Pathways Project to Foster Occupational Therapist Engagement in Older Drivers

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Final Report for
Task 1.2 Submit Literature Review, 1.3 Convene Expert Panel
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Chapter 1: Introduction

1.1. Objective
The overall objective of this project is expanding the numbers of occupational therapists engaging in driving with the older adult population to enhance highway safety and extend driving as a mobility option for older adults as long as possible. This summarizes the overall plan for the project.

1.2 The Big Picture: When you consider the stakeholders who directly address the issue of older drivers, the stakeholders can be grouped into four categories according to their essential function.

1. There are the older drivers, caregivers or family members that are the consumers.
2. The researchers, who provide the research evidence needed for making decisions about fitness to drive, particularly related to assessment and screening. Researchers are typically gerontologists, psychologists, occupational therapists, physicians, social workers, and other professionals with research degrees.
3. The entities making decisions about licensing of the older drivers. In the United States, individual states are governed differently but federal guidelines influence or may serve as indicators on which to create state laws and practices.
4. The fourth category consists of the practitioners. At the level of the consumer, these trained professionals offer services to screen and evaluate the older driver. In some cases, it may be primary physicians who, based on knowledge of the client, will either recommend cessation to the consumer/caregiver, will pass the information on to the licensing agency, or may refer for a specialized evaluation. Thus, this category (practitioner) includes the driver rehabilitation specialist who will provide an expert evaluation and recommendation.

Although there are other stakeholders that could be considered important to the process (e.g., law enforcement or public transit), many of the “gaps” for addressing older drivers could be closed by clear and definitive research, practical and valid individual evaluation, and appropriate policies.
The scope of this project focuses on one of these areas – the practitioner and specifically the occupational therapist who may provide the individualized assessment/evaluation of older drivers to the licensing agencies or reporting agencies, based on the most current and evidence driven research.

Occupational therapists, both generalists and driver rehabilitation specialists, are experts in recognizing the potential of the person within their respective environment. Using the skills of activity analysis, occupational therapists understand the task components of activities in order to compensate for impairments at the physical, visual, sensory, or cognitive levels. Occupational therapists recognize the need to use environmental and contextual resources to compensate for impairment if recovery is not possible. The current “divide” between generalists and specialists is too broad and consequently inefficient (i.e., the lack of referral criteria to ensure that need is demonstrated when referring a client to a different level of service). As evidence is emerging it is clear that when adequate data is available to generalists for action, adding additional specialized service may be construed as excessive.

This project’s overall objective is to empower occupational therapists, generalists and specialists, to provide the essential service of providing individualized information about a person’s potential to drive, offer access to intervention services and contribute from an evidence based decisions of driving competence. The occupational therapist understands the impact of medical impairment on function, recognizes the potential to regain skills or the need to compensate for lost abilities, and push for the solutions to be made available to keep those who can drive, on the road.

1.3 Gaps in Occupational Therapy Knowledge: Most occupational therapists are strictly practitioners with a small percentage of those also involved in clinical research. The number of practitioners involved in research with older adults and driving is even smaller. Part of the
awareness portion of this project is to identify the need for research and encourage more research aimed as informing practice based clinical questions. Some of the identified gaps we will consider for exploration as a part of the literature review and experts meeting include:

1. What is the best method of defining the line between specialist and generalist? How can the defining line be described in order to best encourage meaningful program growth and meet the needs of the client and society?

2. How skilled does the specialist need to be? When does one “become” a driver rehabilitation specialist and what does that mean? Practically speaking, what minimum skill set is required to “offer driving rehabilitation services” to the public? (What training and skill set can be “packaged” to encourage program growth?)

3. What is the role of driving simulation? What is the role for simulation in screening, assessment or in rehabilitation? What training is needed to use it appropriately? To interpret the results appropriately?

4. Can we describe the models for delivery of services? Considering the multi-disciplinary field of driving rehabilitation, can guidance be offered to analyze “settings” and encourage models that may work in various settings? (ie in rural settings, it is very common in medical settings that clinicians wear “many hats”, how might the expertise and access be matched?)

5. What groups of assessments could be and or should be used with different diagnostic groups? When is specificity necessary? Can justification be offered for resource allocation and broader inclusion of key assessment tools?

6. What other stakeholders (e.g., physicians, administrators, families, law enforcement, judicial, licensing agencies, etc.) must be educated about driver rehabilitation services? How can this best be done? And how can the OTs learn from them?

1.4 Outline of Plan

Anne Dickerson’s Responsibilities: Conduct a literature review, assist in design of an expert’s consensus meeting, and integrate the results of the literature review and meeting for a final report/consensus document. The expert panel will be a two-day event with short presentations on the determined topics, followed by work group discussions with Anne Dickerson as the facilitator.

Literature Review: Using the identified above gaps as an initial guide, Anne Dickerson will continue to review the literature and draft a document that will describe the current state of knowledge in occupational therapy specifically within the context of research in the larger area of transportation and aging.

Expert Panel: Using the identifies priorities and review of the literature, experts will be selected to 1) add their knowledge through submitted papers and presentations, 2) participate in active dialogues and 3) develop consensus statements using a modified Delphi type processes based on the information presented and discussed. The expert panel will be primarily occupational therapists and other experts from related fields that work with or contribute to occupational therapy practice knowledge.

The priorities for the expert meeting, devised from the identified gaps are:
• PRIORITY: Are there assessment that can distinguish between the driver and non-driver for diagnostic groups? What groups of assessments could be and or should be used with different diagnostic groups? When is specificity necessary? What is the evidence for justifying referral for a comprehensive driver evaluation (when is it justified to make the driving competence decision without a full CDE). There is a logical continuum from Medical Guidelines to the DMV and need to referral the specialist, which will advise occupational therapy program growth.

• 2ND PRIORITY: What is the best method of defining the line between specialist and generalist? How can the defining line be described in order to best encourage meaningful program growth and meet the needs of the client and society?

• 2ND & RELATED PRIORITY: How skilled does the specialist need to be? When does one “become” a driver rehabilitation specialist and what does that mean? Practically speaking, what minimum skill set is required to “offer driving rehabilitation services” to the public? (What training and skill set can be “packaged” to encourage program growth?)

• 3RD PRIORITY: Can we describe the models for delivery of services? Considering the multi-disciplinary field of driving rehabilitation, can guidance be offered to analyze “settings” and encourage models that may work in various settings? (ie in rural settings, it is very common in medical settings that clinicians wear “many hats”, how might the expertise and access be matched?)

• SOME STATEMENT: What is the role of driving simulation? What is the role for simulation in screening, assessment or in rehabilitation? What training is needed to use it appropriately? To interpret the results appropriately?

• MINIGRANTS: What other stakeholders (e.g., physicians, administrators, families, law enforcement, judicial, licensing agencies, etc.) must be educated about driver rehabilitation services? How can this best be done? And how can the OTs learn from them?

It is anticipated that the outcomes from the presentations, deliberate and dedicated discussion will be consensus statements addressing the top priorities.

Consensus Paper: A concluding “white paper” will incorporate the literature review, opinions of the expert panel, and most importantly the consensus statements endorsed by the expert meeting. It is hoped this document will be widely distributed and immediately useful to driver rehabilitation specialists, programs, and general practice occupational therapists addressing the IADL of driving and community in practice.
Chapter 2: Literature Review

2.1 Overview
A comprehensive literature review was initiated intended to summarize the state of occupational therapy screening and assessment tools for the task of evaluating older adults for fitness to drive. There are three sections for this chapter.

2.2 Section 1. Review of Assessment/Screening Tools
The first document was a summary of the Data from 2009-2010 where we reached out to DRS from the AOTA and ADED databases. This information was available for the planned expert meeting and summarized in Appendix A. (Assessments used Most Frequently by Driver Rehabilitation Specialists)

2.3 Section 2. Reference for Expert Meeting
The literature review consisted of review of all empirical studies, literature reviews, or summary papers concerning screening and assessment for older adults. In recognition of the significant numbers of tools and evidence, select studies were summarized in a form of a table and distributed to expert members for use at the expert meeting. This handout is in Appendix B.

2.4 Section 3. Application of the literature review
The literature review is a final summarization of the literature pertaining to screening and assessment. There is and will continue to be research on the predictive validity of the various specific screening and assessment tools. This includes tools that have been used for many years (e.g., Trail Making A and B, MMSE, UVOV) and others that are relatively new developed or new to the application of driving (e.g., ANT, AMPS, DriveAble). As one reviews the evidence over the past few years, the complexity of capturing the essence of driving in a clinical tool has become clearly evident. Therefore, instead of specific assessment tools being used, groups of tools are being analyzed together to capture all the skills and abilities needed for driving, i.e., in the areas of vision, cognition, perception, and motor function. Some of the work has progressed to determining groups of assessments that increase predictive validity for fitness to drive for just older adults or more specifically for diagnostic categories. Advancement in statistical analysis is also evident as Receiving Operating Curves and sensitivity and specificity have become the statistical benchmark for evidence-based research.

One of the deliverables the Gaps and Pathways Project is to create clinic ready resources build upon the research evidence gained from the comprehensive review of the literature of screening and assessment tools applicable to the driving evaluation of older adults. The key to the success of this deliverable is to present the information in a format that is easily understood and applied by occupational therapists, in both generalist and specialist settings.
2.4.1 Dementia Example
It is essential to translate the research information for practitioners. Thus, the synthesis of the literature needs to be done so that practitioners understand and can use the implications. The following is an example of this synthesis for dementia and driving.

Summary of Evidence for Dementia, Driving, and Occupational Therapy Practice
There are three systematic reviews completed specifically related to dementia and driving; two were completed in the format of the American Academy of Neurology. The Dubinsky et al., (2000) established that there is clear evidence that individuals with dementia have a clear risk of crashes compared to age-matched controls and recommended two standards and one guideline for practice. The impact of the Standards (page 1) for occupational therapy practice is that patients who have mild dementia (CDR=1.0) who should not drive need strategies to maintain community mobility. The patients and their families need occupational therapy intervention. The Guideline recommends a driver performance evaluation by a certified examiner for those patients with very mild (CDR=.5), which includes occupational therapists with driver rehabilitation expertise. The second Standard recommends that individuals with dementia need reassessment every 6 months to continue driving, necessitating continual driving evaluation. The more recent systematic review (Iverson et al., 2010) included an occupational therapist and reported useful characteristics of patients, driving history, and cognitive testing for patients with dementia using the outcomes of on-road performance, driving simulation, crash data, and caregiver report. For occupational therapy practice, it was determined there was not enough evidence to support just neuropsychological testing for evaluating driving risk, therefore a driving performance evaluation is the best method of determining risk. The third systematic review (Molnar, et al., 2006) demonstrated there are no studies for progression rates on dementia and driving risk. Other important studies include Carr & Ott (2010) summarizing the state of research for dementia and driving, Bedard et al., (2008) demonstrating there is no one assessment for predicting driving outcome, and a study by Bielianuskas (2005) revising the literature which shows simulation is promising and vision, attention, and executive function is critical to evaluate to determine fitness to drive.

Groups of Tools to Predict Fitness to Drive
Eight studies in this section use the statistical analysis of receiving operating curves to find the best group of assessments tools (assessing vision, motor, and cognition) that operate together to determine fitness to drive. Most are done with cognitively intact older adults, but two included individuals with dementia. In terms of occupational therapy practice, these will be important studies in determining what occupational therapy generalists might use to screen for risk of driving with their clients having cognitive impairment.

Key Studies of Clients with Dementia and Driving Risk
Twenty-five studies, spanning from 1992 to 2010, explore the issue of fitness to driver by individuals with dementia. The two main questions include 1) when is the individual with dementia become unsafe and 2) what is the best method of screening those individuals. The evidence is consistent that individuals with moderate or severe dementia should not be driving. Those individuals can be screened with the MMSI. However it is the individuals with early or mild dementia that pose the questions. Findings from the studies here show:
• The MMSE does not correlate with on road performance when the client is at the upper range (24 or above).
• Individuals with dementia consistently make more errors and demonstrate poorer on-road performance, but not always to the level of being “unsafe.”
• Even individuals with dementia at the level of “mild” dementia are able to pass an on-road driving evaluation, indicating specialized assessment is necessary at the very mild and mild levels of dementia and follow up is necessary.
• Individuals with dementia consistently make more errors and demonstrate poorer performance on simulators.
• Physicians with dementia expertise are best at determining who is at risk for unsafe driver, over caregivers and participants, but driving evaluators make more stringent assessments and are best at determining risk.
• The on road driving assessment provides the most reliable functional assessment of driving ability.

The evidence of these studies impact occupational therapy practice significantly. Driving and community mobility is a valued IADL and thus, occupational therapy practitioners must address driving with all clients, including those with dementia. For clients with moderate or severe dementia, clients need assistance to find other methods of community mobility by general practice occupational therapists. Family members or caregivers need to be educated about alternative methods of transportation including limitations for individuals with cognitive deficits. For clients with beginning dementia, general practice occupational therapists should address driving retirement and planning with the client, family members, and caregivers. Plans in place will avoid the crises of individuals getting lost, having a crash, or missing community engagement. Occupational therapists with driver rehabilitation specialists are experts at performing the on-road assessment and the evidence is clear that the on-road assessment is the best method of determination of fitness to drive at this time. Finally, there is evidence that simulation will likely play a significant role in assessment and screening for fitness to drive. Occupational therapists, skilled in using this tool will make significant contributions to research and practice in this diagnostic category.

Appendix C Evidence Table for Screening and Assessment Specific to Dementia is an example of listing of the literature to support this synthesis. It would be essential to have the table attached to the synthesis as evidence to support any implications.

2.4.2 Additional Topics
The following topics will become the initial set of these clinic ready resources. The format for each topic will include a summary paper with accompanying evidence tables. Each paper will synthesize the available evidence for so that general occupational therapists and specialists will be able to use the information immediately in practice. The consensus statements where consensus was achieved are included in each packet. The topics will include:
• Screening and Assessment batteries that cover cognitive, motor, and visual perceptual skills.
• Individual assessment tools developed after 2008: Evidence for Reliability and Validity
• “Groups” of Assessments Tools for Determining Fitness to Drive
• Screening and Assessment Tools for individuals with Parkinson’s Disease
• Screening and Assessment Tools for individuals with Stroke
• Screening and Assessment Tools for individuals with vision deficits
• Driving Simulation as a Screening and Assessment Tool for Older Adults
• Screening and Assessment Tools for older adults without specific diagnoses.

2.4.3 Steps to Completion
The next step will be to share these clinic ready evidence summaries with the expert panel to consider additional topics that may be added. Additionally, expert members may provide content or expert guidance on the specific preparation of the clinic ready packets as they apply to the identified targeted groups needing: 1) the acute screen, 2) readiness for referral, and 3) guidance for the severely impaired client in need of transition intervention. The Expert Panel has committed to ongoing input (via conference call), to discuss the evidence and continue to address gaps through the generation of opinion and consensus guidance statements.
Chapter 3: Expert Meeting

3.1 Overview
In keeping with the overall objective of this project, an expert meeting was planned and convened on March 6-7, 2012 at the American Occupational Therapy Association’s headquarters. The priority of the meeting was to develop the criteria for referral to specialists to serve as guidance for program development. The objective is to develop pathways assuring a continuum of service for clients in diverse settings. The list of individuals below were invited and participated.

Members of the Expert Panel
Michel Bedard, PhD, Lakehead University
Johnell Brooks, PhD, Clemson University
David Carr, MD, Washington University*
Felicia Chew, MS, OTR/L, Genesis Rehab Services
Sherrilene Classen, PhD, MPH, OTR/L, FAOTA, University of Florida
Elin Schold Davis, OTR/L, CDRS, American Occupational Therapy Association
Anne Dickerson, PhD, OTR/L, FAOTA, East Carolina University
Anne Hegberg, OTR/L, CDRS, Marianjoy Rehabilitation Hospital
Elizabeth Green, OTR/L, CDRS, Association for Driver Rehabilitation Specialists
Amy Lane, OTR/L, CDRS, University of Pittsburgh
Richard Marottoli, MD, Yale University School of Medicine*
Miriam Monahan, MS, OTR/L, CDRS, University of Florida
Deborah Slater, MS, OTR/L, American Occupational Therapy Association
Wendy Stav, PhD, OTR/L, SCDCM, FAOTA, Townson University
Donna Stressel, OTR/L, CDRS, Sunnyview Hospital Driver Program
Carol Wheatley, OTR/L, CDRS, Good Samaritan Hospital

Dr. David Carr and Dr. Richard Marottoli were not able to physically be at the meeting, but have actively participated in all other elements of the group, including voting.

3.1.1. Schedule
Appendix D illustrates the proposed schedule of the meeting. The meeting was planned in seven sections:

Section 1: Introduction of the Members and Process
Section 2: Definitions of Terms/Models of Programs,
Section 3: Client Groups,
Section 4: Role of Driving Simulation,
Section 5: Ethics Guidelines,
Section 6: Screening/Assessment Tools: Criteria for Referral and Action, and
Section 7: Education for Occupational Therapists.

For each section, individual members of the expert panel were specifically selected and asked to provide critical information and consensus statements prior to the meeting. Anne Dickerson worked with each of the expert members by 1) providing a consistent format to structure their contribution in order to facilitate the meeting, 2) editing the paper contribution, and 3) finalizing
consensus statements in preparation for the meeting. Each section of the meeting will be summarized here.

### 3.2 Section 1: Introduction of the Members and Process

After the introduction of each expert member, the priorities for the meeting were reviewed by Elin Schold Davis and Anne Dickerson. Visual aids in the form of posters were used to enhance the verbal support for goals (see Appendix E). First the vision and objective of the meeting was presented as stated above. Ongoing themes listed included: criteria for action, criteria for referral, identifying gaps in practice, and models for delivery of services. Guidelines and suggestions would need to be efficient, effective, and affordable for programs to implement. The Dickerson, Reistetter, Schold Davis, and Monahan (2011) paper was referenced with the algorithm (see Appendix F) highlighting the need to provide information in order for occupational therapist to appropriately refer to specialists. The Continuum of Action slide (Dickerson & Schold Davis, 2011; Appendix G) was described. Using the concept that this expert group could identify the individuals at both ends of the spectrum to be more effectively and efficiently addressed by general practice occupational therapists while the individuals needing specialized services be appropriately referred. The objective of the experts to identify consensus statements to meet this goal was reinforced.

One of the important concepts reviewed was the basis of Criteria Based Action for the Medical Setting (Sackett et al., 1996). Specifically, the idea that evidence-based practice/best practice is based on 1) best research evidence, 2) clinical expertise, and 3) patient values and preferences.

A unique voting system was used at the meeting. Specifically, an interactive classroom response system (clickers) were introduced and used for all votes. The advantage of the system included immediate and recorded feedback on votes. The votes are potentially anonymous, but expert members were asked to discuss their vote, particularly if it differed from the majority. Prior to any voting, the system components were distributed, explained, and the system established for their use in the meeting.

In recognition that not all tasks or ideas were be completed during the meeting, poster boards were available for expert members to use. When research idea, a potential project, or question was identified during discussion by any member of the group, the participant was asked to write a brief notation about the idea and “post-it” for review towards the end of the meeting.

### 3.3 Terms of Agreement

The next step was determining levels of evidence for action on which to vote on consensus statements. Although three levels were proposed based on the Medical Fitness Guidelines (2009), the group spent significant time to defining the Levels of Evidence for Action. The discussion and vote resulted in two types of consensus statements being established at the meeting. One type was an Agree or Disagree. The group established a criterion of at least 85% of the group members had to agree to achieve consensus with each individual statement.

The other type of consensus statements was evaluated in terms of the degree of evidence supporting the statement. For statements that had clear and convincing evidence, the statement would be considered Level 1: Evidence is strong and allows for an evidence-based consensus
statement. If the evidence were not as strong, it would be considered a Level 2: Evidence is suggestive and allows for a consensus statement. Level 3 was when the evidence is conflicting, inconclusive, or not available; thus recommendations are based on clinical judgment and theory. As with the agree/disagree statements, the criterion was set at 85% for a statement to be considered a consensus statement at any particular level.

- Level 1: Evidence is strong and allows for an evidence-based consensus statement.
- Level 2: Evidence is suggestive and allows for a consensus statement.
- Level 3 was when the evidence is conflicting, inconclusive, or not available; thus recommendations are based on clinical judgment and theory.

Since the two expert members not at the meeting were physicians, there was a specific discussion about their vote on any consensus statements. The following statement was prepared and consensus on the action was achieved.

*The group will consider the two physicians, Dr. David Carr and Dr. Richard Marottoli, as important members of this consensus panel. Therefore, their “vote” will be included for each consensus statement that was acted upon. Votes will be totaled as 16 rather than 14.*

*Since they are not present at the meeting, we would ask that they read and “vote” on each statement. If the consensus statements (100%) and one votes for and one votes against, it will remain a positive consensus statement. If the two physicians vote against a consensus statements, we will ask them to justify their position and that will be presented to all members to see if there is any change in the other members position (through conference/online). In preparation for that discussion, the panel will have the opportunity to voting on increasing the number of panel members that can “disagree.”*

Please see Appendix H for the specifics (percentages) for each vote.

**3.4 Section 2: Definitions of Terms/Models of Programs**

For the discussion of definitions of terms and models of programs, there were several documents prepared for the meeting. These included:

- Consensus Definitions
- Models of Programs: Vermont and Military
- Table of Sample Programs
- Results of DRS input by ADED Members on Program Models
- ADED Membership Input: Amy Lane and Liz Green’s Consensus Statements.
- *Best Practices for the Delivery of Driver Rehabilitation Services* (ADED, 2009)

**3.5 Consensus Definitions**

This document (see Appendix I. Consensus Definitions) was drafted prior to the meeting by identifying critical terms used in driver rehabilitation through professional publications of ADED and AOTA. Current definitions were identified with appropriate references. Stakeholder groups that either should be engaged in communicating about the definitions or would likely have a vested interested in being informed about definitions were identified and listed. The draft
In an effort to try out the clicker system and “pretest” or determine which definitions would likely need and warrant discussion, each term with the definition was announced for the group. For each term, there was a vote to state the definition already indicated are 1) acceptable, 2) it needed discussion and work at this expert meeting, or 3) defer to a post-meeting work group. The terms included:

- Driving rehabilitation
- Driver rehabilitation specialist
- Driver rehabilitation therapist
- Certified Driver rehabilitation specialist
- Specialty Certification in Driving and Community Mobility
- Driver Educator
- Driver Instructor

There was only consensus achieved on one term, Specialty Certification in Driving and Community Mobility. An additional question of Should the definitions differentiate between: Driver Rehabilitation and Driving Rehabilitation did not achieve consensus.

Expert member discussion returned to the topic of consensus of definitions during the two-day meeting. One notable discussion was driver rehabilitation versus driving rehabilitation. Wendy Stav offered a historical perspective on the uses. ADED uses driver rehabilitation and at one time, AOTA used the same terminology. However, Dr. Stav indicated that the leadership of AOTA began to feel that driver only looked at the person and the term needed to be more holistic, thus, driving was seen as including the person, environment, and context and also included transportation of other people. It was argued that “driver” does not imply the person is an open system and encompasses occupation and environment. On the other hand, “driving” is seen to some as an act that has a beginning and an end, while driver is a much broader spectrum. Community mobility brings in other issues, but also fits into the physical therapy guide to practice.

Although the average person does not understand the difference, Dr. Stav emphasized that practice acts and other things need consistency. Dr. Brooks commented that the subtle differences in terminology contribute to the confusion about driving for engineers (in her setting) and the public. There was discussion about whether AOTA and ADED need to use the identical terminology. However there was recognition that there needs to be sensitivity about asking organizations to change language. With this discussion, the panel agreed that language is confusing and sometimes terms used interchangeably caused problems. A glossary for driving terminology was suggested and a consensus statement proposed. There was 100% agreement that Language/terminology is an issue and we want to strive to be consistent so that the community and other professionals understand and this is a priority for future work. With this agreement, the list of terms on the Consensus Definitions document was to be a project between to begin with, at minimum, members of AOTA and ADED.
3.6 Models of Programs

3.6.1 Overview
With the goal of collaboration with ADED, Anne Dickerson and Elin Schold Davis discussed the idea of gathering input from the members of ADED about different types of program models. In October 2011, a pilot study was conducted, soliciting input about potential ways program model names. Twenty-seven driver rehabilitation specialists or researchers participated using an online tool to gather their input called Qualtrics, provided through East Carolina University. The data was analyzed and six model programs with five to seven names for each model. Amy Lane, Liz Green, and Elin Schold Davis assisted in modifying the structure of the questions. Expert members were sent a link to review the questions and provide feedback. The final (modified) list of questions was distributed to the email list of ADED members (n=444) on February 2, 2012. A second email was sent on February 18, 2012. A report was compiled with graphs and qualitative results and sent to Amy Lane and Liz Green to report at the Expert meeting. The Results of the DRS responses from ADED Members about Program Models (Appendix J) and Examples of Program Models (Appendix K) were provided to all expert members by Amy Lane and Liz Green along with a short powerpoint presentation (see Appendix L for the powerpoint).

