguish the role of the generalist occupational therapy practitioner from the specialist in driving and community mobility to enhance collaboration and address client needs throughout the continuum of care.
3. Identify clinical assessment tools that are useful and predictive in determining fitness to drive or use transit.
4. Select intervention approaches appropriate to the scope of the practice setting and practitioner’s expertise.
Driving and Community Mobility

- Classified as an IADL
- Driving and Community Mobility
- “Planning and moving around in the community and using public or private transportation, such as driving, walking, bicycling, or accessing and riding in buses, taxi cabs, or other transportation systems” (AOTA, 2014, p. S19)

- Occupation Enabler
- Facilitates participation in other occupations (AOTA, 2010; Stav & Lieberman, 2008)

Importance of Driving

- Enmeshed in the social and technical aspects of society and has literally changed society (Gartman, 2004; Urry, 2004)
- Automobiles: “quintessential manufactured object ... the major item of individual consumption after housing” (Urry, 2004, pp. 25–26).
- Automobiles are a symbol of class distinction and a means to express one’s individuality (Gartman, 2004)
- Driving is a prominent aspect of daily life and serves as a critical link to engagement in other meaningful occupations
Implications of Not Driving

- Interruption in meaningful occupational engagement:
  - Leisure
  - Social participation
  - Employment
  - Volunteering
  - Shopping

- Negative effects to health and quality of life
  - Access to medical care
  - Grocery shopping
  - Limitations in transportation alternatives
  - Destinations
  - Schedules
  - Municipal lines

Implications of Driving Cessation

- Feelings of regret, loss, and isolation (Johnson, 1995)
- Loss of identity and decreased life satisfaction (Taylor & Tripodes, 2001)
- Increase in depressive symptoms (Marottoli, et al, 1997)
- Dependency on the generosity and kindness of a friend, neighbor, or family member
- Resultant effect on patronage to the local business community (Kim & Richardson, 2006)
Meaning Associated with Driving

- Independence
- Self-reliance
- Spontaneity
- Freedom
- Empowerment
- Escape
- Speed

Reach of Meaning and Implications

- Older adults who represent 14% of the US population totaling over 43 million [2012 data] (NHTSA, 2014)
- Approximately 56.7 million people had a disability in 2010
  - 12.3 million needed assistance with 1 or more ADL or IADL (Brault, 2012)
- Clients with neurological, orthopedic, and metabolic conditions may all experience issues
Two Levels of Assessment

- Determining medical fitness to drive
  - Conducted by a specialist

- Determining whether there is a need to address driving specifically
  - Typically conducted by a generalist
  - Extremes in performance are easy to determine
  - Gray area needs a referral

- Spectrum of Driver Rehabilitation Services

Role of Generalist vs Specialist
Generalist and Specialist in Driving

- **All** therapists should address driving issues
  - At a different point in the continuum of care
  - With a different depth of focus

- Important to know what the other is doing
  - Avoid repetition of assessments
  - Make appropriate referrals

**Generalist**

- **Goal:** Optimize occupational engagement
  - Inquire about community mobility needs
  - Assess performance skills related to driving
  - Refer to other disciplines or specialists
  - Recommend discontinued driving or alternative

- Responsibility to be aware of state regulations
- Provide skill building services to lead to driving
- Focus on independent AND safety
**Specialist**

- Goal: Optimize performance and safety in driving and community mobility
- Advanced training, not entry level practice
- Evaluation of driving including in-vivo assessment
- Determination of medical fitness to drive
- Provision of vehicle-based interventions
- Training in the use of adaptive driving equipment
- Advocacy for system modifications
- Can be certified as CDRS or SCDCM

**Generalist:**
- Inquire about driving needs
- Education about potential driving implications from diagnosis

**Generalist:**
- Assess skills used in driving and comm. mobility
- Remediate skills related to driving
- Identify driving needs
- Determine if a referral is needed then refer