3.6.2 Vermont Model
In addition to the presentation by ADED, Miriam Monahan described her specialist/generalist referral program in Vermont. In addition to the handout provided (See Appendix L), Miriam Monahan highlighted the following points:
- Goal is to maximize the skills of the occupational therapy generalist with neurological experience for individuals with impaired cognition.
- Therapist must have 4-5 years of experience.
- Therapist must be interviewed and shadowed.
- Therapists had to have done driving evaluations with Miriam.
- Therapists had annual training to update skills.
- Those therapists were doing the in-clinic assessments and Miriam did the on-road.
- None of the therapists transitioned to become driver rehabilitation specialists

3.6.3. Genesis Model
Felicia Chew described the program model being rolled out within the Genesis Rehab Services programs. The introduction was through CarFit with the concept of three tiers of therapists. “Tier 1” are the generalist who need to be competent and confident. There are two pilot programs using the Driving Health Inventory as a screen for referral. “Tier 2” are the Champions who coach the generalists. “Tier 3” are the certified or trained driver rehabilitation specialists. The hope is that Genesis Rehab will be purchasing vehicles for on road assessment where there is a shortage and standardization of assessment and documentation. Logistics of billing still needs to be addressed, but is expected to consist of both generalist and specialists services.

3.6.4 Military Model
Although not present at the meeting, Dr. Erica Stern sent materials explaining the TBI Driving Screen for Generalist OTs developed by the military. All expert members had the opportunity to
review the materials, but were not able to keep any copies. The primary objective was to illustrate the flow sheet that demonstrated the referral process from generalist to specialist about fitness to drive. A summary of the materials is in Appendix M.

3.6.5 ADED Leaderships Proposed Consensus Statements
Representing the ADED membership, Amy Lane and Liz Green submitted consensus statements (see Appendix N). There was an initial vote, rewording on some of the statements, and all the statements except one achieved consensus (See Appendix H for voting numbers or percentages). The consensus statements approved include:

- There is a need to differentiate programs based on their levels of service and compliance with ADED Best Practices.
- If program models are clearly defined, then there is a need for improved and understandable descriptors/definitions for the public and other stakeholders.
- There is a need to identify a level of education, training, or experience to use DRS as a credential.
- There is a clear need for clear definition of DRS and who can use this title as compare to those who use the CDRS title.
- There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.

The one submitted statement that did not achieve consensus was: ADED Best Practice Document is established benchmark from which all driver rehabilitation programs should be measured. With limited discussion at the expert meeting, this statement was also sent to all of the expert members in a follow up vote on April 10, 2012 through Qualtrics. Consensus was not achieved on this vote. Thus, this document should likely be part of the discussion planned with about terminology between AOTA and ADED.

3.6 Client Groups

3.7.1 Overview.
This section on client groups was recognized as critical for the expert meeting, as consensus statements could be very helpful in the development of programs. In preparation for this discussion, The Medical Fitness Guidelines publication was highlighted as a reference. Six expert members submitted a paper pertaining to a particular client group using outlined guidelines with most papers having a summary of best practices, potential consensus statements, research questions, and references. The goal of the Pathways Project is to utilize the skill set of the occupational therapy generalist in providing screening for clients so that the client is referred for a comprehensive driving evaluation at the appropriate time, if at all. The diagnoses specifically discussed included dementia, COPD, physical impairments, and Parkinson’s disease with other common diagnoses targeted for future discussion and consensus statements. Each expert member (except for Drs. Carr and Marottoli) summarized their perspective about the client groups in preparation for review of the consensus statements and vote.

The papers and experts were:
• David Carr – Dementia (See Appendix O)
• Richard Marrottoli – General practice (See Appendix P)
• Sherrilene Classen – Parkinson’s disease (See Appendix Q)
• Carol Wheatley – Dementia (See Appendix R)
• Donna Stressel – COPD (See Appendix S)
• Anne Hegberg – Clients needing driver modifications (See Appendix T)

3.7.2 Discussion

3.7.2.1 Dementia: Carol Wheatley commented that her consensus statements were identifying key things general occupational therapists need to know while the physician makes the decision to refer for a driving evaluation. David Carr’s contribution was recognized as valuable and from the perspective of the physician. Some statements that are true for dementia, may hold true for all diagnoses, especially in communities where there may not be a diagnosis. It was also emphasized not to overlook the concept that some causes of dementia are reversible.

3.7.2.2. Parkinson’s disease: Sherrilene Classen described the background of Parkinson’s disease in relation to driving and her grant information. She summarized the background of her own studies and that many simulation studies have been done. Her recent research emphasized that the visual system is causing on-road failure, as the visual system is very complex. With Parkinson’s disease, it is critical to consider risk factors, co-morbidities, and progression of the disease.

3.7.2.3 Physical Conditions. Anne Hegberg summarized the need for individuals with physical conditions including amputation, spinal cord injury, etc. need to be referred to a driver rehabilitation specialist early in the process so if the person will drive in the future, the wrong vehicle is not purchased prior to the time he or she is evaluated for driving potential. With the discussion of the potential statements, the group agreed that part of the statements were suggestive of a consensus statement, but partially identified best practice strategies. It was also recognized that various states had differing laws on using prosthesis to drive.

3.7.2.4. COPD. Donna Stressel related that there is very little literature on the COPD client and driving. It would appear that individuals with COPD have higher risk, but it is not clear where in the level of the disease. Her contribution was that the oxygen levels needs to be assessed so that the cognitive status is not affected. The other issue discussed was how to secure the oxygen tanks safely in the vehicle.

3.7.3 Specific Client Group Consensus Statements
The expert panel members discussed all of the submitted consensus statements for the client groups after the general discussion summarized above. Similar statements were combined, for example dementia statements from the Wheatley and Carr documents; wording was clarified. For these statements, the three levels of evidence was reviewed and consensus voted using the levels
of evidence. Appendix H has the specific voting statistics for each statement. The following are the final outcomes for consensus statements under the specific client groups.

3.7.3.1 Dementia
The following statements reached consensus for Level 1: Evidence is strong and allows for an evidence-based consensus statement.

- An individual with moderate to severe dementia should not drive.
- Those with very mild or mild dementia may be appropriately referred for further testing when risk factors for unsafe driving are present.
- If the patient has a neurodegenerative dementia, mobility counseling (to include alternative methods of transportation) should start immediately anticipating that driving cessation will likely occur in the near future.
- Self-report regarding driving capability is often inaccurate; therefore observation of occupational performance is necessary.
- Co-piloting, in which a passenger verbally assists the individual to drive or follow a route, is not recommended. The need for co-piloting is an indication that the patient should stop active driving, as verbal instructions are insufficient in a driving situation where a rapid response is required to prevent a crash.

Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:

- Regardless of diagnosis, assessment and recommendations for optimal and safest community mobility should be provided.
- Regardless of the driving assessment outcome, when an individual is diagnosed with dementia, the general OT should start planning exploration of alternative transportation options early and begin to use these options to increase the person’s familiarity with them.
- Occupational therapy practitioners need to know legal and ethical obligations related to driving and community mobility.

3.7.3.2. Parkinson’s Disease
The following statements reached consensus for Level 1: Evidence is strong and allows for an evidence-based consensus statement.

- Drivers with PD who have mild motor disability as measured by low scores on the UPDRS Part 3, and no or few risk factors (anti-Parkinson drugs, >75 years of age), may be safe. However, we recommend that the individual who fits this profile and those who are newly diagnosed with PD:
  ✓ Undergo a baseline comprehensive driving evaluation
  ✓ Follow-up annually with repeat comprehensive driving evaluations
  ✓ Start planning for driving cessation because of the progressive nature of the disease
  ✓ Start conversations with the family about retirement from driving
  ✓ Start developing a plan for use of alternative transportation options.

- For those with severe motor impairment and disease severity (high UPDRS Part 3 scores) and multiple risk factors (decreased information processing speed, e.g. scoring greater or equal to 3 on the UFOV risk index, impaired contrast sensitivity, scoring greater than 180 seconds on the Trails B, and scoring greater than 7.5 seconds on the
Rapid Pace Walk) we recommend: 1) forfeiting the license, 2) mandatory reporting, and 3) travel training.

The following statements reached consensus for Level 2: Evidence is suggestive and allows for a consensus statement.

- Research is in progress to provide better guidelines for the “middle” group: i.e., those with mild to moderate motor disability and several risk factors. This group is the most challenging and we recommend
  - A required comprehensive driving evaluation
  - Providing them with opportunities for rehabilitation, including behind-the-wheel training, compensatory strategies, driving restriction, self-regulation
  - Providing them with strategies to address transitioning to non-driving including starting conversations about driving retirement, family involvement in driving retirement, consultation, referral for counseling

3.7.3.3 COPD
Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:

- When an individual has COPD, a referral for a driving evaluation is indicated if one or any of these are present: 1) cognitive decline is evident with either psychometric testing or while performing other ADL, 2) concern is raised about driving safety through direct observation, family concern, or driving incidents, 3) when individual has difficulty maintaining oxygen saturation less than 90% at rest, 4) when the individual experiences dyspnea at rest or while behind the wheel, or 5) when a loading device is needed to manage a powered mobility device or oxygen needs to be secure.

- When an individual has COPD, the driving rehabilitation specialist should monitor oxygen saturation while driving to measure the effects of driving tasks on oxygen levels in the blood. This information can be used to verify the need to drive with oxygen to improve cognition as well as heart and other organ functioning. Pulse oximetry is also an effective tool to demonstrate the effects of energy conservation (vehicle features, arm position etc.) and breathing techniques have while driving.

- When an individual has COPD, the driving rehabilitation specialist’s recommendations are able to provide guidance on overall driving skills and safety including driving limits and compensatory techniques, as well as assistance with loading devices for power mobility devices, and oxygen storage.

- Community mobility should be addressed with every occupational therapy client as part of the initial evaluation and most importantly as part of the discharge planning.

3.7.3.4 Physical Disabilities
Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:

- An individual with a non-functional lower limb, lower extremity prosthesis, or an orthotic on a lower limb used for operation of vehicle should be referred for a driving evaluation.

- An individual with a non-functional upper limb or upper extremity prosthesis should be referred for a driving evaluation.
• An individual with a spinal cord injury at any level should be referred early in the rehabilitation process for consultation with a driver rehabilitation specialist.

• A client with a progressive condition which affects primarily sensation and/or motor function (i.e., multiple sclerosis, post-polio syndrome) should be referred to a driver rehabilitation specialist to determine a baseline need for adaptive equipment for their motor vehicle. The driver rehabilitation specialist can assist with planning for future needs and re-evaluation based on the progression of the condition.

• A client with a non-progressive condition that affects primarily sensation and/or motor function (i.e., cerebral palsy, spina bifida, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfect, arthrogryposis) should be referred to a driver rehabilitation specialist to determine adaptive equipment needed as well as their potential to drive in the future. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the specialist early in the process will ensure comprehensive planning for community mobility for the client and family.

3.8 Summary of Expert Meeting Discussion

In summarizing the first day of the meeting, there were some important topics discussed. The following bullets capture the essence of the discussion and/or decisions.

• Due to time constraints, the discussion on driving simulation was postponed. It was emphasized that there were two contribution papers by Sherrilene Classen and Johnell Brooks in the documents. (See Appendix U and Appendix V for their papers).

• A question about why CVA was not included as a diagnosis. It was agreed that it this diagnosis is critical and should be addressed. This lead to an agreement of the members of expert panel to remain as an active panel for the remainder of the two years of the grant project.

• There was return to a discussion about terminology.
  o The term driving evaluation did not necessarily mean a comprehensive driving evaluation. This lead to a disagreement over what exactly does comprehensive entail with the agreement that the public does not understand the difference between any of the terminology. There is a need to describe the evaluation that is the comprehensive driving evaluation, as the public does not necessarily understand.
  o Some of the consensus statements have driving evaluation and Liz Green questioned the interpretation of the statements.
  o Is screening part of the generalist’s role? Can the generalist come to the conclusion that a driver needs to stop driving? Most of the expert panel agreed that in some client cases, it is possible.
  o AOTA has definitive definitions of assessment, screening, and evaluation. We need to use language that is clear with occupational therapists.
  o Driving evaluation and comprehensive driving evaluations are challenges in terms of billing, as you cannot bill for both.
  o Could a Functional Community Mobility Assessment replace the driving evaluation?
  o Cannot re-bill evaluation code if generalist has already done it and billed.
Would diagnostic intervention be better? Medicare has treatment code for transportation and mobility.
It was agreed reimbursement is a critical issue that needs attention.

The discussion moved back to criteria for referral and the need to clarify the generalist role versus the CDRS role. There is a need for the occupational therapy generalist to refer to the right person to address the client’s need.
Specialty and Board Certification do not require the therapist to do behind-the-wheel assessments.

It was suggested that the driving evaluation can be a general term that occupational therapists are responsible to have a hierarchy to guide the process of who goes where.

Perhaps a task group that is developed to identify these terms and develop the hierarchy.

The discussion has been focused on disability, but must also move beyond that. Mild cognitive impairment may be impairment, not disability.

Occupational therapist generalist should be focused on community mobility.
In Practice Framework, community mobility includes driving.

3.9 Ethics

3.9.1 Discussion
In preparation for the meeting, Deborah Slater presented all members with a document summarizing the ethical obligations of occupational therapists in relation to driving (see Appendix W). The document is consistent with professional standards and is supported by AOTA’s official documents. Considering the statements, it was agreed that these ethical principles underlie all that we do as occupational therapists and do not need evidence to support ethics. The statements were therefore, voted as agreed or disagreed.

In addition to ethics, safety was underlying the principles as performance skills and safety issues need to be identified. The difference between driving and other IADLs was clarified in that risk of some IADL (e.g., falling) is harm to the self, but driving has the potential to harm others and therefore, supersedes confidentiality. Different facilities interpret laws differently, which can create significant ethical dilemmas. Ethics is often a primary reason the generalist does not want to address driving. Contextual barriers also create challenges for the generalist.

A discussion on the issue of confidentiality about reporting highlighted the fact that some states have anonymous reporting, while others do not. It was agreed that if you are reporting the client to the licensing office, there is an obligation to inform the client and in the best circumstances, collaborating with the client.

There was a discussion about needing a decision tree; without a clear path, there is unease about what to do. Generalists do not see driving as the same as other IADLs in relation to cognition. It is clear the profession needs to offer guidance, rather than push it to someone else.

Many generalists are not addressing driving. The need to have criteria to delineate what “addressing driving” means is appropriate and critical. Generalists need to learn to recognize
when to refer to a specialist; need to learn how to translate the data so they can learn how to address driving. There is a need to operationalize the generalist’s role to manage risk. In practice, the translation part is missing.

3.9.2 Ethics Consensus Statements

The proposed ethics statements were carefully reviewed with word changes to reflect the discussion. Driving and community mobility should replace “driving” in the ethics statements. Two statements were voted with 100% consensus at the Level 3 of evidence (best practice):

Driving is a high volume, high risk activity and the changing demographics will result in increasing demand and opportunity for occupational therapy evaluation and recommendations. Occupational therapy practitioners are obligated to follow the ethical principles as applicable to practice.

If the therapist reports the patient’s name to the DMV, it is the therapist’s ethical responsibility to make every effort to inform the patient that he/she is doing so.

All other statements pertaining to ethical obligations (below) achieved consensus as Agreed:

- Occupational therapy evaluation identifies deficits in performance skills (and source, e.g. client factors) that affect ability to do daily activities (occupations). Driving is a daily occupation for a significant number of individuals across the entire lifespan.
- The Occupational Profile (focused interview) should be part of the evaluation process and include/address driving and community mobility if identified by client as a desired outcome.
- Current, appropriate evaluation and assessment tools targeted to obtain meaningful data must be used and administered correctly.
- Occupational therapists and occupational therapy assistants have an obligation to work within their level of competence: Generalist occupational therapists are qualified to obtain data, assess skills related to driving and community mobility, should take steps to manage risks relevant to driving and community mobility and should be familiar with appropriate referral sources for more specialized evaluation (Principle 1I).
- Educational curricula prepare occupational therapists to assess impairment and safety issues with performance of daily occupations (e.g. driving and community mobility) from a musculoskeletal, sensory perceptual, cognitive, and psychosocial perspective.
- Data from occupational therapy evaluation and intervention identifies safety issues (requiring the therapist to address/document/make recommendations) related to ADLs and IADLs (e.g., bath transfers, meal prep): A client’s performance abilities/ disabilities may impact ability to drive safely, if at all. Therefore, there is a professional and ethical obligation to identify and warn when safety deficits or risks are identified, including driving and community mobility.
- Professional, clinical, and ethical reasoning are taught in occupational therapy educational programs and utilized in the clinic to evaluate data and make judgments about realistic, appropriate goals and strategies (or alternative options) to achieve them. This includes driving and community mobility.
Principles in the *Occupational Therapy Code of Ethics and Ethics Standards (2010)* support the overarching ethical obligation to provide services to benefit client and avoiding harm. Driving is an important occupation but also has potential for harm to client as well as general public and must be considered by the practitioners.

- Impaired cognition has been shown in the literature to increase difficulty and risk for driving (Carr, 1997; Dubinsky, Stein, & Lyons, 2000; Love, Welsh, Knabb, Scott, & Brokaw, 2008, p. 536). Impaired cognition also has safety implications for ADLs and IADLs. The challenge is gauging the potential risk that may result from the level of impairment and requires data, professional training and professional judgment. This is also true for vision and physical impairments.

- All principles of the Code and Ethics Standards have relevance for addressing and warning about potential driving impairment.

- Case law exists and sets precedent for professional obligation to warn to based on foreseeable likelihood of danger or harm due to impaired client.

- Confidentiality is presumed in client/therapist relationships but there are legal and ethical considerations that supersede this principle and should lead to communication, documentation of recommendations and possible reporting.

- Reimbursement should not influence decision making related to providing driving services.

- Occupational therapists have an ethical responsibility to know the laws in their state that related to their reporting obligations and options with impaired drivers.

### 3.10 Screening and Assessment Tools: Criteria for Referral and Action

#### 3.10.1 Overview

The topic of evaluation, screening and assessment was a rich discussion that included the issues of language (e.g., distinguishing between assessment and evaluation, driving evaluation versus comprehensive driving evaluations,), Medicare billing for evaluations that include driving, and most significantly, the role of the occupational generalist in driving evaluation. Part of the discussion was reviewing the evidence, or lack of conclusive evidence, about assessment tools. Although only a few were discussion in detail, the emphasis was on the appropriate use of assessment and screening tools for referral from the generalist to the specialist.

In preparation for the meeting, Dr. Michel Bédard summarized the evidence for efficacy and appropriateness of screening and assessment tools in occupational therapy settings (see Appendix X). Johnell Brooks summarized her work with the Driver’s Health Inventory (see Appendix Y).

#### 3.10.2 Discussion

Screening and assessment for occupational therapists discussion was one of the critical discussion points of the expert meeting. The literature review of measurement tools (Appendix B) was the foundation of some of the evidence presented. The problem of measurement tools being developed without enough evidence or peer review was discussed (e.g., SIMARD in Canada). One strong recommendation was to have an evidence-based “committee” to screen new
tools being developed. Occupational therapists have a responsibility to seek data in selecting tools to use. AOTA does have some resources available. A framework or flow sheet that could be used to evaluate measurement tools was suggested.

Some of the discussion focused on the translation of knowledge from the measurement tools to making appropriate referrals. It was observed that measurement tools for driving have not been standardized in the occupational therapy domain. The tools have been studied retrospectively. Further, it is important to make sure that the population and the actual parameters of the study relate to current practices.

Johnell Brooks led a discussion about the Driving Health Inventory (DHI), as it is used in her facility. It is intended as a screening tool and recognized as not a tool to be used alone in making a fitness to drive decision. What they found is that it was an effective tool in introducing driving to clients. The efficacy of the DHI was debated, and that it may provide wrong information or send warnings when they are not warranted. What it did demonstrate is that occupational therapists need to identify what parameters are needed in measurement tools and present these to developers to produce tools that meet the needs of occupational therapists.

The Continuum of Action handout (Appendix G) was highlighted with the emphasis being on on identifying the two ends of the spectrum: The individuals who can be addressed by occupational therapy generalists. Sherrilene Classen identified the need to use tools with normative data and something like David Carr’s probability calculator may be very helpful with identifying the two extreme ends of the driving ability continuum.

3.10.3 Consensus Statements

Using the three levels of evidence, statements achieved consensus at all three levels. Appendix H has the specific voting statistics.

The following statements reached consensus for Level 1: Evidence is strong and allows for an evidence-based consensus statement.

- A decision about continued, restricted, or cessation of driving should never be made on the results of one tool in isolation, as there is not enough evidence on any one tool to make a decision.
- Measurement tools that are developed specifically for a diagnostic group should be interpreted carefully when used with other diagnostic groups unless there is sufficient evidence supporting the use of the tool with this other group.
- Measurement tools that are developed based upon specific outcomes (i.e., crash versus driving performance) should be interpreted carefully when used to assess other outcomes.
- Measurement tools must be administered according to the protocol in order to use the norms and/or evidence.

The following statements reached consensus for Level 2: Evidence is suggestive and allows for a consensus statement.

- If the client is determined unfit to drive, the occupational therapist should provide intervention or an appropriate referral for intervention and planning to address transportation options and community mobility.
• Some screening tools appear to hold more promise than others. Therapists should use evidence-based tools in making decisions.

Although there was not enough conclusive evidence for the next statements, the expert panel reached consensus for these recommendations, Level 3: Based on expert clinical judgment and theory.

• The ethical application of research knowledge depends on the critical appraisal of the research, its replication, and adequate synthesis.
• Occupational Therapists need to apply a framework to identify the criteria required to select the tools best suited to their needs and practices.
• In the hands of a general practice occupational therapist, screening/assessment tools serve as criteria for referral and action. In the hands of the driver rehabilitation specialist, the same tools can contribute to a decision for fitness to drive.
• Occupational therapy generalist should consider the multi-factorial nature of someone’s condition and potential for improvement.
• If the client is determined fit to drive the occupational therapists need to address future community mobility issues including enhancing safe driving as well as transitioning to non-driver status over time.
• Processes should be followed for occupational therapy generalists to start the driving discussions with sufficient clinically related evidence.

3.11 Occupational Therapy Education

3.11.1 Overview
In preparation for the meeting, Wendy Stav 1) summarized the two different credentials for driving rehabilitation specialists, 2) suggested levels of competence for an occupational therapy driving rehabilitation specialist, 3) proposed consensus statements, and 4) identified the select standards from the Accreditation Standards for a Master’s-Degree-Level Educational Program for the Occupational Therapist (see Appendix Z).

3.11.2 Discussion
Because of time constraints, there was only limited discussion.
• Wendy Stav outlined the certification and ACOTE standards.
• The levels of novice, beginner, competent, proficient, and expert were discussed, but not agreed upon, recognizing that this also is an area of continued debate and discussion.
• A mentorship need was discussed. Amy Lane outlined the current mentorship program through ADED.
• It was understood that even within levels of experts, there is levels of specialization. The concept of certification for specific groups of clients was introduced (e.g., specialization in CP, older adults, spinal cord) with appropriate education after achieving the CDRS. Being housed in a university was suggested.
• Education may require a subcommittee, understanding that cost must be reasonable or program cannot be sustained.
• Continuing education was not focus of this meeting, but role of generalist and specialist.
3.11.3 Consensus Statements
One consensus statement was revised and approved at the 3rd level of evidence: *Driving rehabilitation is a multi-tiered complex practice area that requires advanced knowledge, skills and experience.*

A second statement related to education was developed and achieved consensus for Agreement through Qualtrics on April 10, 2012: *Scientific evidence should be prominent in the education and professional development of driving rehabilitation specialists while individuals with higher levels of scholarship expertise should generate evidence that is useful to practitioners for integration for practice.*

3.12 Driving Simulation

3.12.1 Overview
Due to time restraints, the discussion about issues of driver simulation was not extensive, although two members had written two brief papers discussing current evidence and issues with interactive driving simulation as both an assessment and intervention tool. After the meeting, these two members met through conference call and presented joint consensus statements that were sent to all expert members to ask for their agreement or not. The five consensus statements achieved consensus by the group through electronic voting. It was clearly discussed that there was not enough time to devote to this unique tool and will continue to be a topic that needs further research and application in practice. However, what was clear is the strong message that those who choose to use driving simulation must do so with clear objectives, seek appropriate training, and be prepared for dealing with simulator adaptation issues.

3.12.2 Consensus Statements
The statements in this area that achieved consensus as Agreed were:

- Due to driving simulator adaptation, unfamiliarity and anxiety with technology, and a lack of standardization and validation of outcome metrics, driving simulators should not be the sole determinant of fitness to drive for older adults.
- Occupational therapists using driving simulation need to seek and obtain the appropriate education and training to use this tool effectively, appropriately, and with the knowledge to minimize simulation sickness.
- Carefully designed and tested driving simulation activities may offer controlled and repeatable driving conditions for intervention that are unavailable or limited in open-roadway conditions, allowing clients/patients to practice the abilities and skills that will be required for driving during the rehabilitation process understanding that the evidence to support this claim is still emerging.
- Simulators may be valuable as part of a more comprehensive assessment.
- Driving simulators can be used as a tool to determine impaired visual, cognitive, and motor abilities underlying the task of driving when used by an occupational therapist knowledgeable and skilled in its use.
3.13 Conclusion of Expert Meeting
During the entire expert meeting, participants used post it notes to identify ideas for 1) research questions needing pursuit, and 2) possible mini projects that are needed and could be done over the next year. During this last session, each of the post-it notes was reviewed to determine if the idea or concept was viable, if it was feasible, and whether it was a research question or a possible mini grant project.

Many of the notes had to do with terminology and definitions, which were grouped together and agreed was a significant issue for the professional and driving rehabilitation field. There was agreement between the leadership members of ADED and expert members of the group representing AOTA would plan discussion about terminology.

Members of the expert group agreed to continue participation in the work of the Pathways Project. Although there was discussion about new members of the group, no decision was made at this point.
Chapter 4: Outcomes

4.1 Generated Research and Mini-Project Ideas

4.1.1 Overview
As described, expert members used post-it notes to identify ideas for 1) critical research questions and 2) possible mini projects to be funded over the next year. The entire expert member group reviewed each of the post-it notes at the last session of the expert meeting to determine if the idea or concept was viable, if it was feasible, and whether it was a research question or a possible mini grant project.

4.1.2 Initial Brainstorming Table
Immediately after the meeting, Elin Schold Davis and Anne Dickerson took each idea and developed a table with the exact wording of the post-it notes in the first column, their interpretation of the idea based on the discussion in the meeting, and the third column was reserved for the expert panel to modify and add their ideas. Based on the feedback, Anne Dickerson used the information to complete the third column (see Appendix AA Brainstorming table 1).

4.1.3 Brainstorming Table 2
The second table was created to ensure that the ideas generated at the end of the meeting represented the discussion and ideas of the expert panel members. Each participate was asked to clarify the ideas and assist in the development of a two line description (Appendix BB). Additionally, the ideas were consolidated and redistributed to the research section or mini-project section as appropriate.

4.1.4 Brainstorming Table 3
The final table was revised based on feedback and sent to all expert members to ensure interpretations and ideas were appropriately incorporated and described. (see Appendix CC).

4.1.5 Research Ideas
There were eleven research “ideas” which were sent to Kathy Sifrit on April 9, 2012 as outline on Appendix DD and include:

- Develop a probability calculator with evidence-based assessment tools for determining need for a specialist referral.
- Establish a committee of experts to review evidence in the driving literature to assist occupational therapists in making informed decisions about assessment tools on assessment tools and/or intervention products.
• Develop a framework of evaluative criteria for the application of the screening and
assessment tools to offer guidance for clinical application recognizing the distinct settings
or context these tools may be used. A process should include usability, technology, data generated and ease of reports (glitz factors).

• Examine factors related to cognitive load or overload in older drivers’ performance.
• Define and clarify the terminology used in the field of driver rehabilitation by AOTA and
ADED.
• Define/describe the various program models used to provide driver rehabilitation and
community mobility services.
• Develop a better understanding of barriers to program development and address them to
effect changes in practice.
• Conduct efficacy and effectiveness studies on occupational therapy driving evaluation
and interventions.
• Establish a committee for credentialing levels of driver rehabilitation services.

4.1.6 Mini Projects
Once the mini projects were clarified from the expert panel, we were able to use the Qualtrics
tool to solicit a priority ranking from each expert member. They were asked to rank each (gap)
project identified as: 1) a priority project, 2) a good project, but not priority and therefore
considered secondary, or 3) unsure or even though it may be a good idea, it should not be funded
for a variety of reasons (e.g., already being done, not important enough, etc.). The panel received
the questions on April 9, 2012. Each of the members voted with the results of the vote
summarized on April 18, 2012 in Appendix EE (mini project results, April 18).

4.1.7 Mini-Funded Projects: Priority Ranking by Expert Members
The below summary was sent to each expert member:

Process: Ideas were generated for research and mini-funded projects throughout the expert
meeting. All the ideas were discussed and identified as a research idea or a potential mini-project
by the whole group on March 7th. All generated ideas were recorded by Anne and Elin and put
into a table with clarifications based on the discussion. The table was sent to all members for
edits and additional ideas. The feedback was incorporated and sent again to all members. The
ideas were then separated into research ideas (sent to Kathy Sifrit) and the mini projects. Using
all feedback, the mini-projects were built into a questionnaire that would identify each project as
a priority project, secondary status, or “unsure” and the expert was asked to state why this project
might not be either priority or secondary. This is a final list of the priority projects and the
secondary projects with the majority vote. No projects had a majority of “unsure.”

Priority Projects:
• Complete an evidence-based review of driving evaluation and intervention for specific
diagnoses, specifically: CVA/stroke, visual system impairments, lower level amputee, or
multiple sclerosis based on current evidence (Dementia and Parkinson’s Disease have already been completed.) Based on these reviews, potential consensus statements will be developed.

- Empower generalists to use risk management strategies to help identify and intervene with older drivers who are unfit to drive by developing an educational module/fact sheet for informing the generalists and specialists about risk. This includes ethical obligations to warn clients and family members about potential risk to self and others.
- Develop an educational module to assist generalists in identifying older adults who might benefit from driver rehabilitation, both in terms of evaluation and intervention. This would be educating the generalist that scope of practice includes driving as an IADL with older adults.
- Develop a framework that occupational therapists could use to determine select and justify 1) specific assessments tools used in determining fitness to drive and 2) intervention tools to mediate skills and abilities to drive. The framework would provide guidance on tool selection, diagnosis specific criteria (when appropriate), intervention guidance, and outcome recommendations. The framework would address factors including, but not limited to: Availability, affordability (therapist and clients), usability, evidence related to outcomes, adaptability, acceptability, technological advantages, and data reporting.
- Using the knowledge from experienced driver rehabilitation specialists, develop a list of essential or important skill sets to be included in screening or interviewing therapists who want to move into the driver rehabilitation area of practice to ensure the candidate can develop the needed clinical competencies.
- Using the available resources, including new standards, and promoting effective program models, update and expand the educational model for driving and community mobility for all professional occupational therapy programs.
- Develop a template or framework that will help the generalist occupational therapist identify the most salient factors for driving in order to describe them in the referral for the specialist. It might be different for different diagnostic categories or settings.
- Gather normative data for specific screening tools, assessment tools, or evaluation processes.
- An evidence-based review and meta-analysis to identify the effectiveness of simulator interventions on the driving performance of older adults.

Secondary Projects:
- Research the best methods of storing oxygen tanks safely in vehicles and summarize in a handout.
- Develop a template with key phrases that experienced driver rehabilitation specialists use to assist generalists with accurate terminology and effective documentation strategies. Develop the educational module to accompany any sample driving reports.
- Develop strategies to promote mentorships between the occupational therapy generalist and specialists, including expansion of the ADED mentoring program.
- Develop an educational module or tutorial on how to document driving rehabilitation within our medical systems.
- Develop a template with key phrases to use for documentation of interactive driving simulation assessment or intervention as they relate to on-road driving skills.
• The effectiveness of a training program using a left-foot accelerator pedal in a driving simulator.

4.2 Consensus Statements

4.2.1 Overview
The expert members, who were asked to review the literature in their particular areas of expertise, submitted preliminary consensus statements. These preliminary statements were read by all members of the panel, discussed in sections (as noted above), and revised based on discussion and/or suggestions from the meeting. Each statement was then projected within a power point document, supported by Turning Point, the response program. Based on the voting members vote via the response keys, the results of the vote was immediately captured and summarized.

Turning Point generates several kinds of reports, which summarizes the voting results for the expert meeting. The consensus statements generated and voted by the agreed majority from the expert meeting were compiled into a summary format to be distributed in specific venues.

4.2.2 AOTA Conference Handout of Consensus Statements
Specifically, a handout was distributed to participants at the AOTA conference session Older Drivers Initiative Update, which included a specific description of the expert meeting and consensus statements (see Appendix FF).

4.3 Results from Participants at AOTA Update
In an effort to achieve the goals of the Pathways Project, an objective for the Update session was to solicit feedback about outcomes generated from the Project and Expert Meeting. Two methods to gain feedback were created: 1) the immediate response clickers were used, and 2) written feedback was solicited.

4.3.1 Usefulness of the Consensus Statement for Occupational Therapy Practitioners

4.3.1.1 Feedback from AOTA Respondents on Consensus Statements
First, using the same Turning Point technology, 60 “clickers” were distributed to members of the audience. With the handout and prepared slides, each consensus statement was read and voted by members in the audience in terms of the question What is the utility of the statement for my practice? Provided answers were: 1) Useful, 2) Not sure, and 3) Not Useful. The number for respondents is unique for each question, as not all of the members of the audience answered each question.
Two demographic questions captured some information about the audience.

- I address driving and community mobility as an IADL in my practice?
  - N = 53
  - Yes – 70%
  - No – 30%
  - Don’t Know – 0%

- My professional education is:
  - N = 51
  - OTA – 18%
  - OT – 78%
  - Other – 4%

4.3.1.2 Results: General

In general, the consensus statements had 46 to 53 respondents with most statements having at least 50 respondents. Two consensus statements had 100% respondents indicating the statement was useful of their practice. These two were:

- There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.
- Occupational therapy practitioners need to know legal and ethical obligations related to driving and community mobility.

Twenty of the consensus statements had above 90% of the respondents indicating the statement was useful for their practice. Nineteen consensus statements had above 80% of the respondents indicating the statement was useful for their practice. Only five statements got less than 80%. These were specific to diagnoses and simulators, not surprising to not be as useful as other statements.

- 71% Useful: When an individual has COPD, a referral for a driving evaluation is indicated if one or any of these are present: 1) cognitive decline is evident with either psychometric testing or while performing other ADL, 2) concern is raised about driving safety through direct observation, family concern, or driving incidents, 3) when individual has difficulty maintaining oxygen saturation less than 90% at rest, 4) when the individual experiences dyspnea at rest or while behind the wheel, or 5) when a loading device is needed to manage a powered mobility device or oxygen needs to be secure.

- 71% Useful: An individual with a non-functional upper limb or upper extremity prosthesis should be referred for a driving evaluation.

- 67% Useful: A client with a non-progressive condition that affects primarily sensation and/or motor function (i.e., cerebral palsy, spina bifida, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfect, arthrogryposis) should be referred to a driver rehabilitation specialist to determine adaptive equipment needed as well as their potential to drive in the future. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the specialist early in the process will ensure comprehensive planning for community mobility for the client and family.

- 64% Useful: Carefully designed and tested driving simulation activities may offer controlled and repeatable driving conditions for intervention that are unavailable or limited in open-roadway conditions, allowing clients/patients to practice the abilities and
skills that will be required for driving during the rehabilitation process understanding that the evidence to support this claim is still emerging.

- 78% Useful: Driving simulators can be used as a tool to determine impaired visual, cognitive, and motor abilities underlying the task of driving when used by an occupational therapist knowledgeable and skilled in its use.

4.3.1.3 Specific Details of Results

Due to time constraints, not all consensus statements were voted on by the group.

- Language/terminology is an issue and we want to strive to be consistent so that the community and other professionals understand and this is a priority for future work.
  - N = 51
  - Useful – 90%
  - Not sure – 8%
  - Not Useful – 2%

- There is a need to differentiate programs based on their levels of service and compliance with ADED Best Practices.
  - N = 51
  - Useful – 92%
  - Not sure – 8%
  - Not Useful – 0%

- If program models are clearly defined, then there is a need for improved and understandable descriptors/definitions for the public and other stakeholders.
  - N = 53
  - Useful – 91%
  - Not sure – 7%
  - Not Useful – 2%

- There is a need to identify a level of education, training, or experience to use DRS as a credential.
  - N = 50
  - Useful – 96%
  - Not sure – 4%
  - Not Useful – 0%

- There is a clear need for clear definition of DRS and who can use this title as compare to those who use the CDRS title.
  - N = 52
  - Useful – 88%
  - Not sure – 10%
  - Not Useful – 2%

- There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.
  - N = 52
• An individual with moderate to severe dementia should not drive.
  o N = 53
  o Useful – 92%
  o Not sure – 4%
  o Not Useful – 0%

• Those with very mild or mild dementia may be appropriately referred for further testing when risk factors for unsafe driving are present.
  o N = 50
  o Useful – 98%
  o Not sure – 2%
  o Not Useful – 0%

• If the patient has a neurodegenerative dementia, mobility counseling (to include alternative methods of transportation) should start immediately anticipating that driving cessation will likely occur in the near future.
  o N = 50
  o Useful – 88%
  o Not sure – 12%
  o Not Useful – 0%

• Self-report regarding driving capability is often inaccurate; therefore observation of occupational performance is necessary.
  o N = 53
  o Useful – 91%
  o Not sure – 9%
  o Not Useful – 0%

• Co-piloting, in which a passenger verbally assists the individual to drive or follow a route, is not recommended. The need for co-piloting is an indication that the patient should stop active driving, as verbal instructions are insufficient in a driving situation where a rapid response is required to prevent a crash.
  o N = 50
  o Useful – 84%
  o Not sure – 14%
  o Not Useful – 2%

• Regardless of diagnosis, assessment and recommendations for optimal and safest community mobility should be provided.
  o N = 50
  o Useful – 92%
• Regardless of the driving assessment outcome, when an individual is diagnosed with dementia, the general OT should start planning exploration of alternative transportations options early and begin to use these options to increase the person’s familiarity with them.
  o N = 51
  o Useful – 92%
  o Not sure – 8%
  o Not Useful – 0%

• Occupational therapy practitioners need to know legal and ethical obligations related to driving and community mobility.
  o N = 51
  o Useful – 100%
  o Not sure – 0%
  o Not Useful – 0%

• Drivers with PD who have mild motor disability as measured by low scores on the UPDRS Part 3, and no or few risk factors (anti-Parkinson drugs, >75 years of age), may be safe. However, we recommend that the individual who fits this profile and those who are newly diagnosed with PD:
  • N = 50
  • Useful – 80%
  • Not sure – 16%
  • Not Useful – 4%

• For those with severe motor impairment and disease severity (high UPDRS Part 3 scores) and multiple risk factors (decreased information processing speed, e.g. scoring greater or equal to 3 on the UFOV risk index, impaired contrast sensitivity, scoring greater than 180 seconds on the Trails B, and scoring greater than 7.5 seconds on the Rapid Pace Walk) we recommend: 1) forfeiting the license, 2) mandatory reporting, and 3) travel training.
  • N = 49
  • Useful – 84%
  • Not sure – 12%
  • Not Useful – 4%

• Research is in progress to provide better guidelines for the “middle” group: i.e., those with mild to moderate motor disability and several risk factors. This group is the most challenging and we recommend
  o N = 51
• When an individual has COPD, a referral for a driving evaluation is indicated if one or any of these are present: 1) cognitive decline is evident with either psychometric testing or while performing other ADL, 2) concern is raised about driving safety through direct observation, family concern, or driving incidents, 3) when individual has difficulty maintaining oxygen saturation less than 90% at rest, 4) when the individual experiences dyspnea at rest or while behind the wheel, or 5) when a loading device is needed to manage a powered mobility device or oxygen needs to be secure.
  
  o N = 52
  o Useful – 83%
  o Not sure – 11%
  o Not Useful – 6%

• When an individual has COPD, the driving rehabilitation specialist should monitor oxygen saturation while driving to measure the effects of driving tasks on oxygen levels in the blood. This information can be used to verify the need to drive with oxygen to improve cognition as well as heart and other organ functioning. Pulse oximetry is also an effective tool to demonstrate the effects of energy conservation (vehicle features, arm position etc.) and breathing techniques have while driving.
  
  o N = 49
  o Useful – 71%
  o Not sure – 23%
  o Not Useful – 6%

• When an individual has COPD, the driving rehabilitation specialist’s recommendations are able to provide guidance on overall driving skills and safety including driving limits and compensatory techniques, as well as assistance with loading devices for power mobility devices, and oxygen storage.
  
  o N = 49
  o Useful – 86%
  o Not sure – 14%
  o Not Useful – 0%

• Community mobility should be addressed with every occupational therapy client as part of the initial evaluation and most importantly as part of the discharge planning.
  
  o N = 51
  o Useful – 88%
  o Not sure – 6%
  o Not Useful – 6%
• An individual with a non-functional lower limb, lower extremity prosthesis, or an orthotic on a lower limb used for operation of vehicle should be referred for a driving evaluation.
  - N = 48
  - Useful – 85%
  - Not sure – 13%
  - Not Useful – 2%

• An individual with a non-functional upper limb or upper extremity prosthesis should be referred for a driving evaluation.
  - N = 49
  - Useful – 72%
  - Not sure – 20%
  - Not Useful – 8%

• An individual with a spinal cord injury at any level should be referred early in the rehabilitation process for consultation with a driver rehabilitation specialist.
  - N = 49
  - Useful – 88%
  - Not sure – 4%
  - Not Useful – 8%

• A client with a progressive condition which affects primarily sensation and/or motor function (i.e., multiple sclerosis, post-polio syndrome) should be referred to a driver rehabilitation specialist to determine a baseline need for adaptive equipment for their motor vehicle. The driver rehabilitation specialist can assist with planning for future needs and re-evaluation based on the progression of the condition.
  - N = 49
  - Useful – 86%
  - Not sure – 8%
  - Not Useful – 6%

• A client with a non-progressive condition that affects primarily sensation and/or motor function (i.e., cerebral palsy, spina bifida, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfect, arthrogryposis) should be referred to a driver rehabilitation specialist to determine adaptive equipment needed as well as their potential to drive in the future. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the specialist early in the process will ensure comprehensive planning for community mobility for the client and family.
  - N = 48
  - Useful – 67%
  - Not sure – 23%
- Driving is a high volume, high risk activity and the changing demographics will result in increasing demand and opportunity for occupational therapy evaluation and recommendations. Occupational therapy practitioners are obligated to follow the ethical principles as applicable to practice.
  - N = 52
  - Useful – 98%
  - Not sure – 2%
  - Not Useful – 0%

- A decision about continued, restricted, or cessation of driving should never be made on the results of one tool in isolation, as there is not enough evidence on any one tool to make a decision.
  - N = 50
  - Useful – 96%
  - Not sure – 2%
  - Not Useful 2–%

- Measurement tools that are developed specifically for a diagnostic group should be interpreted carefully when used with other diagnostic groups unless there is sufficient evidence supporting the use of the tool with this other group.
  - N = 50
  - Useful – 90%
  - Not sure – 10%
  - Not Useful – 0%

- Measurement tools that are developed based upon specific outcomes (i.e., crash versus driving performance) should be interpreted carefully when used to assess other outcomes.
  - N = 46
  - Useful – 87%
  - Not sure – 13%
  - Not Useful – 0%

- Measurement tools must be administered according to the protocol in order to use the norms and/or evidence.
  - N = 50
  - Useful – 98%
  - Not sure – 2%
  - Not Useful – 0%
• If the client is determined unfit to drive, the occupational therapist should provide intervention or an appropriate referral for intervention and planning to address transportation options and community mobility.
  o N = 48
  o Useful – 96%
  o Not sure – 4%
  o Not Useful – 0%

• Some screening tools appear to hold more promise than others. Therapists should use evidence-based tools in making decisions.
  o N = 51
  o Useful – 92%
  o Not sure – 8%
  o Not Useful – 0%

• The ethical application of research knowledge depends on the critical appraisal of the research, its replication, and adequate synthesis.
  o N = 48
  o Useful – 83%
  o Not sure – 13%
  o Not Useful – 4%

• Occupational Therapists need to apply a framework to identify the criteria required to select the tools best suited to their needs and practices.
  o N = 48
  o Useful – 88%
  o Not sure – 10%
  o Not Useful – 2%

• In the hands of a general practice occupational therapist, screening/assessment tools serve as criteria for referral and action. In the hands of the driver rehabilitation specialist, the same tools can contribute to a decision for fitness to drive.
  o N = 51
  o Useful – 90%
  o Not sure – 8%
  o Not Useful – 2%

• Occupational therapy generalist should consider the multi-factorial nature of someone’s condition and potential for improvement.
  o N = 49
  o Useful – 96%
  o Not sure – 2%
  o Not Useful – 2%
• If the client is determined fit to drive the occupational therapists need to address future community mobility issues including enhancing safe driving as well as transitioning to non-driver status over time.
  o N = 50
  o Useful – 88%
  o Not sure – 6%
  o Not Useful – 6%

• Processes should be followed for occupational therapy generalists to start the driving discussions with sufficient clinically related evidence.
  o N = 51
  o Useful – 94%
  o Not sure – 4%
  o Not Useful – 2%

• Due to driving simulator adaptation, unfamiliarity and anxiety with technology, and a lack of standardization and validation of outcome metrics, driving simulators should not be the sole determinant of fitness to drive for older adults.
  • N = 50
  • Useful – 80%
  • Not sure – 18%
  • Not Useful – 2%

• Occupational therapists using driving simulation need to seek and obtain the appropriate education and training to use this tool effectively, appropriately, and with the knowledge to minimize simulation sickness.
  • N = 49
  • Useful – 90%
  • Not sure – 4%
  • Not Useful – 6%

• Carefully designed and tested driving simulation activities may offer controlled and repeatable driving conditions for intervention that are unavailable or limited in open-roadway conditions, allowing clients/patients to practice the abilities and skills that will be required for driving during the rehabilitation process understanding that the evidence to support this claim is still emerging.
  • N = 50
  • Useful – 64%
  • Not sure – 26%
  • Not Useful – 10%

• Simulators may be valuable as part of a more comprehensive assessment.
  • N = 50
  • Useful – 86%
  • Not sure – 10%
• Not Useful – 4%

• Driving simulators can be used as a tool to determine impaired visual, cognitive, and motor abilities underlying the task of driving when used by an occupational therapist knowledgeable and skilled in its use.
  • N = 46
  • Useful – 78%
  • Not sure – 13%
  • Not Useful – 9%

• Driving rehabilitation is a multi-tiered complex practice area that requires advanced knowledge, skills and experience.
  o N = 51
  o Useful – 96%
  o Not sure – 0%
  o Not Useful – 4%

• Scientific evidence should be prominent in the education and professional development of driving rehabilitation specialists while individuals with higher levels of scholarship expertise should generate evidence that is useful to practitioners for integration for practice.
  o N = 50
  o Useful – 84%
  o Not sure – 12%
  o Not Useful – 4%

4.3.2 Written Feedback

4.3.2.1 Overall results of written feedback
A questionnaire was developed and distributed within the meeting (see “Appendix GG”). This questionnaire was developed to solicit information about: 1) occupational therapy practitioners perceptions of the overall goals for the Pathways Project, 2) feedback on the table of evidence in preparation for the final output of the literature review, 3) perception about how the consensus document will or will not be helpful, and 4) what suggestions might be offered from practitioners in meeting their needs through the project.