**Generalist:**
- Remediate skills related to driving
- Make referral to driving specialist
- Address deficits identified by specialist

**Acute Illness**
- Aware of CM needs
- Early stages of recovery

**Acute Rehab**
- Focused on recovery
- Building skills used in CM

**Out-patient**
- Entry into the community
- Return to CM
Aware of CM needs
Early stages of recovery

Focused on recovery
Building skills used in CM

Entry into the community
Return to CM

Specialist:
• Educate generalists about what to look for
• Train generalists in screening tools
• Inform generalists about community resources including driving evaluation

Specialist:
• Evaluate driving
• Determine fitness to drive
• Provide intervention to return to driving
• Assist with driving cessation

Evaluation of Driving
## Assessment of Driving

### GENERALIST
- Interpretation of assessments and observation from course of rehab services
- Administration of screens – interpret with caution
- Similar clinical reasoning used when considering safety to cook or bathe
- Be aware of tools specialist is using to reduce possibility of learning the test
- Result: Decision of fitness to drive or referral to specialist

### SPECIALIST
- Administration of assessment tools proven to be predictive of driving performance or crashes
- Administration of an in-vivo road test to measure performance in the naturalist context
- Result: Decision of fitness to drive

## Occupational Profile
- Who is the client?
- Why is the client seeking services?
- What occupations and activities are successful or causing problems?
  - Driving / Community Mobility
  - Secondary to driving
- What contexts support and inhibit driving performance?
- What is the client’s history related to driving?
- What are the client’s priorities related to driving and community mobility?
Clinical Assessment

- Tests of client skills / deficits
- Conducted in the “clinic”
- Battery of assessment tools
- Choose tools based on
  - Client specific diagnosis and needs
  - Evidence of value of tool

What the Tools Measure

- What constructs are being measured
  - Vision
  - Cognition
  - Motor performance
- What does the literature say about a relationship to driving?
  - Predictability of crashes
  - Indicative of driving performance
Vision/Perception Assessment Tools

- Vision important to assess to ensure adherence with state guidelines
- Acuity most commonly has state minimum
- Visual fields minimums often identified
- Use traditional visuals screens and refer to eye care specialist for concerns

Vision Assessments

- Visual acuity
  - NOT linked to crashes
- Contrast sensitivity
  - Linked to crashes
Cognitive Assessments

- Cognitive deficits often necessitate the need for driving cessation
- Many publicly available screen measure cognition
- Predictability of driving is an important consideration

Mini Mental State Exam

- Questions about
  - Orientation
  - Memory
  - Identification of objects
  - Abstract thinking
  - Calculations
  - Ability to follow directions
  - Visual-Perceptual-Motor Skills
- Not predictive of driving performance
**Trailmaking**

- Paper pencil test
- Quick and easy to administer
- Trails A – connect numbers sequentially
- Trails B – connect numbers/letters alternatively and sequentially
- Assesses:
  - Attention
  - Scanning
  - Planning
  - Problem solving
  - Divided attention
  - Attention shift

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**Trails B**

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![Image of Trails B diagram]
Useful Field of View

- Visual Processing Speed
- Divided Attention
- Selective Attention
- Evidence of predictability for crashes
- Linked to crashes

Symbol Digit Modalities Test

- Attention
- Attention Shift
- Working Memory
- Visual Motor Integration
- Inconsistent in the literature
Clock Drawing Test

- Conceptualization of time
- Visual spatial organization
- Memory
- Executive function
- Visual memory
- Motor programming
- Inconsistent in the literature

Clock Drawing Test

- All hours are in correct numeric order, starting with 12 at the top
- Only the numbers 1-12 are included, no duplicates, omissions or foreign marks
- Numbers are drawn inside the clock circle
- Numbers are spaced equally or nearly equally from each other
- Numbers are spaced equally or nearly equally from the edge of the circle
- One clock hand correctly points to the two o’clock
- Other hand correctly points to the eleven o’clock
- There are only two clock hands
Motor Performance Assessments