4.3.2.2 Question on Pathway Project
In response to the first question: Considering the Pathways Project, what goals of this Older Driver Initiative (ODI) project would you consider most useful to the occupational therapy generalist? There were two specific answers indicating therapists are looking for easy access tools to use.
  • Tools to use and direction it leads to.
  • To have an easy access point for resources to refer to this would make it easier to refer client/people to one place vs. multiple places.
4.3.2.3 Question on Assessment and Screening
For the question about how to make information more accessible using an example: In considering the Assessment and Screening Tables, how can this table of evidence be modified or expanded to support your development of pathways in your practice setting? Two individuals responded with indicating the desire for easy access and availability:
- Where do you need more detail?
- N/A for my setting.
- Where do you find these assessments on internet or forms to print out tests.
- What specifics seem to be missing or could be added that would improve its usefulness as a resource for practice?
- Provide copy of screening tools so that therapist would have better understanding

4.3.2.4 Question on Consensus Statements
In considering the Consensus Statement Document, only two responses to the specific questions with giving a general positive sense while identifying two issues that might be addressed in the future:
- How do you see the use of consensus statements supporting your confidence in the development of your evaluation and intervention pathways?
  - The practical evidence.
  - Good starting point.
- What practice related challenges, questions or concerns would you suggest the expert panel explore for future consensus statements?
  - Bioptic driving-Expanding states scope of practice to include driving
  - How to educated COTA and OTs and get the word out with easily accessible information.

4.3.2.4 Other Feedback and Suggestions
In response to asking for feedback or suggestions for the Pathways Project, there was comments that ranged from positive feedback about the session, specific questions about unrelated topics, to appropriate information that will be helpful as the project progresses. Appendix HH has all the comments embedded in the questions. The specific comments related to the Pathways Project are listed below (with the unrelated comments excluded):
- Both the goal of the generalist making referrals and the DRS being able to meet needs of referrals in a timely and effective manner. Each goal is interrelated and will impact the success of the goal of reaching consumers. It may even be possible for an outcome to be development of generalists using tools to screen so the CDRs may complete the road evaluation and not need to spend as much time in the clinical portion.
- The most important concern I have is to make it clear that a generalist should never determine fitness to drive based only on standardized tests and research outcomes-only the CDRSs. And it is necessary to complete testing in all key areas not to pick and choose when basing on diagnosis. High SCI also have underlying cognitive issues due to possible frontal brain trauma=impact from diving or MVA.
• I value all of the statements for use in practice but caution the use of these by persons in practice who may not have the experience to apply them when it is appropriate. I would like to see more focus on studies regarding multiple medication use, types of MS such as chronic progressive and relapsing/remitting and vision loss. Also best practice documents from ADED and research should be included.

• Keep the great work up and include ADED leadership including an OTA in the discussion. Also consider specialty certified practitioners in the panel = you.

• Need to define moderate/severe dementia – how do we know? Need that definition with that consensus statement.

• On the feedback-(and I should have asked earlier)-but my answers would be different as asking about the profession vs. my practice. What is the utility of this statement for my practice vs. OT practice.

• Wonderful information-I would like to explore info on web more to be able to present it to my facility to especially the generalist who will send referrals or who will start the initial conversations with patients and their family members.

• Quick reference to info-websites links

• Guidelines on how to approach introduction to generalists and MDs; especially when the cost of evaluations are an issue How to report clients that are not fit to drive.

• Guidelines on what to say to clients who do not see the need for evaluation and modifications.

• Support network on how to communicate importance of addressing issues related to driving and importance of correctly addressing return to independent driving in your facility if you do not have support from your facility/ co-workers.

• Assistance on how to not have MDs just clear patients to drive without consulting OTs involved on if they don’t care to consult with OT.

• Communication to not just go to BMV/DMV for voluntary drive

• How to discuss topic with physicians to encourage them to report clients who does not follow through on recommendations not to drive.

• Ethical and liability; requirements needed to perform driving assessments

• Why is the ACL not used? It’s not listed on screening and assessments paper

• How to get word out-> Market to rehab companies to provide the education for free to their employees and contact the clinical consultants of the therapy companies.

• I enjoyed the information! The need for organizing/educating in the area of driving at multiple levels was certainly noted today. This was very helpful to me.

• Make it more accessible and clear about certification process

• Continue to make info accessible to older drivers

• Have better diagnostic tools to access older drivers

• Get word out to the southern states since they are very limited in knowledge/resources as compared to all states in the US

• Definitions of diagnoses need to be very specific, especially for those which are not easily offered-such as dementia or amputation.

• Need to also address importance of involving caregivers and family early in plans to D/C driving-they can’t do it alone, but need to be on board in the plan.
4.3.3 Questions and Comments
Notes were taken during the questions and answer session at the Update. Pertinent to the Pathways Project were the following:

- Many states are addressing their scope of practice through licensure laws, it is a good time to bring up driving and cognition.
- Defining moderate/severe dementia is important, how do we know – Scales needed.
- Occupational therapy views cognition more globally and in a broader context than other specialists.
- In the scope of practice, the generalists, specialists, and CDRS all play different parts, the beginning and end points need to be defined.
- Scope of practice and legal issues need to be addressed.
- CDRS who have private practices do many “lunch and learn” type of sessions to educate generalists; it needs to be done at the grass root level.
- Speaking at state occupational therapy conferences is critical. (Both Elin Schold Davis and Anne Dickerson gave examples of how and where this is occurring.)

4.4 Future Plans for Consensus Statement Updates
In a continued effort to achieve the goals of the Pathways Project, there has been a one hour session added to the ADED conference on July 31, 2012. This session will be similar to the AOTA session in that the expert meeting will be summarized and feedback solicited on the Pathways Project. The session will not be opposed, so it is hoped that most of the attendees at the conference will attend. The Turning Point response system (with approximately 200 clickers) will be again used to solicit information about the consensus statements from this group of specialists.

4.5 Outcomes for Terminology
As terminology was clearly an issue at the expert meeting, there are plans in place to meet this need. Specifically, there will be an added session at the ADED conference on July 30, 2012. This session will be a one and a half hour session with an initial presentation from Anne Dickerson and Elin Schold Davis highlighting the issues with terminology. Discussion will be taped and offer insights by experienced specialists and their understanding of terminology and its issues. There will be a second hour and half with the leadership of ADED as well as members of the expert panel available to meet to make plans of how this issue might be addressed.
Appendices
### Appendix A

**Assessments used Most Frequently by Driver Rehabilitation Specialists**

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Use N</th>
<th>Use %</th>
<th>Use with All Clients N</th>
<th>Use Selectively N</th>
<th>Use with All Clients %</th>
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<tr>
<td>Visual Acuity</td>
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<td>100</td>
<td>203</td>
<td>90</td>
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<tr>
<td>ROM – Upper Extremity</td>
<td>213</td>
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<td>ROM – Head, Neck, trunk</td>
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<td>14</td>
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<tr>
<td>Brake Reaction</td>
<td>110</td>
<td>49</td>
<td>99</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td>Judgment/Rules of the Road</td>
<td>109</td>
<td>48</td>
<td>93</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td>Phorias</td>
<td>105</td>
<td>67</td>
<td>88</td>
<td>56</td>
<td>17</td>
</tr>
<tr>
<td>Road Signs (Optec)</td>
<td>102</td>
<td>45</td>
<td>95</td>
<td>42</td>
<td>7</td>
</tr>
<tr>
<td>Short Blessed</td>
<td>100</td>
<td>45</td>
<td>56</td>
<td>25</td>
<td>44</td>
</tr>
<tr>
<td>Mini Mental Status Exam</td>
<td>93</td>
<td>41</td>
<td>41</td>
<td>18</td>
<td>52</td>
</tr>
<tr>
<td>MMSE or SBT</td>
<td>193</td>
<td>86</td>
<td>97</td>
<td>43</td>
<td>18</td>
</tr>
</tbody>
</table>
### Assessments Used Selectively by More than 19%

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Use Selectively</th>
<th>Neuro</th>
<th>Dementia</th>
<th>Spinal cord</th>
<th>Devel disab</th>
<th>Orthopedic</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clock Drawing Test</td>
<td>83</td>
<td>83</td>
<td>72</td>
<td>59</td>
<td>2</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Letter Cancelation</td>
<td>65</td>
<td>38</td>
<td>64</td>
<td>22</td>
<td>1</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>MVPT</td>
<td>59</td>
<td>33</td>
<td>56</td>
<td>37</td>
<td>1</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>Convergence/Divergence</td>
<td>59</td>
<td>28</td>
<td>58</td>
<td>19</td>
<td>3</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>Ocular Range of Motion</td>
<td>57</td>
<td>27</td>
<td>56</td>
<td>18</td>
<td>5</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Mini Mental Exam</td>
<td>52</td>
<td>25</td>
<td>34</td>
<td>45</td>
<td>2</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Trails B</td>
<td>50</td>
<td>22</td>
<td>48</td>
<td>45</td>
<td>3</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Trails A</td>
<td>47</td>
<td>27</td>
<td>45</td>
<td>40</td>
<td>3</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>Saccades</td>
<td>46</td>
<td>29</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Blessed</td>
<td>44</td>
<td>27</td>
<td>29</td>
<td>39</td>
<td>0</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Sensation</td>
<td>35</td>
<td>20</td>
<td>35</td>
<td>6</td>
<td>21</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>UFOV</td>
<td>28</td>
<td>19</td>
<td>27</td>
<td>21</td>
<td></td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Draw a person</td>
<td>28</td>
<td>19</td>
<td>25</td>
<td>12</td>
<td></td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

#### Behind the Wheel  N= 227

<table>
<thead>
<tr>
<th></th>
<th>Off Road</th>
<th>On Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>All clients taken BTW</td>
<td>105 or 45%</td>
<td>170 or 75%</td>
</tr>
<tr>
<td>Only select clients on BTW</td>
<td>12 or 5%</td>
<td>13 or 6%</td>
</tr>
<tr>
<td>Length of the BTW</td>
<td>5 minutes – 4 hours</td>
<td>5 minutes – 6 hours</td>
</tr>
<tr>
<td>Mean</td>
<td>44 minutes (SD=39.8)</td>
<td>70 Minutes (SD = 40.0)</td>
</tr>
<tr>
<td>Mode</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>Median</td>
<td>30</td>
<td>60</td>
</tr>
</tbody>
</table>

Respondents were asked to list their top 5 assessments used to make a fitness to drive decision. Also could give “all other assessments.”

### Top % Assessments Use to Make Recommendation/Decision

<table>
<thead>
<tr>
<th>Top 5 Assessments 40 different assessments</th>
<th>N Selected</th>
<th>Mean Percent</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behind the Wheel</td>
<td>155</td>
<td>57.6 ± 22.6</td>
<td>5-100%</td>
</tr>
<tr>
<td>Vision Testing</td>
<td>115</td>
<td>12.8 ± 10.5</td>
<td>1-80%</td>
</tr>
<tr>
<td>Trails A &amp; B or Trails B</td>
<td>85</td>
<td>12.4 ± 9.3</td>
<td>1-40%</td>
</tr>
<tr>
<td>Physical Assessment</td>
<td>53</td>
<td>9.8 ± 6.7</td>
<td>1-30%</td>
</tr>
<tr>
<td>Brake Reaction</td>
<td>47</td>
<td>9.6 ± 6.4</td>
<td>2-30%</td>
</tr>
<tr>
<td>Cognitive Assessment</td>
<td>45</td>
<td>14.3 ± 12.0</td>
<td>2-60%</td>
</tr>
<tr>
<td>Short Blessed/ MMSE</td>
<td>44</td>
<td>8.8 ± 6.1</td>
<td>1-25%</td>
</tr>
<tr>
<td>UFOV</td>
<td>37</td>
<td>13.9 ± 11.6</td>
<td>4-25%</td>
</tr>
<tr>
<td>All other assessments</td>
<td>105</td>
<td>14.4 ± 12.0</td>
<td>1-60%</td>
</tr>
<tr>
<td>Other Factors</td>
<td>105</td>
<td>7.8 ± 5.0</td>
<td>1-30%</td>
</tr>
</tbody>
</table>

Notes: 22 only do clinical; 4 only look at BTW for 100%, 23 others said 95% with 5% all other information.
OTHER RELEVANT RESULTS

- Simulators: Only 25 (11%) of the respondents are using driving simulators.
- UFOV: Only 29% of the respondents are using UFOV; Most are using all 3 subtests and generally only with individuals with neurological disorders or dementia.
- With the exception of UFOV – use of assessments same as 2003.
- Dependence on written assessments for the clinical assessment.
- BTW weight in greatest balance of making any recommendation.

Limitations:

- Does not reveal reasons for the use of specific assessment.
- Grouped as physical, cognitive, & visual – there is a quality of performance that is seen by therapists observing assessments.
- Mail and web-based.

Consensus Statements:

1. Assessment tools should be used selectively and judiciously for specific clients rather than a laundry list of tools for all clients.
2. Key assessments should be identified for specific diagnoses.
3. Generalist occupational therapists referring to driver rehabilitation specialists should summarize key screening tools, assessments done on performance skills, particularly those addressing safety risk in IADLs.

Questions to be answered:

1. The role of driver simulation in screening and assessment.
2. If DRS are using the BTW as the major decision for fitness to drive, what should the clinical assessment be framed to be used?
Appendix B

NHTSA/AOTA Cooperative Agreement: The Pathways Project to
Foster Occupational Therapist Engagement in Older Driver Rehabilitation
Expert Panel Meeting, Bethesda, MD, March 6-7, 2012

Screening and Assessment
Anne Dickerson

There is and will continue to be research on the predictive validity of the various specific screening and assessment tools. In more recent years, instead of individual assessments, batteries are being developed that address more than one area of visual, cognitive, and physical function. Some of the work has progressed to determining groups of assessments that increase predictive validity for fitness to drive for just older adults or more specifically for diagnostic categories. Additionally, the sensitivity and specificity have become the statistical benchmark for evidence-based research.

The last section of the literature review is a final summarization of the literature pertaining to screening and assessment. There is and will continue to be research on the predictive validity of the various specific screening and assessment tools. This includes tools that have been used for many years (e.g., Trail Making A and B, MMSE, UFOV) and others that are relatively new developed or new to the application of driving (e.g., ANT, AMPS, DriveAble). As one reviews the evidence over the past few years, the complexity of capturing the essence of driving in a clinical tool has become clearly evident. Therefore, instead of specific assessment tools being used, groups of tools are being analyzed together to capture all the skills and abilities needed for driving, i.e., in the areas of vision, cognition, perception, and motor function. Some of the work has progressed to determining groups of assessments that increase predictive validity for fitness to drive for just older adults or more specifically for diagnostic categories. Advancement in statistical analysis is also evident as Receiving Operating Curves and sensitivity and specificity have become the statistical benchmark for evidence-based research.

One of the deliverables the Gaps and Pathways Project is to create clinic ready resources build upon the research evidence gained from the comprehensive review of the literature of screening and assessment tools applicable to the driving evaluation of older adults. The key to the success of this deliverable is to present the information in a format that is easily understood and applied by occupational therapists, in both generalist and specialist settings.
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Health Inventory</td>
<td>See J. Brooks Summary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Core includes: visual acuity test, a visual confrontation test, proprioception of the lower limb, the Berg Balance Scale, the Motoricity Index, a motor sequences screen, and four assessments developed by the OT–DORA group: the Road Law and Road Craft Test, the OT Drive Home Maze Test, the Simulated Accelerator–Brake Test, and the Right Heel Pivot Test.</td>
<td>Drive Home Maze test executive function, visuo-constructive, and the individual completing the paper maze. The interaction between the number of crossing line, the time it took for the subject to complete the maze and the performance on-road test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The RLRCT is a 15-item test of laws and knowledge of driving situations. To examine the RLRCT with the limitation of achieving good fit for its structure, it was not clearly a road test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Score of the CBDI instructor’s pass/fail cut was found significant for driving outcomes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CBDI scores were found significant for those who failed driving evaluation. Sensitivity - 62%, with positive predictive and negative values for the CBDI are not significant for driving evaluation.</td>
</tr>
</tbody>
</table>
Assessment of Driving-related Skills

| Assessment of Driving-related Skills | Screening tool for physicians from AMA | Sensitivity and specificity of the Assessment of Driving-related Skills older driver screening tool. McCarthy DP; Mann WC; Topics in Geriatric Rehabilitation, 2006 Apr-Jun; 22 (2):139-52 | ROM, Rapid pace were related to fail. Sensitivity was 100% and specificity was 37.5% negative predictive and 62.5% positive predictive. Screening tool – may numbers, who may be identified.

DriveAble


| DriveAble | Each subtest measures different component skills, including measure reaction time, attentional fields, attention shifting, decision making, executive functions, and hazard identification. Upon completion, the program generates a report with client information, task scores, and the predicted fail probability of the on-road assessment based on a complex algorithm of based on previous research by the developers. The standardized road course has specific performance evaluation criteria which provides frequency and severity driving errors in a report that summaries the results and allows for a recommendation of driving continuance. | Korner-Bitensky and Sofer (2009) | DriveABLE screens clients who would fail driving test. However, retrospective of clients already referred for evaluation, which was positive predictive screening tool for the population of older drivers.

Key Studies to Consider

Multiple linear regression model with the five assessments significantly predictive of driving errors. Used raw scores and scores adjusted for demographic and neuropsychological factors. Better if used raw scores. If adjust for demographic correlates, diminishes the predictive accuracy.


Dementia: Table of neuropsychological tests and demographic factors predict performance on road tests for dementia. Used several large data sets to and individually predict performance on road tests for dementia. ROC curves: MMSE, Trails A time, UFOV and driving incidents were found to be significantly associated with driving errors. MMSE (sensitivity: 0.753, specificity: 0.603), Trails A (sensitivity: 0.654, specificity: 0.603), UFOV: (sensitivity: 0.795), Driving record (sensitivity: 0.230, specificity: 0.603). UFOV had the highest specificity ratings but was not significantly predictive value.

Still not sufficient to be used alone when making a driving evaluation.


Systematic Review: 17 eligible studies, most used psychometric tests to assess cognitive skills. Most useful: Rey-Osterrieth, UFOV.

---

**Studies Using Individual Tools as Batteries**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Target Population</th>
<th>Tools (significant)/Outcome</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>See S. Classen Summary</td>
<td>Parkinson’s Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictability of clinical assessments for driving performance. Stav WB, Justiss MD, McCarthy DP, Mann WC, Lanford DN. Journal of Safety Research. 39(1):1-7, 2008.</td>
<td>Older adults</td>
<td>Contrast Sensitivity, slide B Rapid Pace Walk UFOV Rating MMSE total score</td>
<td>Stepwise regression included the Contrast Sensitivity B, Rapid Pace Walk, MMSE total score; explained the variability in Glaucoma; the standardized road test was significantly correlated with the individual tests individually.</td>
</tr>
<tr>
<td>Prediction of driving ability with neuropsychological tests: demographic adjustments diminish accuracy. Barrash J, Stillman A, Anderson SW, Uc EY, Dawson JD, Rizzo M. Journal of the International Neuropsychological Society. 16(4):679-86, 2010 Jul.</td>
<td>Older adults, Control, dementia and Parkinson’s disease</td>
<td>Trails A Complex Figure Test Block Design</td>
<td>Multiple linear regression, the five assessments significantly predictive of driving errors. Raw scores for Trails A, Complex Figure Test, and Block Design were significantly correlated with driving errors. Better if used raw scores and demographic correlates.</td>
</tr>
<tr>
<td>Study</td>
<td>Participants</td>
<td>Outcome</td>
<td>Predictive Accuracy</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>The assessment of fitness to drive in people with dementia. Lincoln NB. Radford KA. Lee E. Reay AC. International Journal of Geriatric Psychiatry. 21(11):1044-51, 2006 Nov.</td>
<td>Dementia</td>
<td>Stroke drivers screening assessment, MMSE, behavioral assessment of dysexecutive syndrome: rule shift and key search, stroop color word test, adult memory and information processing battery, sort – recognition for words and faces</td>
<td>No test individually significant. SDSA good with some validity with other conditions. Discriminant function identified a combination of tests, which correctly predicted drivers with dementia who were unsafe. On indep sample with 0 cutoff, but 80% with cutoff of 5.</td>
</tr>
<tr>
<td>Study</td>
<td>Population</td>
<td>Measures</td>
<td>Findings</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Literature Review and Expert Meeting 2012</td>
<td>Older adults</td>
<td>MMSE, Driving habits, Ottawa Driving &amp; dementia, Bothered by diabetes, Timed Toe Tap Test</td>
<td>Outcome: motor vehicle crashes, Used assessment by acceptability and prediction of crashes. Significant positive past or current MV components of: MMSE, Driving habits, Ottawa Driving &amp; dementia “bothered a great deal by diabetes” the Timed Toe Tap Test.</td>
</tr>
<tr>
<td>Ten years down the road: Predictors of driving cessation</td>
<td>Older adults</td>
<td>Age at baseline, Days driven per week, UFOV performance</td>
<td>Outcome: driving cessation, Longitudinal from Drivers Project, Did several regressions, Final model: The age driven per week and UFOV performance were indicators of risk for driving cessation.</td>
</tr>
<tr>
<td>Identifying at-risk older adult community-dwelling drivers through neuropsychological evaluation</td>
<td>Older adult</td>
<td>Hopkins verbal learning task, Integrated visual and auditory continuous performance, Trails B</td>
<td>Outcome: BTW, Hopkins verbal learning task, Integrated visual and auditory continuous performance, Trails B, more predictive of BTW or UFOV.</td>
</tr>
</tbody>
</table>
## Key Studies to Consider for Making any Decisions with Dementia Using Screening or Assessment Tools

<table>
<thead>
<tr>
<th>Study</th>
<th>Systematic Review for Dementia:</th>
<th>Recommendations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dubinsky, R.M., Stein, A.C. &amp; Lyons, K. (2000). Practice Parameter: Risk of driving and Alzheimer’s disease (an evidence based review): Report of the Quality Standards Subcommittee of the American Academy of Neurology. <em>Neurology, 54</em>, 2205-2211.</td>
<td>14 articles that met criteria for Class I, II, II levels of evidence. Divided between crash statistics, evaluation of driving performance, and analysis of driving task components. Clear evidence that individuals with dementia have an increased risk of crashes compared to age-matched controls. Crash risk of CDTR of 1.0 is greater than our society tolerates for any other group; CDR of .5 is the same for 16-19 year olds and alcohol intoxication of BAC&lt;.08%. <strong>Recommendations:</strong> 1. Patients and their families should be told that patients with AD with severity of CDR 1 or greater have substantially increased accident rate and driver performance errors and should not drive an automobile (Standard). 2. Patients and their families should be told that patients with possible AD with severity of CDR 0.5 pose a significant traffic safety problem when compared to other elder drivers. <strong>Referral of the patient for a driver performance evaluation by a certified examiner should be considered</strong> (Guideline). Because of the high likelihood of progression to a severity of CDR 1.0 within a few years, clinicians should reassess dementia severity and appropriateness of continued driving every 6 months (Standard).</td>
<td></td>
</tr>
<tr>
<td>Iverson, D.J., Gronseth, G.S., Reger, M.A., Classen, S., Dubinsky, R.M., &amp; Rizzo, M. (2010). Practice Parameter Update: Evaluation and management of driving risk in dementia. <em>Neurology, 74</em>, 1316-1324.</td>
<td><strong>Systematic Review:</strong> Usefulness of characteristics, driving history, and cognitive testing in predicting driving capability of patients with dementia and determine efficacy of driving risk reduction strategies. 502 manuscripts reviewed; outcomes measures of on-road performance, driving simulation, crash data, caregiver report. <strong>Conclusions:</strong> Factors that are useful for identifying unsafe drivers: CDR level of .5 but some with CDR of .05-1 will be found be to be safe with on-road test; an MMSE of less or equal to 24; caregiver’s rating of marginal or unsafe; history of crashes in previous 1-5 years or citation in previous 2-3 years; reduced driving mileage; self reported avoidance; aggressive or impulsive behavior. Factors <strong>not</strong> useful: Patient’s self-rating of driving; absence of self reported avoidance.</td>
<td></td>
</tr>
</tbody>
</table>
There is no evidence of interventional strategies for drivers with dementia. Not enough evidence to support neuropsychological testing for evaluating driving risk. **Algorithm for evaluating driving competence and risk management in patients with dementia.**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Population/Tools</th>
<th>Main Findings and Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carr, D. B., &amp; Ott, B. R. (2010). The older adult driver with cognitive impairment: “It’s a very frustrating life.” <em>Journal of American Medical Association</em>, 303, 1632-2357.</td>
<td><strong>Dementia</strong>: Table of neuropsychological tests and test batteries to predict performance on road tests for dementia. Specific sensitivity and specificity and classification lacking in most studies. Includes expert recommendations of professional societies and consensus meetings. <strong>Summarizes the state of research on driving for dementia and implications for physicians.</strong></td>
<td></td>
</tr>
<tr>
<td>Bedard, M., Weaver, B., Darzins, P., &amp; Porter, M. M. (2008). Predicting driving performance in older adults: we are not there yet! <em>Traffic Injury Prevention</em>, 9, 336-341.</td>
<td>Used several large data sets to and individually analyzed tools and ROC curves: MMSE, Trails A time, UFOV and previous driving incidents were found to be significantly associated with Behind-the-Wheel. The UFOV had the highest specificity ratings but was still had limited predictive value. <strong>Important point:</strong> There is not one test that is sufficient to be used alone when making decisions.</td>
<td></td>
</tr>
<tr>
<td>Molnar, F. J., Patel, A., Marshall, S. C., Man-Son-Hing, M., &amp; Wilson, K. G. (2006). Systematic review of the optimal frequency of follow-up in persons with mild dementia who continue to drive. <em>Alzheimer Disease; Associated Disorders</em>, 20, 295-297.</td>
<td><strong>Systematic Review</strong>: There are no studies that focus on when to follow up with drivers with dementia. Three longitudinal studies reference periodic follow-up. Paper recommends that studies be completed and progression rates of dementia be used until studies done.</td>
<td></td>
</tr>
<tr>
<td>Bieliauskas, L. A. (2005). Neuropsychological assessment of geriatric driving competence. <em>Brain Injury</em>, 19, 221-226.</td>
<td><strong>Review of the literature</strong>: Indicates that the domains of vision, attention, and executive function are critical for driving. Simulators are promising. There should be an algorithm for regular testing and use the simulator as part of the evaluation.</td>
<td></td>
</tr>
<tr>
<td>Barrash, J., Stillman, A., Anderson, S. W., Uc, E. Y., Dawson, J. D., &amp; Rizzo, M. (2010). Prediction of driving ability with neuropsychological tests: demographic adjustments diminish accuracy. <em>Journal of the International Neuropsychological Society</em>, 16, 679-686.</td>
<td>Multiple linear regression model with the five assessments was significantly predictive of driving errors. Used raw scores and scores adjusted for demographic corrections. <strong>Important point to gain from the study:</strong> Better if used raw scores. If adjust for demographic corrections, diminishes the predictive accuracy.</td>
<td></td>
</tr>
</tbody>
</table>

### Key Studies with Diagnostic Categories: Dementia (In order of descending year published)

<table>
<thead>
<tr>
<th>Citation</th>
<th>Population/Tools</th>
<th>Main Findings and Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lafont, S., Marin-Lamellet, C., Paire-Ficout,</td>
<td>20 with early dementia and 56</td>
<td>Used composite indicator with three performance</td>
</tr>
<tr>
<td>L., Thomas-Anterion, C., Laurent, B., &amp; Fabrigoule, C. (2010). The Wechsler Digit Symbol Substitution Test as the best indicator of the risk of impaired driving in Alzheimer disease and normal aging. <em>Dementia and Geriatric Cognitive Disorders, 29</em>, 154–163.</td>
<td>controls, compared cognitive tests with on road performance (3 performance indicators).</td>
<td>indicators to analyze with cognitive measure is most predictive. Digit span substitution test was best measure to be used as screening (sensitivity 91.7% and specificity 81.2%).</td>
</tr>
<tr>
<td>Ott, B. R., Festa, E. K., Amick, M. M., Grace, J., Davis, J. D., &amp; Heindel, W. C. (2008). Computerized maze navigation and on-road performance by drivers with dementia. <em>Journal of Geriatric Psychiatry; Neurology, 21</em>, 18–25.</td>
<td>65 probable dementia, 23 possible dementia, 45 controls. Compared computerized mazes with on road test.</td>
<td>Total time to plan and complete the mazes were significantly correlated with BTW score. Highest correlations to BTW score were seen with the Trails A, trails B, Hopkins verbal learning, and hand tapping. Maze tests are not adequate as a stand-alone measure.</td>
</tr>
<tr>
<td>Berndt, A., Clark, M., &amp; May, E. (2008). Brief Report: Dementia severity and on-road</td>
<td>117 from memory clinic; age, MMSE, road test.</td>
<td>Those with moderate to severe dementia is equated with failed road test. Those with no or very mild get</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
<td>Methods</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Assessment: Briefly revisited. <em>Australasian Journal on Ageing</em>, 27, 157-160.</td>
<td>Molnar, F.J., Patel, A., Marshall, S.C., Manson-Hing, M., &amp; Wilson, K.G. (2006).</td>
<td>Clinical utility of office based cognitive predictors of fitness to drive in persons with dementia: A systematic review.</td>
</tr>
<tr>
<td>Systematic review: What are the psychometric properties of office based cognitive tests that would allow them to be used to assess fitness to drive with persons with dementia. 16 met inclusion criteria.</td>
<td>Adler, Rottunda, Christensen, Kuskowski, &amp; Thursas. (2006).</td>
<td>Driving Safe: Development of a knowledge test for drivers with dementia. <em>Dementia</em>, 5, 213-222.</td>
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<td>Prediction of on-road driving performance in patients with early Alzheimer’s disease. <em>Journal of American Geriatric Society</em>, 53, 94-98.</td>
<td>Brown, L.B., Ott, B.R., Papandonatos, G.D., Sui, Y., Ready, R.E., &amp; Morris, J.C. (2005).</td>
<td>75 drivers with dementia and 80 non demented drivers, rules of road and MMSE,</td>
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<td>Driver landmark and traffic sign identification in early Alzheimer’s disease. <em>Journal of Neurology and Alzheimer’s</em></td>
<td>Uc, E.Y., Rizzo, M., Anderson, S.W., Shi, Q., &amp; Dawson, J.D. (2005).</td>
<td>33 Alzheimer’s compared to 137 normal controls on cognitive tests, vision tests, on road drive to identify landmarks and traffic signs.</td>
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<td>Neurosurgical Psychiatry, 76, 764-768.</td>
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<td>21 dementia, 21 Parkinson’s, 21 control group; compared motor and cognitive function with on road performance.</td>
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<td>Sensitivity, judgment of line orientation predictors of total landmark and traffic sign identification.</td>
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<td>Dementia made significantly more errors on on-road than controls; Rey-Osterrieth figure was sensitive to poor on road performance, Trails A and B sensitive to dementia subjects.</td>
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<td>23 with CDR of .5 and 23 controls; Battery of screening measures compared with outcome measure of road assessment.</td>
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<td>Trails B, Maze navigation time, UFOV, letter cancelation significantly related to on-road for patient group; for control, only age. Regression showed maze navigation time, trails B time, and UFOV part 1 accounted for 46% of variance (Trails B added insignificantly). UFOV too challenging for even early dementia; Mazes may be good screening tool.</td>
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<td>Carr et al. (1998)</td>
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<td>Kapust, L. R., &amp; Weintraub, S. (1992).</td>
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Appendix D

NHSTA/AOTA Cooperative Agreement: The Pathways Project to Foster Occupational Therapist Engagement in Older Driver Rehabilitation
Expert Panel Meeting, Bethesda, MD, March 6-7, 2012

8:30 – 8:45 Introduction of Panel Members

The priority for this expert meeting is to develop criteria for referral to specialists to serve as guidance for program development. The objective is to develop pathways assuring a continuum of service for clients in diverse settings.

8:45 – 9:00 Objectives of the Expert Meeting: Outcomes Expected

Terms of Agreement: Consensus Guidelines: Evidence Statements and Percent of Agreement

Definitions of Terms/Model of Programs

Critical Information & Consensus Statements
- Table of Sample programs
- Algorithm: Handout Reference: AJOT
- Continuum of Action: Handout
- Models of Programs: Genesis, Vermont, Military
- Amy Lane and Elizabeth Green – Consensus Statements

9:00 - 12:00 Discussion

12:00 – 1:00 Lunch

Client Groups

Critical Information & Consensus Statements
- Medical fitness guidelines
- David Carr – Dementia
- Richard Marrottoli – General practice
- Sherrilene Classen – Parkinson’s disease
- Carol Wheatley – Dementia
- Donna Stressel – General practice
- Anne Hegberg – Clients needing driver modifications

1:00 – 4:00 Discussion

Role of Driving Simulation

Consensus Statements
- Sherrilene Classen – simulation
- Johnell Brooks – simulation & Physician survey

4:00 – 5:30 Role of driving simulations for intervention & assessment

Happy Hour – 5:30-6:30 Dinner at Cesco

Wednesday, March 7, 2012

8:30 – 9:00 Recap of previous day

Ethics Guidelines – Deborah Slater
The goal is to develop criteria so the actions of the generalist at the clients at the two ends of the spectrum; clearly functionally or clearly impaired (not the “gray” areas).

- When screening results are WNL (no impairment), does this support removing or not include driving on the problem list.
- When impairment is severe, can generalist make recommendation about fitness to drive (action on what they know).
- Actions could include report at the DMV level (whether it goes to the physician or other).

Critical Information & Consensus Statements:
- Assessment Table
- Johnell – Driving Health Inventory
- Michel Bedard – Assessment versus screening; assessments

9:00 - 12:00 Discussion
12:00 - 12:30 Break

**Education for occupational therapists**

Critical Information & Consensus Statements: Wendy, Miriam, Felicia’s work.

- Education and Credentialing– Wendy Stav
- Education for Generalists – Felicia Chew

12:30 – 2:00 Discussion
2:00 – 2:30 Wrap up and plans for outcomes.
Appendix E

**Criteria Based Action for the Medical Setting**

Evidenced-based Practice / Best Practices includes:

- Clinical Expertise
- Research Evidence
- Patient Values & Preferences

EBP

The consensus statements generated at this meeting will use all three of these components.

**Levels of Evidence for Action**

- **Level 1:** Evidence is relatively clear and allows for an evidence-based consensus statement.*
- **Level 2:** Evidence is suggestive enough to allow for a consensus statement.*
- **Level 3:** Evidence is not available or persuasive, but allow for guidance statements.#

No consensus achieved.#

* For Levels 1 and 2, the discussion should be:
  
  What do we need to make the consensus statement stronger?

# For Level 3 or no consensus, the discussion should be:
  
  What evidence needs to be collected to achieve consensus?

**VISION OF EXPERT MEETING: March 6-7, 2012**

The priority for this expert meeting is to develop criteria for referral to driver rehabilitation specialists to serve as guidance for program development.

The objective is to develop pathways assuring a continuum of service for clients in diverse settings.

**ONGOING THEMES:**

- “Criteria for Action”
- “Criteria for Referral”
- “Identifying Gaps in Practice”
- “Models for Delivery of Services”

Guidelines/suggestions need to be practical (efficient, effective, and affordable) for programs to implement.
Appendix F

Evaluating Driving as a Valued Instrumental Activity of Daily Living

The purpose of this translational research article is to illustrate how general practice occupational therapists have the skills and knowledge to address driving as a valued occupation using an algorithm based on the Occupational Therapy Practice Framework: Domain and Process (2nd ed.; American Occupational Therapy Association, 2008b). Evidence to support the model is offered by a research study. Participants were compared on their performance of complex instrumental activities of daily living (IADLs) and a behind-the-wheel driving assessment. A significant relationship was found between the process skills from the performance assessment and whether the driver passed, failed, or needed restrictions as indicated by the behind-the-wheel assessment. The evidence suggests that occupational therapists using observational performance evaluation of IADLs can assist in determining who might be an at-risk driver. The algorithm addresses how driver rehabilitation specialists can be used most effectively and efficiently with general practice occupational therapy practitioners meeting the needs of senior drivers.

Appendix G

![Diagram of Occupational Therapy Intervention: Clinical Judgment, Evidence, and Risk]

Interventions: Plan & Build Options for Mobility
- Maximize Skills & Abilities
- Self-Awareness Choice & Options
- Develop Transportation Alternatives
- Promote Driving Retirement

Dickerson & Schold Davis, 2011
Appendix H

NHTSA/AOTA Cooperative Agreement: The Pathways Project to Foster Occupational Therapist Engagement in Older Driver Rehabilitation
Expert Panel Meeting, Bethesda, MD, March 6-7, 2012

Consensus Statements: Results represent reflection and consensus from Expert Members

<table>
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<tr>
<th>Consensus Agreements: Process</th>
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<tr>
<td><strong>Level of Evidence Statements</strong></td>
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<tr>
<td>Evidence is strong and allows for an evidence-based consensus statement.</td>
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<tr>
<td>• 100% agreement</td>
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<tr>
<td>Evidence is suggestive and allows for a consensus statement.</td>
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<td>• 100% agreement</td>
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<tr>
<td>Evidence is conflicting, inconclusive, or not available; thus recommendations are based on clinical judgment and theory.</td>
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<td>• 100% agreement</td>
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<tr>
<td>No consensus achieved.</td>
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<td>• 100% agreement.</td>
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**Other statements**
What number of experts can disagree for us to still say consensus was reached?
• Result: 2 can disagree; 100% agreement

Will the group allow individuals to abstain from voting on a specific item without affecting the vote for consensus?
• Result: 79% = no; 21% = yes (3 disagree, no consensus)

After the meeting, will we accept votes from our absent members integrated in the totals: Dr. David Carr and Dr. Richard Marottoli?
• 100% agreement.

The MDs will be given a chance to vote in support or against each consensus statement decision made from this meeting.
• 100% agreement.

Physicians will be asked to vote on each consensus statements, when the vote does not change the vote (nothing will happen & included on vote) but if their vote changes the outcome, we will have a conference call, discuss, and revote (and we will re-decide the number of disagrees.
• 100% agreement.

**March 6, 2012: Later vote on physicians**
The group considers the two physicians, Dr. David Carr and Dr. Richard Marottoli, as important members of this consensus panel. Therefore, their “vote” will be included for each consensus statement that was acted upon. Votes will be totaled as 16 rather than 14. Since they are not present at the meeting, we would ask that they will read and “vote” on each statement. If the
consensus statements (100%) and one votes for and one votes against, it will remain a positive consensus statement. If the two physicians vote against a consensus statement, we will ask them to justify their position and that will be presented to all members to see if there is any change in the other members position (through conference/online). In preparation for that discussion, the panel will have the opportunity to voting on increasing the number of panel members that can “disagree.”

Do you agree with the physician statement on the provided page?

- Consensus achieved. Yes 93%; No 7%

### Definitions & Terminology Section

For each term, there was a vote to state the definition already indicated are 1) acceptable, 2) work on it at this meeting, or 3) defer to a post-meeting work group.

Driving rehabilitation:

- Results: 7% acceptable; 57% work on it; 36% defer

Driver rehabilitation specialist:

- Results: 29% acceptable; 29% work on it; 43% defer

Driver rehabilitation therapist:

- Results: 14% acceptable; 29% work on it; 57% defer

Driver rehabilitation specialist:

- Results: 71% acceptable; 14% work on it; 14% defer

Specialty Certification in Driving and Community Mobility:

- Results: 93% acceptable; 0% work on it; 7% defer

**Consensus Achieved.**

Driver Educator:

- Results: 71% acceptable; 7% work on it; 21% defer

Driver Instructor:

- Results: 64% acceptable; 0% work on it; 36% defer

Should the definitions differentiate between: Driver Rehabilitations and Driving Rehabilitation?

- Results: Yes 29%; No 71%

Language/terminology is an issue and we want to strive to be consistent so that the community and other professionals understand and this is a priority for future work.

- 100% agreement.

### ADED Section

ADED Best Practice Document is established benchmark from which all driver rehabilitation programs should be measured.

- Results 3/5/2012: Level 1-21%; Level 2-29%; Level 3-43%;
- Revote 3/5/2012 based on Yes/No: Yes 57%; No 43%
- Results 3/19/2012: Yes 63%; No 25%; Need to be discussed: 25% (n=16)

There is a need to differentiate programs based on their levels of service and compliance with ADED Best Practices.

- Results: Yes 93%; No 7% Consensus Achieved.
If program models are clearly defined, then there is a need for improved and understandable descriptors/definitions for the public and other stakeholders.

- 100% Agreement

There is a need to identify a level of education, training, or experience to use DRS as a credential.

- Results: Yes 93%; No 7%  Consensus Achieved.

There is a clear need for clear definition of DRS and who can use this title as compare to those who use the CDRS title.

- Results: Yes 93%; No 7%  Consensus Achieved.

There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.

- Results: Yes 93%; No 7%  Consensus Achieved.

### Client Groups

An attempt to determine the etiology of the dementing illness while identifying co-morbidities that can impact cognition should be made by a physician prior to referral for a driving evaluation.

- Results: Level 1 - 21%; Level 2 - 29%; Level 3 - 29%; No consensus - 21%

An individual with moderate to severe dementia should not drive.

- 100% consensus at level 1

Regardless of diagnosis, assessment and recommendations for optimal and safest community mobility should be provided.

- 100 consensus at level 3

Those with very mild or mild dementia may be appropriately referred for further testing when risk factors for unsafe driving are present.

- Consensus achieved at level 1.
- Results: Level 1 - 86%; Level 2 - 7%; Level 3 - 0%; No consensus - 7%

Although many professional organizations have made recommendations on fitness to drive based on dementia severity, there is no universally accepted measures of assessing dementia severity and few clinicians have been trained in assessing dementia severity.

- Results: Level 1 - 71%; Level 2 - 21%; Level 3 - 0%; No consensus - 7%

Brief cognitive screens can be adopted as a rough proxy of dementia severity and may be useful to consider the appropriateness of a referral, but individual tests should not be the sole determinant of final driving recommendations.

- Results: Level 1 - 71%; Level 2 - 14%; Level 3 - 7%; No consensus - 7%

Recent evidence-based reviews and algorithms on approaching fitness to drive have been recently published and typically identify at-risk drivers based on the history of the new onset of impaired driving behaviors that occur within the context of cognitive decline, the presence of...
impaired higher order IADL’s and/or cognitive screen/test findings that indicated impaired attention, visuospatial ability, visual search, or processing speed or visual closure.

- Results: Level 1 - 64%; Level 2 - 21%; Level 3 - 14%; No consensus - 0%

There is currently no consensus on what specific tests, scores, or cut-offs warrant a referral to a driving clinic for a given patient with dementia. If OT’s are willing to adopt interval likelihood ratios of individual cognitive tests and/probably calculators that combine multiple tests, then suggested cut-offs for appropriate referrals can likely be readily answered or at least suggested by combining several existing data sets across centers that have used similar outcomes.

- Results: Level 1 - 79%; Level 2 - 21%; Level 3 - 0%; No consensus - 0%

If the patient has a neurodegenerative dementia, mobility counseling (to include alternative methods of transportation) should start immediately anticipating that driving cessation will likely occur in the near future.

- Consensus Achieved
- Results: Level 1 - 86%; Level 2 - 7%; Level 3 - 7%; No consensus - 0%

Individuals who have been diagnosed with mild cognitive impairment or mild dementia should be referred for a driving evaluation.

- Results: Level 1 - 64%; Level 2 - 29%; Level 3 - 0%; No consensus - 7%

Individuals with moderate or severe dementia, as measured by the CDR should be counseled to stop driving as they do not meet the criteria for referral to a specialist.

- Results: Level 1 - 79%; Level 2 - 0%; Level 3 - 14%; No consensus - 7%

The generalist OT should assess the patient’s physical function including coordination, visual spatial skills, attention, concentration, orientation, memory, reasoning, judgment, and speed of information processing. The therapist should include functional assessments of these skills as the patient’s verbal functioning may not be a reliable indicator of their performance skills.

- Results: Level 1 - 64%; Level 2 - 21%; Level 3 - 0%; No consensus - 14%

Self-report regarding driving capability is often inaccurate; therefore observation of occupational performance is necessary.

- 100% consensus at level 1

The generalist OT should consult with the patient’s physician & team members to discuss the scope of the patient’s deficits and to develop a plan to monitor and address the patient’s driving over time. Include plans for re-assessment as the patient’s conditions declines. Provide the family with literature on the warning signs for driving cessation.

- Results: Level 1 - 79%; Level 2 - 7%; Level 3 - 7%; No consensus - 7%

Co-piloting, in which a passenger verbally assists the individual to drive or follow a route, is not recommended. The need for co-piloting is an indication that the patient should stop active driving, as verbal instructions are insufficient in a driving situation where a rapid response is required to prevent a crash.

- Consensus Achieved at level 1
- Results: Level 1 - 86%; Level 2 - 0%; Level 3 - 14%; No consensus - 0%
Regardless of the driving assessment outcome, when an individual is diagnosed with dementia, the general OT should start planning exploration of alternative transportations options early and begin to use these options to increase the person’s familiarity with them.

- Consensus Achieved at level 3
- Results: Level 1 - 0%; Level 2 - 7%; Level 3 - 93%; No consensus - 0%

The generalist and specialists need to weigh the person’s needs for independence and their safety concerns. Safety should always take priority over independence. The therapist needs to assist the patient and their family in transitioning to alternative forms of community transport, so that the patient can continue to participate in the community to the maximum extent possible.

- Results: Level 1 - 36%; Level 2 - 14%; Level 3 - 50%; No consensus - 0%

Occupational therapy practitioners need to know legal and ethical obligations related to driving and community mobility.

- 100% consensus at level 3

Drivers with PD who have **mild motor disability** as measured by low scores on the UPDRS Part 3, and no or few risk factors (anti-Parkinson drugs, >75 years of age), may be safe. However, we recommend that the individual who fits this profile and those who are newly diagnosed with PD:

- Undergo a baseline comprehensive driving evaluation
- Follow- up annually with repeat comprehensive driving evaluations
- Start planning for driving cessation because of the progressive nature of the disease
- Start conversations with the family about retirement from driving
- Start developing a plan for use of alternative transportation options.

- 100% consensus at level 1

For those with **severe motor impairment** and disease severity (high UPDRS Part 3 scores) and multiple risk factors (decreased information processing speed, e.g. scoring greater or equal to 3 on the UFOV risk index, impaired contrast sensitivity, scoring greater than 180 seconds on the Trails B, and scoring greater than 7.5 seconds on the Rapid Pace Walk) we recommend: 1) forfeiting the license, 2) mandatory reporting, and 3) travel training.

- 100% consensus at level 1

Research is in progress to provide better guidelines for the “middle” group: i.e., those with **mild to moderate motor disability** and several risk factors. This group is the most challenging and we recommend

- A required comprehensive driving evaluation
- Providing them with opportunities for rehabilitation, including behind-the-wheel training, compensatory strategies, driving restriction, self-regulation
- Providing them with strategies to address transitioning to non-driving including starting conversations about driving retirement, family involvement in driving retirement, consultation, referral for counseling
- Developing mobility plans for driving cessation.

- 100% consensus at level 2

When an individual has COPD, a referral for a driving evaluation is indicated if one or any of these are present: 1) cognitive decline is evident with either psychometric testing or while
performing other ADL, 2) concern is raised about driving safety through direct observation, family concern, or driving incidents, 3) when individual has difficulty maintaining oxygen saturation less than 90% at rest, 4) when the individual experiences dyspnea at rest or while behind the wheel, or 5) when a loading device is needed to manage a powered mobility device or oxygen needs to be secure.