- Consider ability to:
  - Transfer in and out of vehicle
  - Operate vehicle controls
    - Steering wheel
    - Foot pedals
    - Key in ignition
  - Sustain movement or position
  - Feel where limbs are in space

Proprioception

- Important for right leg and foot
- Manually assess
  - Shoulder flexion
  - Shoulder internal / external rotation
  - Elbow flexion / extension
  - Ankle dorsi / plantar flexion
  - Knee flexion / extension
  - Hip internal / external rotation
Rapid Pace Walk

- Gait
- Balance
- Motor planning
- Coordination
- Ability to follow directions
- Ability to initiate movement
- Linked to crash and driving performance

What Does it All Mean?

- Performance on assessment tools paints a picture
- Outlines what you MIGHT see during the road test
- Clinic based tests do not definitively predict crashes or performance... yet
**Road Test**

- Assesses driving in naturalistic environment
- Provides real life perceptual challenges
- Sensory feedback while driving with consequences
- Progressively complex environments
- Real life problem solving
- *INVALUABLE* in making clinical determinations about safety

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**Skills Assessed in a Road Test**

**VEHICLE SKILLS**
- Transfer into vehicle
- Adjust seat
- Don seatbelt
- Adjust mirrors
- Put key in ignition
- Identify turn signals
- Locate wiper control
- Locate horn

**DRIVING SKILLS**
- Use of vehicle controls
- Stopping
- Gap Acceptance / Following Distance
- Lane Keeping
- Turning (left and right)
- Lane changing
- Merging
- Speed control
Interpretation and Synthesis

- Clients fall into one of three categories
  - Able to drive safely
    - May benefit from injury prevention education
  - Need intervention to drive safely
    - Remediation
    - Modifications
    - Changes to routines
  - Unable to drive safely
    - Recommend driving cessation
    - Report to the state?

Driving Intervention
The Goals

- Must balance independent performance with safety
- Should meet client’s need for desired community mobility
- Should consider all possibilities of intervention approaches
- Should foster engagement and participation in community mobility

Intervention Approaches

- Create or promote occupational performance
- Establish or restore occupational performance
- Maintain occupational performance
- Modify occupational performance
- Prevent deterioration of occupational performance

OT Practice Framework (AOTA, 2014)
Create / Promote Occupational Performance

- Assumes that individual does not have a disability
- Provides contextual and activity experiences to enhance performance
- Creates circumstances that foster more adaptable or complex performance
- Design of new healthy tasks that still allow for engagement in meaningful occupations and fulfillment of life roles

Create / Promote Interventions

- Identification of transportation alternatives
- Facilitation of registration for transportation services
- Travel training for clients in the use of transit
- Education related to social programming within the client’s community
- Promotion of walking and bicycling programs
Establish / Restore Occupational Performance

- Directed toward restoring or remediating function
- Strategies are focused on the person
  - Engagement in the occupation of driving is the end result
  - Emphasis is placed on restoration of performance skills
- Considerations
  - Type and cause of the deficit
  - Progressive deficits do not warrant attempts at remediation
- Does not have to be performed by an OT

Establish / Restore Interventions

- Exercise Programs
  - Strength / ROM / Coordination
- Cognitive Retraining
  - Memory / Attention / Reasoning / Safety
- Medical Interventions
  - Surgery (cataract removal)
  - Medication changes
Maintain Occupational Performance

- Provide supports that allows preservation of performance capabilities
- Assumes existing safe and functional performance

Maintain Interventions

- Didactic classroom courses
- Hands-On Driver Refresh Courses
- Self-assessment
  - Increases awareness of skills
- Walking wellness program to maintain balance and agility
- Maintain medication schedule with timers and medication boxes
Modify Occupational Performance

- Adaptation of current circumstances to facilitate performance
  - Task
  - Environment
  - Individual’s approach
- Accepts current level of function and aims to facilitate optimal engagement with existing skills