- 100% consensus at level 3

When an individual has COPD, the driving rehabilitation specialist should monitor oxygen saturation while driving to measure the effects of driving tasks on oxygen levels in the blood. This information can be used to verify the need to drive with oxygen to improve cognition as well as heart and other organ functioning. Pulse oximetry is also an effective tool to demonstrate the effects of energy conservation (vehicle features, arm position etc.) and breathing techniques have while driving.

- 100% consensus at level 3

When an individual has COPD, the driving rehabilitation specialist’s recommendations are able to provide guidance on overall driving skills and safety including driving limits and compensatory techniques, as well as assistance with loading devices for power mobility devices, and oxygen storage.

- 100% consensus at level 3

Community mobility should be addressed with every occupational therapy client as part of the initial evaluation and most importantly as part of the discharge planning.

- 100% consensus at level 3

An individual with a non-functional lower limb, a lower extremity prosthesis, or an orthotic on a lower limb used for operation of vehicle should be referred for a driving evaluation.

- 100% consensus at level 3

An individual with a non-functional upper limb or an upper extremity prosthesis should be referred for a driving evaluation.

- 100% consensus at level 3

An individual with a spinal cord injury at any level should be referred early in the rehabilitation process for consultation with a driver rehabilitation specialist.

- 100% consensus at level 3

A client with a progressive condition which affects primarily sensation and/or motor function (i.e., multiple sclerosis, post-polio syndrome) should be referred to a driver rehabilitation specialist to determine a baseline need for adaptive equipment for their motor vehicle. The driver rehabilitation specialist can assist with planning for future needs and re-evaluation based on the progression of the condition.

- Consensus Achieved at level 3
- Results: Level 1 - 0%; Level 2 - 14%; Level 3 - 86%; No consensus - 0%

A client with a non-progressive condition that affects primarily sensation and/or motor function (i.e., cerebral palsy, spina bifida, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfect, arthrogryposis) should be referred to a driver rehabilitation specialist to determine
adaptive equipment needed as well as their potential to drive in the future. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the specialist early in the process will ensure comprehensive planning for community mobility for the client and family.

- Consensus Achieved at level 3
- Results: Level 1 - 7%; Level 2 - 7%; Level 3 - 86%; No consensus - 0%

**Occupational Therapy Education**

Driving rehabilitation is a multi-tiered complex practice area that requires advanced knowledge, skills and experience.

- 100% Consensus at level 3

Scientific evidence should be prominent in the education and professional development of driving rehabilitation specialists while individuals with higher levels of scholarship expertise should generate evidence that is useful to practitioners for integration for practice.

- Consensus achieved at 100% agreement. (N=16)

**Ethical Obligations**

Driving is a high volume, high risk activity and the changing demographics will result in increasing demand and opportunity for occupational therapy evaluation and recommendations. Occupational therapy practitioners are obligated to follow the ethical principles as applicable to practice.

- 100% Consensus at level 3

Occupational therapy evaluation identifies deficits in performance skills (and source, e.g. client factors) that affect ability to do daily activities (occupations). Driving is a daily occupation for a significant number of individuals across the entire lifespan.

- Consensus Achieved
- Results: Agree 93%; Do not agree 7%

The Occupational Profile (focused interview) should be part of the evaluation process and include/address driving if identified by client as a desired outcome.

- Consensus Achieved
- Results: Agree 93%; Do not agree 7%

Current, appropriate evaluation and assessment tools targeted to obtain meaningful data must be used and administered correctly.

- Consensus achieved at 100% agreement.

Occupational therapists and occupational therapy assistants have an obligation to work within their level of competence: Generalist occupational therapists are qualified to obtain data, assess skills related to driving, should take steps to manage risks relevant to driving and should be familiar with appropriate referral sources for more specialized evaluation (Principle 1I).

- Consensus achieved at 100% agreement.
Educational curricula prepare occupational therapists to assess impairment and safety issues with performance of daily occupations (e.g. driving and community mobility) from a musculoskeletal, sensory perceptual, cognitive, and psychosocial perspective.

- Consensus achieved at 100% agreement.

Data from occupational therapy evaluation and intervention identifies safety issues (requiring the therapist to address/document/make recommendations) related to ADLs and IADLs (e.g., bath transfers, meal prep): A client’s performance abilities/disabilities may impact ability to drive safely, if at all. Therefore, there is a professional and ethical obligation to identify and warn when safety deficits or risks are identified, including driving.

- Consensus achieved at 100% agreement.

Professional, clinical, and ethical reasoning are taught in occupational therapy educational programs and utilized in the clinic to evaluate data and make judgments about realistic, appropriate goals and strategies (or alternative options) to achieve them. This includes driving and community mobility.

- Consensus achieved at 100% agreement.

Principles in the *Occupational Therapy Code of Ethics and Ethics Standards (2010)* support the overarching ethical obligation to provide services to benefit client and avoiding harm. Driving is an important occupation but also has potential for harm to client as well as general public and must be considered by the practitioners.

- Consensus achieved at 100% agreement.

Impaired cognition has been shown in the literature to increase difficulty and risk for driving (Carr, 1997; Dubinsky, Stein, & Lyons, 2000; Love, Welsh, Knabb, Scott, & Brokaw, 2008, p. 536). Impaired cognition also has safety implications for ADLs and IADLs. The challenge is gauging the potential risk that may result from the level of impairment and requires data, professional training and professional judgment. This is also true for vision and physical impairments.

- Consensus achieved at 100% agreement.

All principles of the Code and Ethics Standards have relevance for addressing and warning about potential driving impairment.

- Consensus achieved at 100% agreement.

Case law exists and sets precedent for professional obligation to warn to based on foreseeable likelihood of danger or harm due to impaired client.

- Consensus achieved at 100% agreement.

Confidentiality is presumed in client/therapist relationships but there are legal and ethical considerations that supersede this principle and should lead to communication, documentation of recommendations and possible reporting.

- Consensus achieved at 100% agreement.

Reimbursement should not influence decision making related to providing driving services.

- Consensus achieved at 100% agreement.
Occupational therapists have an ethical responsibility to know the laws in their state that related to their reporting obligations and options with impaired drivers.

- Consensus achieved at 100% agreement.

If the therapist reports the patient’s name to the DMV, it is the therapist’s ethical responsibility to make every effort to inform the patient that he/she is doing so.

- Consensus achieved at 100% agreement.
- 100% Consensus at level 3

**Screening and Assessment**

The ethical application of research knowledge depends on the critical appraisal of the research, its replication, and adequate synthesis.

- 100% Consensus at level 3

Occupational Therapists need to apply a framework to identify the criteria required to select the tools best suited to their needs and practices.

- 100% Consensus at level 3

A decision about continued, restricted, or cessation of driving should never be made on the results of one tool in isolation, as there is not enough evidence on any one tool to make a decision.

- 100% Consensus at level 1

In the hands of a general practice occupational therapist, screening/assessment tools serve as criteria for referral and action. In the hands of the driver rehabilitation specialist, the same tools can contribute to a decision for fitness to drive.

- 100% Consensus at level 3

Some screening tools appear to hold more promise than others. Therapists should use evidence-based tools in making decisions.

- 100% Consensus at level 2

Occupational therapy generalist should consider the multi-factorial nature of someone’s condition and potential for improvement.

- 100% Consensus at level 3

If the client is determined fit to drive the occupational therapists need to address future community mobility issues including enhancing safe driving as well as transitioning to non-driver status over time.

- Consensus Achieved at level 3
- Results: Level 1 - 7%; Level 2 - 0%; Level 3 - 93%; No consensus - 0%

If the client is determined unfit to drive, the occupational therapist should provide intervention or an appropriate referral for intervention and planning to address transportation options and community mobility.

- Consensus Achieved at level 2
- Results: Level 1 - 0%; Level 2 - 93%; Level 3 - 7%; No consensus - 0%
Measurement tools that are developed specifically for a diagnostic group should be interpreted carefully when used with other diagnostic groups unless there is sufficient evidence supporting the use of the tool with this other group.

- 100% Consensus at level 1

Measurement tools that are developed based upon specific outcomes (i.e., crash versus driving performance) should be interpreted carefully when used to assess other outcomes.

- 100% Consensus at level 1

Measurement tools must be administered according to the protocol in order to use the norms and/or evidence.

- 100% Consensus at level 1

Processes should be followed for occupational therapy generalists to start the driving discussions with sufficient clinically related evidence.

- 100% Consensus at level 3

**Driving Simulation N = 16**

Due to driving simulator adaptation, unfamiliarity and anxiety with technology, and a lack of standardization and validation of outcome metrics, driving simulators should not be the sole determinant of fitness to drive for older adults.

- Consensus achieved at 100% agreement.

Occupational therapists using driving simulation need to seek and obtain the appropriate education and training to use this tool effectively, appropriately, and with the knowledge to minimize simulation sickness.

- Consensus achieved at 100% agreement.

Carefully designed and tested driving simulation activities may offer controlled and repeatable driving conditions for intervention that are unavailable or limited in open-roadway conditions, allowing clients/patients to practice the abilities and skills that will be required for driving during the rehabilitation process understanding that the evidence to support this claim is still emerging.

- Consensus achieved at 100% agreement.

Simulators may be valuable as part of a more comprehensive assessment.

- Consensus achieved.
  - Results: Agree 88%; Disagree 13%
  - Issues to be discussed: 25%

Driving simulators can be used as a tool to determine impaired visual, cognitive, and motor abilities underlying the task of driving when used by an occupational therapist knowledgeable and skilled in its use.

- Consensus achieved.
  - Results: Agree 88%; Disagree 13%
  - Issues to be discussed: 6%
Driving simulators are useful and safe to test applications, such as environmental design and in-vehicle technologies.

- Results: Agree 69%; Do not agree 13%; Issues to be discussed: 25%

Driving simulators are useful for occupational therapists in determining aspects of driving performance in some high-risk groups (e.g., those with severe stages of Parkinson’s disease), where testing on the road will be deemed unsafe.

- Results: Agree 44%; Do not agree 31%; Issues to be discussed: 44%

Interactive driving simulators can detect differences in impaired versus control groups.

- Results: Level 1 - 44%; Level 2 - 31%; Level 3 - 13%; No consensus - 6%; Issues to be discussed 19%

Simulator sickness is a real and uncomfortable phenomenon that may affect clients during their simulated drive. As such, it must be understood, managed, prevented, and reduced through simulator sickness mitigation strategies.

- Results: Level 1 - 75%; Level 2 - 19%; Level 3 - 0%; No consensus - 0%; Issues to be discussed 6%
Appendix I

NHTSA/AOTA Cooperative Agreement: The Pathways Project to
Foster Occupational Therapist Engagement in Older Driver Rehabilitation
Expert Panel Meeting, Bethesda, MD, March 6-7, 2012

Consensus Definitions

Stakeholder Organizations for Definitions:
With the long-term goal of having consistent terminology across organizations, can we agree on what organizations need to collaborating* or be informed+ about definitions related to driver rehabilitation?

Transportation Research Board*
American Occupational Therapy Association*
The Association for Driver Rehabilitation Specialists*
National Mobility Equipment Dealer Association*
American Occupational Therapy Foundation
National Board for Certification in Occupational Therapy
American Association of Motor Vehicle Administrators+
National Highway Traffic Safety Administration+

American Medical Association+
Gerontological Society of America+
American Society of Aging+
AARP+
American Automobile Association+
Insurance Institute on Highway Safety+
Vocational Rehabilitation+
Veterans Administration+
Accreditation Council of Occupational Therapy Education+
State Departments of Transportation
All Medical Advisory Boards+
Centers for Medicare and Medicaid+
National Institutes of Health+
Federal Highway Administration+
Driving School Association of the Americas+

Suggested edits in [add/delete/change]

I. Critical Definitions for the Section on Models of Programs
1. Driving Rehabilitation. [Add: A profession that uses adaptive equipment, specific skills and techniques in training or intervention to restore or develop an individual’s ability to effectively drive a motor vehicle, independently, and in accordance with the licensing regulations in the state.]
2. Driver Rehabilitation Specialist: A specialist who "plans, develops, coordinates, and implements driver rehabilitation services for individuals with disabilities"
3. **Driver Rehabilitation Therapist:** An allied health professional with specialized training, experience, and credentials in driver rehabilitation services, including evaluating and training people with disabilities in driving or safe transportation (Pierce, 2002).

4. **Certified Driver Rehabilitation Specialist (CDRS):** An individual who meets the educational and experiential requirements and successfully completes the certification examination provided by the Association of Driver Rehabilitation Specialists (ADED, 2004).

5. **Specialty Certification in Driving and Community Mobility (SCDCM):** A portfolio based certification based on competencies and criteria that represent knowledge, critical and ethical reasoning, and interpersonal and performance skills that are specifically geared to the practice of occupational therapy in the specialized area of driving and community mobility (AOTA, 2012).

6. **Driver Educator (DE):** A professional with a college degree in education with specialized study in driver education (Stav, Hunt, & Arbesman, 2006).

7. **Driving Instructor (DI):** An individual with a high school degree and a clear legal and driving record who has completed a driver education training program and has been licensed as a driving instructor by the state motor vehicle administration (Stav, Hunt, & Arbesman, 2006).

### II. Critical Definitions for the Section on Driving Simulation

1. Driving Simulator:
2. Interactive Driving Simulator
3. Simulated driving (videos, games)
4. Virtual reality

### III. Critical Definitions for the Section on Screening and Assessment

1. **Screening**
   i. Self-screening
   ii. Proxy screening
   iii. Evaluator screening

2. **Comprehensive Driving Evaluation:** A comprehensive assessment of a client’s knowledge, skills, and abilities that includes: 1) interview, obtain medical and driving history) a clinical assessment with physical, cognitive, vision, and perception components, 2) an on road component if appropriate based on the clinical assessment, 3) an outcome summary, and 4) [delete: an intervention plan] [change: goals and plan].

3. **Driver Evaluation:** A comprehensive assessment of an individual’s abilities and/or potential to become a safe and independent driver. The driver evaluation will include screening (medical history, driving history, driver license status, etc.), clinical evaluation (physical functioning, vision and visual perception and assessment of cognition, etc.), and wheelchair seating, where applicable, as they pertain to the functional skills necessary to safely operate a motor vehicle. Driver evaluation will also include an on the road assessment of the individual in an actual driving environment using equipment similar to that which will be recommended. (ADED,
4. **Clinical assessment**: [Question: is this the same as pre-driver’s evaluation?] The administration of specific tools or instruments used during the first phase of the evaluation process for driving or community mobility. These may include an occupational profile and measures of performance skills, performance patterns, contexts, activity demands, and client factors (AOTA, 2005). [Add: May also be referred to as “office based tests”]. [Comment: definition may not meet ADED best practice guidelines]

5. **Closed course**: A roadway, [add: racetrack.] or parking area, not generally accessible to the driving public, where behind the wheel driving assessments and training are performed. [Add: may also be referred to as “off road.”][not add: Off road is clinical portion]

6. **Naturalistic context**: The environment, [add: vehicle.] and conditions in which driving and community mobility actually occur.

7. **Open Course**: A behind the wheel driving assessment done in a public traffic environment. If performed in the driver’s personal location referred to as [delete: Naturalistic] context. (may be in driver’s location, but if DRS with person, not make it naturalistic)

8. **Off road**: A roadway or parking area, not generally accessible to the driving public, where behind the wheel driving assessments and training are performed. May also referred to as “closed course”. [delete: combine with closed course][clarify: off road with clients may be those clients who are not ready for public roads; the eval has moved beyond a clinical evaluation.]

9. **On Road**: A contextually based test that allows the occupational therapy driving rehabilitation specialist to observe actual driving performance (Stav, Hunt, & Arbesman, 2006).[change: needs to be redefined if road test is not standardized, what is the minimum criteria if not standardized.][change: cannot limit to an occupational therapy road evaluation.]

10. **Evidence-based tools/ batteries**

IV. **Critical Definitions for the Section on Occupational Therapy Education**

1. **Driver education**: A process facilitated by a professional in a classroom and in-vehicle setting whereby a person learns the knowledge, attitude, and skills to be a safe driver (Stav, Hunt, & Arbesman, 2006).

2. Continuing education: AOTA, ADED, State associations, University based

3. What do we call Susan Pierce’s two week training?

4. The role of mentorship.

5. The role of shadowing

*Should this be a mini-grant?

**References:**


Appendix J

Results of DRS Feedback from ADED Members on Program Models

Model A:
Consider a program or practice setting that provides all of the following:
1. all components of the driving evaluation including clinical and on road assessments,
2. vehicle or equipment evaluations, recommendations, and “checkout,”
3. in-vehicle training for novice drivers or vehicle modification training,
4. licensing assistance including using the program’s modified vehicle for specialized testing, &
5. transportation counseling.

Model B:
Consider a program or practice setting that provides a smaller scope of services than described above such that the service has:
1. has one or two vehicles,
2. therapists may have other responsibilities in addition to driving, and
3. the focus may be only on assessment and/or training with vehicle modifications limited to hand controls.

Model C:
When a program has occupational therapists providing the clinical assessment while certified driving instructor or driving educator provides the behind the wheel vehicle evaluation.

**Model D:**
If rehabilitation and training would be provided by a combination of occupational therapists and driving instructors working together, as well as the assessments described above.

**Model E:**
In this model, the general practice occupational therapist receive referrals for driving or mobility assessment and may have a specialized skill set, but are not driver rehabilitation specialists. The generalist(s) evaluate the client using selected screening/assessment tools with cut off points, agreed upon by the generalist and the driver rehabilitation specialist, and referral to the specialist is based on need according to test results.

**Model F:**
In this model, the providers would be driving educators or driving instructors providing community based driving orientation, drivers education, skill practice for novice drivers without medical conditions, evaluation or skills practice for older drivers without a significant medical condition, or drivers who need training with vehicle devices as determined by a medical professional.
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Appendix L

Program Model Survey
Survey of ADED membership
January 2012

Question #1: service expectation of a driver rehabilitation program

Consensus Statement #1

- ADED’s Best Practice document is the established benchmark from which all driver rehabilitation programs should be measured.

Model A Program:
- Clinical and on road
- Vehicle/equipment evaluation
- Vehicle training
- Licensing assistance
- Transportation counseling

Model A-Comments

- Not every program has CT—keep out of title
- Should include training
- Good descriptive titles, yet dislike length
- Consider the consumer and general public
  - Comprehension of this type of program
  - Possible confusion in using community mobility
  - Name of program will still need to be defined

Model B Program:
- Smaller than Model A
- One or two vehicles
- Therapists have other responsibilities
- Focus on assessment and or training with vehicle modifications limited to hand controls.
Model B-Comments

- Again- Not every program has OT-keep out of title
- Limited or Basic in title has negative connotation-dislike
- Model A and Model B are very similar in scope

Model C-Comments

- Some confusion on whether OT accompanies the DE/DI on the road
- Splitting hairs-what does it matter who does what, if the service is provided
- Model implies evaluation only-no training, no “rehabilitation”
- Programs should spell out what services are offered.

Model D-Comments

- Same as Model C.
- Names cannot be too long or confusing for public

Model E-Comments

- General practice OT provides screening with established cut off points and referral to driver rehabilitation specialists based on need according to testing.
Model E-Comments

- What is difference in OT Screening vs. Assessment - not clear
- This model is an OT eval with reference to driving
- Therapists who call themselves DRS must have documented training

Model F Program:
- Driver educator/instructor provide community based driving orientation, education, novice driving instruction, older driver skill improvement, equipment training

Model F-Comments

- Driving School
- Should not include "adaptive driving" in this model.
- Some schools do not want to train drivers with adaptive equipment.

Awareness and Effort

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<th>Effort focused on project</th>
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<td>n = 132, Range = 0%-100% (whole range), Mean = 49% (SD=18.4)</td>
<td>n = 134, Range = 0%-100%, mean = 68% (SD=22.5)</td>
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<td>75-100% = 21%</td>
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41% of the respondents think there should be significant effort on this task.
60% indicate effort of at least 51%

Additional Comments on Models

- General consensus for defining programs
  - Types of programs
  - Distinguish clinical only vs. clinical and on-road
  - Who provides the services
    - Statements for and against specific discipline in title
    - Allied Health vs. Traffic Safety/Education
    - OTs vs. Other Allied Health providers

Final Comments on Survey

- Concerns about DRS vs. CDRS
- How can we distinguish levels of service?
- Define key terms and language and use them (ADED, ADTA, other agencies)
- Keep it simple for the consumer and public
- Program model titles are nebulous - will still need descriptors of programs and definitions
Consensus Statements

- #2: There is a need to differentiate programs based on their levels of service and compliance with ADED Best Practices.
- #3: Initiate process toward differentiating program models:
  - Focus group session at ADED conference
  - Survey related professionals, consumers, stakeholders
  - Initiate development of models, use of expert panel?
  - See attached example

Consensus Statements

- #4: If program models are clearly defined, then there is a need for improved and understandable descriptors/definitions for the general public and related stakeholders.
- #5: There is a need for clear definition of DRS and who can use this title, as compared to those who use the CDRS title. There is a need to identify a level of education, training or experience to use DRS as a credential.

Consensus Statements

- #6: There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.
Appendix M

Developed for TBI Driving Screen for Generalist OTs

AOTA Driving Consensus Conference 2012

Summary of the project titled: Driving Screening, Treatment, and Referral for Generalist Occupational Therapists: Clinical Recommendations for Clients Following Traumatic Brain Injury

Developed by: All Branches Occupational Therapy Consortium (ABOTC) TBI Driving Task Force (alphabetical): Ms. Cindy Deleon-Bell, CDR Laura Grogan, Ms. Tamatha Gallegos, Ms. Mary C. Guardia, LT Joseph S. Otto, Ms. Deirdre Peters, Ms. Theresa Prudencio, and Dr. Erica B. Stern. Other Contributors: Ms. Elin Schold Davis, CPT Tammy Phipps

Project Purpose: To provide clinical recommendations to generalist occupational therapists in the Military Health System continuum (e.g., rehabilitation clinic through Warrior Transition Unit) in regard to screening, treatment, and referral of clients regarding driving following traumatic brain injury.

Project materials are:

- The narrative. Offers background and describes cutoff scores and how to use the project materials.
- The table titled “Generalist Occupational Therapist Driving Screen Clients with Mild/Moderate Traumatic Brain Injury: Sources and Criteria”. Describes the recommended measures to be used to screen driving-related state and medical requirements, and performance skills for clients with TBI who are requesting to drive. It also lists other health care professionals who may be able to provide these data, the sources to access screening tools and learn procedures, and the criteria and cutoff scores for classifying a client’s status. Where evidence was available, it was used to recommend the measure of choice and cutoff scores. Where evidence was not available for a measure’s interpretation, the measure’s results are used descriptively. Clinicians should not replace listed measures with unlisted measures.

As measures are created and validated, occupational therapists are encouraged to contact the ABOTC to have the measure vetted, before including it as part of the screen. Similarly, the ABOTC plans to review the screen at least every three years to ensure that best evidence guides best practice.

- The decision flowchart titled “Generalist Occupational Therapist Driving Screen Series for Clients with Mild/Moderate Traumatic Brain Injury”. Describes three hierarchical levels of driving measures and how results of these measures can be weighed to decide when generalist occupational therapy treatment is appropriate, when referral to a driving rehabilitation specialist (DRS) is indicated, and when the team should be
consulted toward recommending to the client’s medical doctor (MD) that the client cease driving.

- The “Clinician Screening Forms”. Are state specific summaries reporting the minimum licensing requirements and any governmental medical requirements for persons post-TBI. They are meant to guide the generalist occupational therapist through
Consensus Statements

Amy Lane and Liz Green

1. ADED’s Best Practice document is the established benchmark from which all driver rehabilitation programs should be measured.

2. There is a need to differentiate programs based on their levels of service and compliance with ADED Best Practices

3. Initiate process toward differentiating program models:
   • Focus group session at ADED conference
   • Reach out to related professionals, consumers, stakeholders
   • Initiate development of models, consult with expert panel
   • See attached example

4. If program models are clearly defined, then there is a need for improved and understandable descriptors/definitions for the general public and related stakeholders.

5. There is a need for clear definition of DRS and who can use this title, as compared to those who use the CDRS title. There is a need to identify a level of education, training or experience to use DRS as a credential.

6. There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.
Do Not Distribute Outside OT Working Group: (Review has copyrighted material and if kept in the consensus statement, may need approval from Journal/Authors).

Best practices guiding your decision making for screening, assessment and referral when addressing fitness to drive with respect to the diagnosis of Dementia.

It is important to first define what is meant by the term dementia. Dementia is a syndrome or group of disorders that can be defined as having symptoms affecting intellectual and/or social abilities severe enough to interfere with daily functioning. Typically, criteria for dementia have required a decline in at least two unique cognitive domains in addition to the presence of social, and/or occupational and/or functional impairment (1). There exists present and newly proposed criteria for diagnosing mild cognitive impairment (2, 3), dementia (4, 5), and AD (6, 7) making it difficult for the practicing clinician to know how to diagnose and/or treat specific causes for dementing illnesses.

It is still a reality that the specific cause(s) of the underlying cognitive impairment or dementia may not be properly diagnosed or may be undiagnosed. Etiologies for dementing illnesses may include treatable causes of cognitive decline (e.g. sedating medications, undiagnosed sleep apnea, sensory deprivation, depression) or static conditions (e.g. brain injury/stroke). For any OT practitioner that is evaluating an older adult driver with a dementing illness, one must be cautious in concluding the patient has a progressive neurodegenerative condition such as Alzheimer’s Disease (AD).

The OT practitioner may be the first professional to identify or raise the issue of a new dementing illness based on the interview with the patient, family and/or based on the results of cognitive testing. Even when the diagnosis of a progressive neurodegenerative disease is not in doubt, cognition may be improved or stabilized for a period of time by addressing co-morbidities and/or treatment with specific AD medications (if indicated). Thus, referral back to the primary care physician and/or a subspecialist (e.g. neurologist, geriatrician, psychiatrist) to obtain a specific diagnosis, address co-morbidities and/or provide the patient/family with education and appropriate pharmacological treatment, may be as critical as the decision to refer to a driving rehabilitation specialist/clinic. The etiology of the dementia would also be important in the context of the driving clinic evaluation, since any driving decisions based on performance (off road and/or on-road) should be done with knowledge of the probable cause and whether the condition is anticipated to progress, improve and/or stabilize over time.
There have been many review articles on fitness to drive in dementia over the past decade (8-11). Together, these articles cite many unique references, so interested readers are referred to these thorough reviews for background information.

There have also been many consensus statements on fitness to drive and dementia from a myriad of professional organizations (Table 1). These driving recommendations are usually based on the level of dementia severity. Unfortunately, the average joe practitioner is rarely trained on how to rate dementia severity, thus rendering guidelines based on dementia severity limited.

Perhaps a more practical approach than consensus statements from a panel of experts, would be to provide some practical measuring sticks to assess dementia severity for practitioners in the field while we await more evidence-based research efforts in this area. Unfortunately, there is currently no consensus in the literature on determining dementia severity. The Global Deterioration scale (26) and the Functional Assessment Staging (FAST) (27) scales rate dementia severity and has been adopted by the National Alzheimer’s Association. However, to our knowledge, studies have not been done relating the GDS/FAST to driving fitness in demented patients, although there is some data associated with the GDS level and driving cessation. The Clinical Dementia Rating (CDR) Scale (28) is a commonly utilized scale in research, and CDR ratings have been utilized in several studies on fitness to drive and dementia. Clinicians interested in obtaining training on this scale can be referred to the CDR website (29). However, the CDR take times (at least 30-45 minutes), experience, and an informant making it impractical as a brief screening tool for a clinician in the field. However, the rating scale (see Table 2) may be useful to review when attempting to put easily adopted cognitive screens/tests in the context of the dementia ratings (see norms in Table 3). Thus, brief tests of cognition may serve as “rough” estimates of dementia severity. Although any individual score on a cognitive test should not be the sole determinate of driving ability due to variability in performance, education, language issues, etc., average test scores on common cognitive screens (e.g. MMSE, SBT) may provide the OT in the field with an “estimate” of dementia severity, and possibly with decisions on whom to refer to a driving clinic.

In addition, there have been two recent and fairly exhaustive evidenced-based reviews on this topic published in the past two years in physician-based journals (23, 30). An OT based practitioner could adopt either of these algorithms (see Figures 1, 2) proposed in these reviews as the basis of referral to a driving specialist (e.g. given the caveats in the first paragraph). Supporting evidence for these approaches can be found in each of the articles. In other words, there may be no need to reinvent the (steering) wheel, until additional research is forthcoming.

Thus, a hybrid approach for a practitioner in the field might be to use a brief cognitive screen to identify those individuals that may have a given level of dementia severity. Those drivers with normal scores on the screens or scores consistent with a moderate level of dementia severity may not meet criteria for a referral to a driving evaluation clinic. Those scores that do appear to be in the range for very mild or mild dementia could be referred to a driving clinic, if there were the presence of any “risk factors” as noted in the algorithms in Figure 1 or 2.
We also acknowledge that there is a paucity of data linking road test outcomes to prospective at-fault crash data and that many experts in the traffic safety field would not necessarily be supportive of simulator and/or road test outcomes to determine fitness-to-drive in demented patients. However, studies using crash data to determine fitness to drive may never be practical and/or appropriate for individuals with AD. For instance, let’s examine a similar situation that may occur with the IADL task “finances.” When an adult child observes their parent with AD make mistakes with the check book or give multiple donations to the same charity due to episodic memory impairment, the natural step is to “take away the checkbook” and finances so the demented individual is no longer responsible for that task before a disaster occurs (e.g. utilities are turned off or the entire savings are lost). Similarly, when an adult child observes a concerning decrement in driving behavior in their demented parent and/or an OT driving evaluator observes unacceptable driving behavior on a road test with a skill that has been overlearned, there usually is an intervention to take the older adult off the road before a crash (or another event) occurs. Thus, we would consider an “at-fault crash” in an individual with AD a downstream event and something that should be avoided when there are warning signs, given the physical vulnerability of a motor vehicle crash in this group and for public safety.

Psychometric tests that predict pass or fail on a road test or simulator, should try to spare or “save” safe drivers (minimizing cell “b” or false positive tests) from inappropriate referrals. In this way, cut-offs could be derived to parse the sample into a) those that should not be referred for further testing and may be safe, b) those that would likely fail and might be appropriate for counseling for driving cessation, and c) an indeterminate group that could be referred on for further testing. AUC/ROC curves can be derived for individual tests, along with probability calculators that would predict pass/fail using multiple tests and/or adopting likelihood ratios for individual/group tests to determine referral patterns. This approach has been pursued in recent studies in the literature (37, 38, 39), making it possible to combine datasets from several sites to create more robust findings.

Consensus Statements:

1. An attempt to determine the etiology of the dementing illness while identifying co-morbidities that can impact cognition should be made by a physician prior to referral for a driving evaluation.
2. For those that do perform dementia severity assessments, an individual with moderate dementia should not drive. Those with very mild or mild dementia may be appropriately referred for further testing when risk factors for unsafe driving are present.
3. Although many professional organizations have made recommendations on fitness-to-drive based on dementia severity, there are no universally accepted measures of assessing dementia severity and few clinicians have been trained in assessing dementia severity.
4. Brief cognitive screens can be adopted as a rough proxy of dementia severity and may be useful to consider the appropriateness of a referral, but individual tests should not be the sole determinant of final driving recommendations.
5. Recent evidenced-based reviews and algorithms on approaching fitness to drive in dementia have recently been published and may be useful to the OT practitioner in the field. These approaches typically identify at-risk drivers based on history of the new onset of impaired driving behaviors (e.g. at-fault crashes, moving violations, failure to scan for traffic) that occur within the context of the cognitive decline, the presence of impaired higher order IADL’s (e.g. cooking, finances), and/or cognitive screen/test findings that indicate impaired attention, visuospatial ability, visual search or processing speed, or visual closure (e.g. typical suspects are Clock Drawing Tasks, Maze tests, Trails A/B, UFOV subtest 2, Motor Free Visual Perceptual Test).

6. There is currently no consensus on what specific tests, scores, or cut-offs warrant a referral to a driving clinic for a given patient with dementia. If OT’s are willing to adopt interval likelihood ratios of individual cognitive tests and/or probability calculators that combine multiple tests, then suggested cut-offs for appropriate referrals can likely be readily answered or at least suggested by combining several existing data sets across centers that have used similar outcomes.

7. If the patient has a neurodegenerative dementia (e.g. AD), mobility counseling (to include alternate methods of transportation) should start immediately, anticipating that driving cessation will likely occur in the near future.

Questions that still need to be answered. Or concepts that need to be discussed. Or “If I had a million dollars.”

1. What are the most important driving behaviors or traffic skills that we should measure during road testing or in driving simulators and how can we operationalize them?
2. How can we move toward adopting similar qualitative and quantitative outcome measures when performing road tests or simulators in the community and research studies?
3. What is an unacceptable crash rate? How do we define failure on a road test or a simulator?
4. What cut-offs of common brief feasible cognitive or functional tests are useful to determine who should be referred for a road test or simulator study?
5. What percent of the sample do we need to characterize in order for the test to be useful for clinicians?

References

4. Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV) diagnostic criteria for dementia of the Alzheimer's type.
20. Lyketsos CG, Colenda CC, Beck C et al. Position statement of the American Association for Geriatric Psychiatry regarding principles of care for patients with


### Table 1: Expert recommendations of professional societies and consensus meetings.

<table>
<thead>
<tr>
<th>Expert Group</th>
<th>Driving Cessation Recommended</th>
<th>Specialized or Detailed Assessment Recommended</th>
<th>Other Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Psychiatric Association: Practice guideline, 1997 (14)</td>
<td>Moderate to severe impairment</td>
<td>Mild dementia plus significant deficits in judgment, spatial function, or history of at-fault motor vehicle</td>
<td>Patients with milder impairment should be urged to consider giving up driving.</td>
</tr>
<tr>
<td>American Association of Geriatric Psychiatry, Alzheimer’s Association, American Geriatric Society, 1997 (15)</td>
<td>Advanced dementia</td>
<td>Patients with a history of traffic mishaps or more significant spatial and executive dysfunction</td>
<td></td>
</tr>
<tr>
<td>Canadian Consensus Conference on Dementia, 1999 (16)</td>
<td>All patients: Based on focused medical assessments, physicians should</td>
<td></td>
<td>Patients with AD should plan early for eventual cessation of driving. Physicians should advocate for the establishment and access to affordable, validated performance-based driving assessments.</td>
</tr>
<tr>
<td>American Association of Automotive Medicine/ National</td>
<td></td>
<td></td>
<td>Physicians should advocate establishment and access to</td>
</tr>
<tr>
<td>Source</td>
<td>Criteria</td>
<td>Assessment</td>
<td>Reassessment Recommendation</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Highway Transportation Safety Association Consensus meeting:</td>
<td>encourage early planning for eventual cessation of driving in persons with dementia.</td>
<td>affordable, validated, and performance-based driving assessments.</td>
<td></td>
</tr>
<tr>
<td>Guidelines for physicians, 2000 (17)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Academy of Neurology: Practice parameter, 2000 (18)</td>
<td>Mild dementia defined as Clinical Dementia Rating (CDR) = 1 or greater (Standard)</td>
<td>Questionable or very mild dementia defined as CDR = 0.5: referral for a driving performance evaluation by a qualified examiner (Guideline)</td>
<td>Reassess every 6 months (Standard)</td>
</tr>
<tr>
<td>Alzheimer’s Association: Position statement, 2001 (19)</td>
<td>When the individual poses a serious risk to self or others.</td>
<td>If there is concern that an individual with AD has impaired driving ability, and the person would like to continue driving: perform a formal assessment of driving.</td>
<td>A diagnosis of AD is not, on its own, a sufficient reason to withdraw driving privileges. The determining factor should be an individual’s driving ability.</td>
</tr>
<tr>
<td>American Association of Geriatric Psychiatry: Position statement, 2006 (20)</td>
<td>Strongly consider for all patients with AD, even in mild dementia.</td>
<td>Those with very earliest manifestations of dementia: refer for driving performance evaluation by a qualified examiner</td>
<td>Reassess dementia severity and appropriateness of continued driving every six months.</td>
</tr>
<tr>
<td>Canadian Medical Association: Driver’s guide, 2006 (21)</td>
<td>Moderate-to-severe dementia</td>
<td>Mild dementia: comprehensive off-road and on-road test at a specialized driving center</td>
<td>Patients deemed fit to drive should be re-evaluated and possibly retested every 6 to 12 months.</td>
</tr>
<tr>
<td>Australian and New Zealand Society for Geriatric Medicine, 2009 (22)</td>
<td>Moderate-to-severe dementia</td>
<td>Mild dementia: comprehensive off-road and on-road test at a specialized driving center</td>
<td>Special mention made of the unique problems attributed to dementia subtypes (e.g. FTD, DLB).</td>
</tr>
<tr>
<td>Source</td>
<td>Severe dementia incompatible with driving</td>
<td>Mild and moderate dementia may be compatible with safe driving.</td>
<td>Do not recommend license restriction or co-pilot, DMV’s may consider testing high risk individuals</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-----------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Driver Fitness Medical Guidelines, NHTSA, 2009 (23)</td>
<td>Severe dementia incompatible with driving</td>
<td>Mild and moderate dementia may be compatible with safe driving.</td>
<td>Do not recommend license restriction or co-pilot, DMV’s may consider testing high risk individuals</td>
</tr>
<tr>
<td>American Academy of Neurology: Practice parameter, 2010 (24)</td>
<td>Moderate-to-severe dementia</td>
<td>Identify risk factors that may identify need for intervention; informant rating, history of citations, crashes, infrequent trips, aggression, MMSE&lt;24, presence of co-morbidities</td>
<td>CDR=1 (mild dementia) individuals may continue to drive</td>
</tr>
<tr>
<td>American Medical Association: Physician's Guide to Assessing and Counseling Older Drivers, 2011 (25)</td>
<td>All patients: office-based measures to guide recommendation for driving cessation or performance-based assessment</td>
<td>With early diagnosis, plan early for a smooth transition from &quot;driving&quot; to &quot;non-driving&quot; status. Co-pilots should never be recommended to unsafe drivers as a means to continue driving.</td>
<td>With early diagnosis, plan early for a smooth transition from &quot;driving&quot; to &quot;non-driving&quot; status. Co-pilots should never be recommended to unsafe drivers as a means to continue driving.</td>
</tr>
</tbody>
</table>

Adopted in part from Carr DB, Ott B. The Older Adult Driver with Cognitive Impairment. JAMA 2010; 303: 1632-1641.
### Table 2: CDR RATING TABLE

**CLINICAL DEMENTIA RATING (CDR)**

<table>
<thead>
<tr>
<th>Impairment</th>
<th>0</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Memory</strong></td>
<td>No memory loss or slight inconsistent forgetfulness</td>
<td>Consistent forgetfulness; partial recollection of events; &quot;senior&quot; forgetfulness</td>
<td>Moderate memory loss; more marked for recent events; deficit interferes with everyday activities</td>
<td>Severe memory loss; only highly learned material retained; new material rapidly lost</td>
<td>Severe memory loss; only fragments remain</td>
</tr>
<tr>
<td><strong>Orientation</strong></td>
<td>Fully oriented</td>
<td>Fully oriented except for slight difficulty with time relationships</td>
<td>Moderate difficulty with time relationships; oriented for place at examination; may have geographic disorientation elsewhere</td>
<td>Severe difficulty with time relationships; usually disoriented to time, often to place</td>
<td>Oriented to person only</td>
</tr>
<tr>
<td><strong>Judgment &amp; Problem Solving</strong></td>
<td>Solves everyday problems &amp; handles business &amp; financial affairs well; judgment good in relation to past performance</td>
<td>Slight impairment in solving problems, similarities, and differences</td>
<td>Moderate difficulty in handling problems, similarities, and differences; social judgment usually maintained</td>
<td>Severe loss in handling problems, similarities, and differences; social judgment usually impaired</td>
<td>Unable to make judgments or solve problems</td>
</tr>
<tr>
<td><strong>Community Affairs</strong></td>
<td>Independent function at usual level in job, shopping, volunteer and social groups</td>
<td>Slight impairment in these activities</td>
<td>Unable to function independently at these activities although may still be engaged in some; appears normal to casual inspection</td>
<td>No pretense of independent function outside home</td>
<td>Appears well enough to be taken to functions outside a family home</td>
</tr>
<tr>
<td><strong>Home and Hobbies</strong></td>
<td>Life at home, hobbies, and intellectual interests well maintained</td>
<td>Life at home, hobbies, and intellectual interests slightly impaired</td>
<td>Mild but definite impairment of function at home; more difficult chores abandoned; more complicated hobbies and interests abandoned</td>
<td>Only simple chores preserved; very restricted interests, poorly maintained</td>
<td>No significant function in home</td>
</tr>
<tr>
<td><strong>Personal Care</strong></td>
<td>Fully capable of self-care</td>
<td>Needs prompting</td>
<td>Requires assistance in dressing, hygiene, keeping of personal effects</td>
<td>Requires much help with personal care; frequent incontinence</td>
<td></td>
</tr>
</tbody>
</table>

Score only as decline from previous usual level due to cognitive loss, not impairment due to other factors.
Table 3: Clinical Description of Dementia Severity Levels with Corresponding Values of Psychometric Tests Based on Data From Multiple Sources (Based on samples that average ~75 years of age and ~14 years education)

<table>
<thead>
<tr>
<th>Clinical Measure of Dementia Severity</th>
<th>No Dementia (CDR=0)</th>
<th>Questionable or Very Mild Dementia (CDR=0.5)</th>
<th>Mild Dementia (CDR=1.0)</th>
<th>Moderate to Severe Dementia (CDR=2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the Dementia Specialist: Clinical Dementia Rating</td>
<td>No memory loss or inconsistent memory loss Fully oriented Judgment intact Function intact Personal care intact</td>
<td>Consistent slight forgetfulness Slight difficulty with orientation or judgment Slight impairment in community activities or home activities Personal care intact</td>
<td>Memory loss interferes with everyday activities Geographic disorientation Moderate impairment in judgment Mild but definite impairment of community or home activities Needs prompting for personal care</td>
<td>Severe memory Severe difficulty time relationship judgment No longer independent in activities Only simple community activities preserved Needs assistance with personal effectiveness</td>
</tr>
<tr>
<td>For the Clinician: Short Blessed Test Mini-Mental Status Exam</td>
<td>1.2 (1.9) (31) 28.9 (1.3) (35)</td>
<td>4.8 (5.9) (34) 23.1 (2.5) (36)</td>
<td>15.4 (5.2) (35) 20 (3.9) (35)</td>
<td>18.5 (5.5) 16.1 (4.7)</td>
</tr>
<tr>
<td>For the Neuropsychologist: Logical Memory</td>
<td>8.8 (2.9) (31)</td>
<td>4.3 (2.7) (33)</td>
<td>1.9 (1.7) (33)</td>
<td>1.5 (2.3)</td>
</tr>
<tr>
<td>Block Design</td>
<td>30.1 (8.6) (31)</td>
<td>22.2 (9.8) (33)</td>
<td>12.0 (9.6) (33)</td>
<td>3.2 (6.6)</td>
</tr>
<tr>
<td>Digit Symbol</td>
<td>45.6 (11.5) (31)</td>
<td>31.7 (13.6) (33)</td>
<td>17.0 (13.3) (33)</td>
<td>8.3 (8.7)</td>
</tr>
<tr>
<td>Trailmaking A</td>
<td>40.9 (20.0) (31)</td>
<td>70.2 (39.2) (33)</td>
<td>108.3 (50.5) (33)</td>
<td>???</td>
</tr>
<tr>
<td>Benton Copy</td>
<td>9.6 (.88) (31)</td>
<td>9.1 (1.6) (33)</td>
<td>7.3 (2.7) (33)</td>
<td>???</td>
</tr>
</tbody>
</table>
Figure 1 (24):

Sample algorithm for evaluating driving competence and risk management in patients with dementia.

<table>
<thead>
<tr>
<th>CDR 0.5-1.0</th>
<th>CDR 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate for risk factors</td>
<td></td>
</tr>
</tbody>
</table>

**Risk factors**

<table>
<thead>
<tr>
<th>Level B evidence</th>
<th>Caregiver report of marginal or unsafe skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level C evidence</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>Other</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>History of citations</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>History of crashes</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>Driving &lt; 60 miles / week</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>Situational avoidance</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>Aggression, impulsivity</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>MMSE ≤ 24</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
<tr>
<td>Alcohol, medications, sleep disorders, visual impairment, motor impairment</td>
<td>Caregiver report of marginal or unsafe skills</td>
</tr>
</tbody>
</table>

**Risk factors:**

- None
- Few
- Several
- Multiple

- CDR 0.5
- CDR 1.0

**Risk Management**

- Encourage family support for alternate transportation.
- Strongly consider voluntary surrender of driving privileges.
- Consider DMV referral or professional driving evaluation, based on state guidelines.

Figure 2 (30)
Figure 1: Evidence-Based Approach to the Older Adult with Cognitive Impairment/Dementia

Step 1: Diagnosis of Mild Cognitive Impairment or Dementia
- Obtain cognitive and functional history from reliable informant
- Screen for dementia using validated tool
- Use standard criteria to diagnosis MCI, Dementia
- Evaluate for reversible causes of cognitive impairment
- Rate Dementia Severity (Table 1)

- Review history with caregiver

Impaired Traffic Skills
- Impaired IADL’s
- Impaired Cognitive Domains

No, or questionable dementia
- Monitor for progression or changes every 6 months

Yes, but questionable or mild dementia* or significant impairment in visuospatial, executive, or attention abilities
- Consider Referral
  - Subspecialist Neuropsychologist
  - Driving Clinic**
  - DMV***

Yes
- Driving Recommended?

No
- Patient refuses

Recommend
- Driving Cessation
- Transportation Alternatives
- Steps for Resistant Drivers

Yes
- Patient refuses
- Recommend
- Driving Cessation
- Transportation Alternatives
- Steps for Resistant Drivers

* Dementia severity rating: See Table 1. For more information, see Dubinsky, et al.(2000)
** Performance Based Driving Evaluation recommended, if available
*** DMV referral for refractory or high risk situations
Box 1

A. History: Assessing patients for driving safety
Ask patient and/or caregivers about: Motor vehicle crashes?, Tickets?, Being pulled over by police?, Change in driving behaviors from baseline? Difficulty staying in the lane? Following the rules of the road? “Near misses”? Other cars honking at driver? Scratches on vehicle? Getting lost in familiar areas? Vigilance in scanning for vehicles/pedestrians?

B. Physical Examination: Assessment for co-morbid conditions that can further reduce capacity
Visual: cataracts, diabetic retinopathy, macular degeneration, glaucoma
Cognitive: sleep apnea, multiple sclerosis, Parkinson’s disease, psychiatric disease, diabetes mellitus
Motor: degenerative joint disease, muscle weakness, neuropathy

C. Medication Review: Assessment for sedating agents
Anticonvulsants (eg, gabapentin), Antihistamines, Antipsychotics, Tricyclic antidepressants, Bowel/bladder antispasmodics, Benzodiazepines, Muscle relaxants, Barbiturates

D. Functional Assessment: Review higher order IADLs
Referral from General Practice to Specialist Occupational Therapists
Richard Marottoli

Patient population:
It is likely that general practice occupational therapists deal with an at-risk population. In order to get referred to an occupational therapist, one is likely to have a condition of interest (from a driving safety perspective), whether the referral is for cognitive-perceptual evaluation, upper extremity impairment, or assessment of instrumental/basic ADL capabilities. There are also likely to be condition-specific areas of concern: Neurologic (e.g., vascular or space-occupying lesions, TBI), neurodegenerative disorders or certain orthopedic conditions, including those likely to progress/degenerate or for which there is no/limited surgical intervention.

Approach: Assuming occupational therapists are dealing with an at-risk population, the approach moving forward from that perspective involves questions similar to those faced by all clinicians:
1. Does the patient drive?
2. Is the impairment/condition likely to affect their ability to safely operate a motor vehicle?
3. Might the patient benefit from further assessment or intervention (i.e., adaptive equipment or retraining)?