Modify Occupational Performance

- Compensating for limitations
  - Compensatory strategy education
  - Adaptive techniques
  - Use of environmental modifications
  - Adaptive equipment
Modifying the Context

- Adapt / change the context to match skills and abilities
- Physical context
  - Change the route of driving
    - Lighter traffic
    - Better lighting conditions
- Temporal contexts
  - Change the time of driving
    - Avoid rush hours
    - Limit driving to daylight
    - Coordinate with optimal medication times

Modifying the Activity Demands

- Adapt / change the task to match skills and abilities
- Adapt the vehicle
  - Provide alternative for of entering / exiting
  - Sitting in the vehicle
  - Operating the vehicle controls
Modifying the Vehicle

- Therapists should never modify a vehicle
- Only trained specialists should recommend adaptive equipment
- Clients should be trained on equipment prior to installation
- Equipment needs are unique to the client

Commonly Used Equipment

<table>
<thead>
<tr>
<th>SPINNER KNOB</th>
<th>CONSIDERATIONS</th>
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<tbody>
<tr>
<td></td>
<td>Most frequently used steering device</td>
</tr>
<tr>
<td></td>
<td>Requires functional grasp</td>
</tr>
<tr>
<td></td>
<td>Mounted within available reach</td>
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<tr>
<td></td>
<td>Often recommended secondary to another necessary adaptation</td>
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</tbody>
</table>
**Commonly Used Equipment**

**HAND CONTROLS**

<table>
<thead>
<tr>
<th>CONSIDERATIONS</th>
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<tbody>
<tr>
<td>§ Replaces use of vehicle installed accelerator and brake</td>
</tr>
<tr>
<td>§ Multiple planes of movement for operation</td>
</tr>
<tr>
<td>§ Client ROM, strength, vehicle, and size of occupant cabin dictate which controls</td>
</tr>
<tr>
<td>§ Original pedals still work for other driver</td>
</tr>
<tr>
<td>§ Takes considerable practice to acclimate to new motor habits</td>
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</table>

**PEDAL BLOCK**

<table>
<thead>
<tr>
<th>CONSIDERATIONS</th>
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<tbody>
<tr>
<td>• Prevents accidental lower extremity application of gas/brake by users of hand controls</td>
</tr>
<tr>
<td>• For individuals with uncontrollable lower extremity movements, which may include spasms, or other movements</td>
</tr>
</tbody>
</table>
### Commonly Used Equipment

#### PEDAL EXTENDERS

- Allows reach to foot pedals while maintaining a safe distance from the airbag
- Can be clamp on- allowing 1-4 inches of extension
- Can be adjustable fold down to allow 6-12 inches of extension

#### SPECIALTY MIRRORS

- Typically convex to expand viewable area
- Assists driver in seeing vehicles in their blind spot without distorting image
- Important for individuals with limited neck and trunk mobility
Commonly Used Equipment

SEATING AND TRANSFER ASSIST

CONSIDERATIONS

- Seating and transfer needs are not only for the drivers

Prevent Interventions

- Population based interventions provide strategies to improve health, support performance and prevent negative outcomes for communities and larger groups
  - Educating drivers and passengers
  - Working with community design professionals
  - Vehicle design
  - Health fairs
  - Community presentations
  - Driver-vehicle fit screening programs
Prevent Interventions

- Driver – vehicle fit principles
- Allow 3 second following distance behind vehicles
- Stop behind vehicles where driver can see the bottom of rear tires of vehicle to the front
- Turn left at intersections with a left turn signal
- Hold steering wheel at 4 o’clock and 8 o’clock
- Seat children under age 12 in the back seat

Recommendations for Cessation

- Clients need to remain mobile in the community
- Consider their other engagement needs
- Identify other modes of transportation to meet their needs
- Assist with application for paratransit
- Provide travel training using transit
References


References


continued
Questions