The issues guiding the decision to refer are also similar to those faced by other clinicians:
1. Functional impairments (cognition, vision, physical ability);
2. Medical conditions (the litany of conditions that can potentially affect any of the functional abilities outlined above);
3. Medications including psychoactive medications;
4. Lack of awareness of/insight into the deficits/impairments; and
5. Historical evidence of driving difficulties (e.g., crashes, moving violations, near misses, or episodes of getting lost).

The standard resources utilized by other clinicians, such as the AMA guide in the US or comparable documents from other countries, would be applicable here as well in terms of determining whether to move forward with further assessment.

One issue that is unique to occupational therapists in this circumstance (or to anyone seeing someone in referral) is the question of how or whether to involve the original referring clinician in any decision to further refer the patient. In other words, if a primary or specialty clinician refers a patient for a general occupational therapy evaluation to address a specific question or problem, and if that therapist then determines or believes the patient should subsequently be referred for a specialized driving assessment, should
the original or primary referring clinician be kept ‘in the loop’ and, if so, how? One could envision difficulties if the primary/referring clinician is left to deal with repercussions of loss of license if the primary clinician didn’t anticipate this as a possible outcome of the original referral or was not made aware of the subsequent referral. This is an issue that geriatricians face as well, although there is, at some level, an understanding or awareness on the part of the referring clinician that this may be an outcome of a geriatrics referral (and in some cases a desired outcome if they don’t have to deal with the issue directly themselves or ‘take the blame’ for it). It is at the very least something that should be taken into consideration when developing guidelines or recommendations about the process.
Guidelines for Driving for Individuals with Parkinson’s disease.

Sherrilene Classen PhD, MPH, OTR/L

Evidence on efficacy and appropriateness with respect to driving simulation for intervention and assessment in occupational therapy clinical setting.

PD is manifested not only by motor but also by cognitive and non-motor symptoms that may affect safe driving ability (Heikkila, Turkka, Korpelainen, Kallanranta, & Summal, 1998; Stolwyk, Charlton, Triggs, Iansek, & Bradshaw, 2006; Wood, Worringham, Kerr, Mallon, & Silburn, 2005). Given the dependency on the private automobile as the primary source of transportation in Western societies, identifying safe or, more importantly, remediable PD drivers through driver rehabilitation programs, may provide continued independent mobility for the driver while enhancing safety on the road. When screening subjects with PD, studies have examined the relationship between safe driving ability and many aspects of PD, such as motor and cognitive impairments (Amick, Grace, & Ott, 2007; Dubinsky, et al., 1991; Worringham, Wood, Kerr, & Silburn, 2006), sleepiness (Lachenmayer, 2000; Meindorfner, et al., 2005), medication use (Meindorfner, et al., 2005), severity of disability (Madeley, Hulley, Wildgust, & Mindham, 1990; Singh, Pentland, Hunter, & Provan, 2007; Worringham, et al., 2006), and clinical disease markers (Grace, et al., 2005; Lings & Dupont, 1992; Singh, et al., 2007; Zesiewicz, et al., 2002). Increasing disease severity, in addition to the risk factors (mentioned above) must be taken into consideration to determine fitness to drive.

Key evidence studies.

The section below highlights nine themes which have emerged from a comprehensive review of the literature pertaining to driving and individuals with PD.

1. Motor vehicle crash rates are higher in patients with PD but these studies have limited generalizability because they are retrospective in nature; either no control group, or no age-matched controls were used; or a bias of underestimation exist as the studies did not control for vehicle miles traveled.

People with PD have an increased risk of crashes per million miles traveled, specifically in those with greater disease severity (Dubinsky, et al., 1991). In a small study (N=15), a third of the PD patients thought that their PD symptoms may have contributed to a recent crash (McLay, 1989). However, some studies suggest that “PD patients are not more prone to cause road accidents than the rest of the population” (page 1439) (Lings & Dupont, 1992). On the contrary, a German study found that 15% of over 6,000 PD respondents reported involvement in a motor vehicle crash, with 11% reporting being at fault (Meindorfner, et al., 2005).
2. The relationship between disease status (severity, duration, levodopa medication) and driving performance remains inconclusive, possibly due to the heterogeneity among PD patients, differences in sample size, rating scales and driving performance measures.

- Although a worse Hoehn and Yahr stage was associated with accidents or increased crashes in the previous three years (Dubinsky, et al., 1991; Grace, et al., 2005) and unsafe driving (Singh, et al., 2007), the scale was not predictive of driving performance in other studies (Grace, et al., 2005; Heikkila, et al., 1998; Singh, et al., 2007; Wood, et al., 2005).
- The Webster’s Rating Scale showed a relationship with some components of the driving task (Madeley, et al., 1990) or with the driving test outcome (Radford, Lincoln, & Lennox, 2004a), but proved to be an unreliable predictor of crashes (Lings & Dupont, 1992).
- The Unified Parkinson’s Disease Rating Scale (UPDRS) as a predictor of driving performance has been examined in studies with mixed results. Although in Radford et al’s study the UPDRS motor section was not significantly correlated with driving ability (Radford, et al., 2004a), several other studies found a significant association of UPDRS motor with collisions on a simulated driving test (Devos, et al., 2007; Zesiewicz, et al., 2002) and on-road driving performance (Amick, et al., 2007).
- Studies have also examined the relationship of disease duration, UPDRS subscales, levodopa dosage, visual processing speed, cognition and age, to the driving ability of PD patients (Amick, et al., 2007; Devos, et al., 2007; Worringham, et al., 2006). Decreased cognitive, visual processing, motor performance (UPDRS motor score), were associated with impaired driving performance (Amick, et al., 2007; Devos, et al., 2007; Heikkila, et al., 1998; Radford, et al., 2004a; Worringham, et al., 2006).
- Findings confirm that a combination of disease duration, UPDRS motor, and levodopa dosage, predict impaired driving ability of PD patients (Amick, et al., 2007; Devos, et al., 2007; Worringham, et al., 2006).

3. A minority of PD patients may experience sleep attacks which may contribute to having a consequent crash.

- Day time sleepiness significantly affects driving performance in PD; but its exact contribution to crashes is unclear. The annual incidence of sleep-attack-induced accidents are between 0 - 2% (Klimkeit, Bradshaw, Charlton, Stolwyk, & Georgiou-Karistianis, 2009).
- A French study (N=1625 PD patients) reports that 11.2% of drivers experience sleep attacks, with 0.5% admitting that these episodes are unpredictable (Ghorayeb, et al., 2007).
- A German study (N= 6620 PD patients) reports that about 2.2% of PD patients reported a crash due to a sleep attack (Meindorfner, et al., 2005).
- Most studies are confounded in that they did not use age-matched controls, have methodological differences, e.g. differences in target population, and use different data collection tools.

4. There is a need to determine (a) at which point the individual may be classified as “unsafe to drive”; and (b) whether a PD patient can accurately recognize this safety risk.

- There is a large variation between studies with respect to how many people with PD give up driving post-diagnosis, with reports ranging from 18% [21] to over 70% (McLay, 1989).
- Driving cessation among PD Drivers is influenced by the family, physician, and as a result of self-concern (Klimkeit, et al., 2009).
• Drivers with PD self-regulate their driving (decrease frequency, drive at reduced speeds, avoid certain road conditions and long distances). This finding shows that PD patients may have insight in their declining driving abilities (Adler, Rottunda, Bauer, & Kuskowski, 2000; Klimkeit, et al., 2009; McLay, 1989; Wood, et al., 2005).

• However, Wood et al. found that there was no relation between an individual’s self-rating of driving performance and their safety ratings (Wood, et al., 2005).

• Caregivers provide more accurate information on the driving behaviors of patients than the PD patients themselves (Cordell, Lee, Granger, Vieira, & Lee, 2008).

5. The ability of physicians to determine whether a patient is a safe driver is likely overestimated. Thus, there is a need for predictive assessment tools that can correctly identify those who need to be referred for a comprehensive driving evaluation.

• The American Medical Association’s Physician’s Guide to Assessing and Counseling Older Drivers recommends clinicians assess motor and cognitive function; and response to treatment, including medication side effects, because several anti-PD drugs can impair driving performance. In addition, the Guide recommends monitoring the patient’s symptoms every 6 to 12 months and, if needed, initiate a referral to a driver rehabilitation specialist (DRS) to determine fitness to drive (Wang, Kosinski, Schwartzberg, & Shanklin, 2003).

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• The ability of physicians to determine whether or not a patient is a safe driver is likely overestimated (Heikkila, et al., 1998) due to lack of knowledge, training, assessment tools, and other resources (Marshall & Gilbert, 1999; Miller & Morley, 1993).

• The lack of valid and reliable tools to guide clinical decision-making makes the physician’s task difficult. Wood et al. (2005, pg. 179) suggested that “…currently used clinical disease markers do not adequately capture those aspects of PD that are linked with unsafe driving performance”.

• Seven PD patients out of 20 (35%), whom a neurologist approved to drive, were evaluated as being unable to drive on the basis of the on-road driving test (p. 328) (Heikkila, et al., 1998).

6. PD drivers demonstrate impairments in driving behaviors while using a driving simulator.

• Driving simulator scores correlate and differentiate drivers who were assessed as safe or unsafe to drive based on on-road, clinical, visual, and cognitive tests (Devos, et al., 2007).

• PD drivers demonstrate increased reaction time and greater inaccuracy of steering and red light violations when tested in a simulator (Heikkila, et al., 1998), approached signals with a slower speed, had delayed deceleration, drove more slowly around curves, showed more difficulty maintaining lane position around curves, and had more difficulties in stopping in time, compared to controls (Stolwyk, Triggs, et al., 2006).

• Driving safety in a simulator decreases if PD drivers are confronted with a divided attention task (Stolwyk, Triggs, et al., 2006).

7. Driving ability of PD patients as measured in on-road assessments is impaired

• PD drivers made more errors on a route finding task that placed demands on driver memory, attention, executive functions and visual perception (Uc, et al., 2007).

• PD drivers made significantly more errors (than controls) in lane keeping, observing their blind spot, backing up, parking and negotiating traffic lights (Wood, et al., 2005).
• Compared to 151 neurologically normal older adults, 79 drivers with mild to moderate PD had impairments on a **landmark and traffic sign identification task** potentially leading to risk for safety errors and crash potential (Uc, et al., 2006a).

• People with PD proceeded **more slowly at t-junctions**, were less able to control a steady speed, were unsteady in maneuvering the steering wheel, and had reduced usage of mirrors and demonstrated delays in decision making and judgment (Cordell, et al., 2008).

• People with PD **make less strategic** (decisions prior to the drive such as trip planning) and **operational errors** (maintaining speed, obeying rules of the road, or performing basic driving maneuver), but more tactical errors in vehicle maneuvering (responses meeting the demands of the changing environment) (Grace, et al., 2005).

• Drivers with PD who had to perform a distracting task while driving had **poorer performance on the concurrent task of detecting roadside targets** (Uc, et al., 2006b).

8. Neuropsychological batteries **explain less than 70% of the variance in driving ability** (Klimkeit et al., 2009)

• Five groups of researchers have investigated the predictability of neuropsychological and/or clinical test to driving performance (Amick, et al., 2007; Devos, et al., 2007; Heikkila, et al., 1998; Radford, et al., 2004a; Worringham, et al., 2006).

• Although it is not clear if these tests err more in terms of false positives or false negatives, they did find that attention, visual and verbal memory, slow information processing, motor dexterity, executive functions, visuospatial organization and planning impairments may “affect” (Klimkeit, et al., 2009) driving performance of PD patients.

9. **Visual attention and visual-perception are impaired in PD patients and may impact their driving performance abilities** (Amick, et al., 2007; Klimkeit, et al., 2009; Trick, Kaskie, & Steinman, 1994).

• Visual attention is the visual field area from which information can be acquired in a glance without eye or head movements. The field of view (fov) is influenced by visual search (localize targets presented at greater distances from a simultaneous, demanding, central task) and visual attention (varying stimulus duration, conspicuity, central task difficulty, addition of secondary tasks, presence of distracters).

• Compared to controls, PD patients scored significantly lower on tests measuring visual speed of processing and attention, spatial perception, and visual construction (Uc, et al., 2006a).

• Amick assessed the clinical utility of visual-perception, i.e., contrast sensitivity relative to attention, executive function, and visuospatial abilities to predict driving safety in 25 patients with PD (Amick, et al., 2007). Of the 25 patients, 11 received a marginal or unsafe rating on the road test. Poorer driving performance was associated with worse performance on measures of contrast sensitivity, visuospatial constructions, set shifting, and attention, suggesting that these tests may be useful to screen hazardous driving in PD patients.

**Summary:**
Classen et al. conducted two published studies with PD patients undergoing a comprehensive driving evaluation conducted by a CDRS and found: Visual attention processing speed deficits (measured with the UFOV™) and visual-perception impairment (specifically contrast sensitivity measured with the Stereo-optical Vision Analyzer, Inc. †) in PD patients, combined with postural
instability and gait disturbance (measured with the Rapid Pace Walk) may be the most sensitive measures, telling of fitness to drive (S. Classen, et al., 2009; Sherrilene Classen, et al., 2011). Specifically, in a study of 19 randomly selected people with idiopathic PD, age-matched to 104 controls without PD, who were all referred for a driving evaluation, we found the following:

Compared to neuropsychological and clinical tests of vision and cognition, the UFOV showed the strongest correlations ($r \geq .75$, $p < .05$) with measures of failing a standardized road test and number of driving errors committed. The **UFOV Risk Index score of 3 (range 1-5) was established as the cutoff value for passing the on-road test, yielding the most optimal combination of sensitivity (87%) and specificity (82%) with area under the ROC curve (AUC), an index of discriminability, of 92%** (S. Classen, et al., 2009).

And in a follow-up study, also using the comprehensive driving evaluation, Classen at al (2011) determined that although PD and control groups were comparable for age, race and education, PD had a higher on-road failure rate (56% vs. 12%; $p < .001$) and made more on-road driving errors (209 vs. 246; $p < .001$). For PD, the Useful Field of View (UFOV) subtest 2 and Rapid Pace Walk were responsible for the majority ($R^2 = 53\%$) of the variance in the on-road test. The model accurately categorized pass/fail outcomes for 33 of 41 (81%) PD patients (sensitivity = 82.6%, specificity = 77.8%, positive predictive value = 82.6%).

Clinical screening batteries administered by the DRS and the specialty neurologists may be predictive of driving performance in PD. The UFOV subtest 2, administered in about 15 minutes, may be the single most useful clinical test for such predictions. In Classen et al. (2011), 8 of 41 PD were incorrectly classified (4/23 = 17% false positives; 4/18 = 22% false negatives), indicating the need to refine the screening battery.

The Unified Parkinson Disease Rating Scale Part 3 (motor scale) is a measure of motor disability and disease severity in people with PD (Fahn & Elton, 1987). From the table below it is clear that the lower the score, the less affected the person is, but the higher the score the more severe the disability is. Research at the University of Florida and the University of Iowa is currently ongoing to identify cut-point for UPDRS as a predictor of fitness to drive.

<table>
<thead>
<tr>
<th>UPDRS Item</th>
<th>Assessment</th>
<th>Scale Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bradykinesia subscale</strong></td>
<td>Score includes</td>
<td>0 (not affected) to 36 (most severely affected)</td>
</tr>
<tr>
<td></td>
<td>• body bradykinesia and hypokinesia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• left- and right-hand finger taps, opening and closing of hands, pronation/supination of hands, and heel taps</td>
<td></td>
</tr>
<tr>
<td><strong>Tremor subscale</strong></td>
<td>Score includes</td>
<td>0 (not affected) to 32 (most severely affected)</td>
</tr>
<tr>
<td></td>
<td>• action tremor of right and left hands</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• resting tremor in the left and right hands and feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• resting tremor of the face, lips, and chin</td>
<td></td>
</tr>
<tr>
<td><strong>Rigidity subscale</strong></td>
<td>Score includes</td>
<td>0 (not affected) to 20 (most severely affected)</td>
</tr>
<tr>
<td></td>
<td>• rigidity in the neck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• rigidity in the left and right upper and lower extremities</td>
<td></td>
</tr>
<tr>
<td><strong>PIGD (postural instability and gait disorder)</strong></td>
<td>Score includes</td>
<td>0 (not affected) to 20 (most severely affected)</td>
</tr>
<tr>
<td></td>
<td>• falling, freezing, ability to walk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• gait, postural stability</td>
<td></td>
</tr>
</tbody>
</table>
Risk factors that may compromise fitness to drive for individuals with PD include: advancing age, anti-parkinsonian drugs and other medications, comorbidities, levodopa dosage, decreased visual processing speed, impaired visual construction, decreased visual search, impaired spatial perception, decreased cognition, day time sleepiness, decreased insight, increased time (>7.5 seconds) to complete the RPW. Until cut-points for motor disability and disease severity are made clear, and the specific risk factors are quantified, the following consensus guidelines are suggested:

Consensus Statements:
1. Drivers with PD who have mild motor disability as measured by low scores on the UPDRS Part 3, and no or few risk factors (anti-Parkinson drugs, >75 years of age), may be safe. However, we recommend that the individual who fits this profile and those who are newly diagnosed with PD:
   - undergo a baseline comprehensive driving evaluation by a certified driving rehabilitation specialist
   - follow-up annually with repeat comprehensive driving evaluations
   - start planning for driving cessation because of the progressive nature of the disease
   - start conversations with the family about retirement from driving
   - start developing a plan for use of alternative transportation options.

2. For those with severe motor impairment and disease severity (high UPDRS Part 3 scores) and multiple risk factors (decreased information processing speed, e.g. scoring ≥ 3 on the UFOV risk index, impaired contrast sensitivity, scoring >180 seconds on the Trails B, and scoring >7.5 seconds on the Rapid Pace Walk) we recommend:
   - forfeiting the license
   - mandatory reporting
   - travel training

3. Research is in progress to provide better guidelines for the “middle” group: i.e., those with mild to moderate motor disability and few to several risk factors. This group is the most challenging and we recommend
   - a required CDE by CDRS
   - providing them with opportunities for rehabilitation, including behind-the-wheel training, compensatory strategies, driving restriction, self-regulation
   - providing them with strategies to address transitioning to non-driving including starting conversations about driving retirement, family involvement in driving retirement, consultation, referral for counseling
   - developing mobility plans for driving cessation.

Questions that still need to be answered:
- What constitute the ideal screening battery with high sensitivity and specificity that will help target at-risk drivers with PD?
- What are the primary risk factors for decreased fitness to drive?
- What is the core problem of drivers with PD who are not fit to drive?
- What is the role of the visual system in driving fitness for people with PD?
- Can the simulator be used as a viable tool to identify at-risk drivers with PD?
• Can remediable PD drivers be identified?
• What are the best intervention strategies to enhance fitness to drive in people with PD?
• What is the evidence-based frequency, intensity, type and duration of intervention for drivers with PD?
• Are the intervention strategies efficacious and effective?

References


Referral Guidelines for a Person with Dementia
Carol Wheatley

Best practices guiding your decision making for screening, assessment and referral when addressing fitness to drive with respect to the diagnosis of Dementia.

At some point, driving cessation is a likely outcome for an individual who has been diagnosed with Dementia. Initially, decreased memory capacity may hinder the person’s ability to remember their destination or they may become lost on familiar roadways. However, later, deficits in visual spatial skills may diminish their ability to judge the position of the vehicle relative to their surroundings, resulting in crashes with stationary objects such as mailboxes or parked vehicles, or with moving vehicles in the roadway. They may have difficulty interpreting visual stimuli, and so may respond incorrectly to traffic signals, running through red lights or stopping for green lights. They may not be able to understand signs or cues from traffic, and may drive on the wrong side of the road in the face of oncoming traffic. The person’s overall mental processing usually slows, decreasing their ability to respond quickly to events in the driving environment. The person may develop apraxia, and may have difficulty with foot pedal errors or operating the other controls of the vehicle (Dobbs, 2005).

In the early stages of dementia, the person may have some awareness of their deficits. He or she may compensate effectively for a time by reducing the number and distance of their trips, avoiding rush hour traffic or heavily traveled intersections. Unfortunately, as the disorder progresses, the memory for minor errors or mistakes may diminish, as well as the insight to the scope and severity of impairment.

An occupational therapist should interview the individual with dementia and their family carefully. The client’s responses to interview questions should be verified with a family member or other individual who has observed the client’s functioning. Use of a questionnaire, such as the Safe Driving Behavior Measure (Classen et al, 2012), can assist the family in describing and quantifying the driving problems they have noted in the client.

Key questions to the client include:

- What changes have you noticed in your driving?
- Have you had any incidents of difficulty pulling in and out of your driveway, the garage, driving in tight spaces such as parking lots?
- Have you had any crashes, minor or major? How did the crash happen? Were you at fault, or was the other driver?
- Have you received any traffic violations?
- Have you ever become lost while driving to a familiar destination? Describe the circumstances.
• Do your passengers ever help you as you drive, by pointing out important events in the roadway, or helping you with driving a familiar route?
• Has your family or your doctor expressed concern about your driving?

The person’s recent driving history, family input, medical and cognitive status are all important sources of information in the determination of the appropriate referral for the individual (O’Connor, et al, 2010).

Consensus Statements
1. Individuals who have been diagnosed with Mild Cognitive Impairment or Mild Dementia, as measured by the Clinical Dementia Rating (Vanderbur and Silverstein, 2006), should be referred to a driver rehabilitation specialist for assessment.

2. Individuals with moderate or severe dementia, as measured by the Clinical Dementia Rating (Vanderbur and Silverstein, 2006), should be counseled to stop driving as they do not meet the criteria for referral to a specialist.

3. The general practice occupational therapist should assess the patient’s physical function, including coordination, visual spatial skills, attention, concentration, orientation, memory, reasoning, judgment and speed of information processing. The therapist should include functional assessments of these skills (i.e. Kitchen Task Assessment, Executive Function Performance Test), as the patient’s verbal functioning may not be a reliable indicator of their performance skills.

4. The general practice occupational therapist should consult with the patient’s physician and other team members to discuss the scope of the patient’s deficits and to develop a plan to monitor and address the patient’s driving over time. Include plans for re-assessment as the patient’s condition declines. Provide the family with literature on the warning signs for driving cessation.

5. Co-piloting, in which a passenger verbally assists the individual to drive or follow a route, is not recommended. The need for co-piloting is an indication that the patient should stop active driving, as verbal instructions are insufficient in a driving situation where a rapid response is required to prevent a crash. (Carr, et al, 2010).

6. Regardless of the driving assessment outcome, when an individual is diagnosed with dementia, the general practice occupational therapist should start planning exploration of alternative transportation options early and begin using these options to increase the person’s familiarity with them (Stav, et al, 2006). The plan should be thorough to be executed successfully, as an initial positive experience can be an important determination of future alternative transportation use.

7. The generalist and specialist therapists need to weigh the person’s needs for independence and their safety concerns. Safety should always take priority over independence. The therapist needs to assist the patient and their family in transitioning to alternative forms of community transport, so that the patient can continue to participate in the community to the maximum extent possible.
8. The generalist and specialist therapists need to be knowledgeable regarding their state DMV reporting laws. Some states specifically list Dementia as a reportable medical condition (Vanderbur and Silverstein, 2006). The therapist should inform the patient and their family about the details of the laws and advise them regarding the procedures for reporting. If the therapist reports the patient’s name to the DMV, it is the therapist’s ethical responsibility to inform the patient that he/she is doing so.

Questions / issues that still need to be answered:

- Can a general OT Assessment predict driving performance?

- Which OT assessment tools have the best predictive value to determine the safest living environment for the person with Dementia?

- Are recommendations for geographical restrictions advisable?

References:


Best Practice for Chronic Obstructive Pulmonary Disease (COPD)  
Donna Stressel

Definition: COPD refers to diseases involving obstructed airflow such as peripheral airway disease, emphysema, and chronic bronchitis. The Centers for Disease Control and Prevention’s National Center for Health Statistics recently released a report in which it indicates that COPD has become the third leading cause of death in the United States for 2008. Symptoms include chronic cough, sputum production, and dyspnea. Symptoms may increase with exertion, exposure to extreme temperature (cold or hot/humid air), and some patients with severe airway obstruction, may experience cough syncope.

Research: There are few studies available examining the relationship between COPD and motor vehicle crashes, but at least one suggests individuals with COPD are at higher risk of cognitive impairment resulting from chronic hypoxemia, placing the individual at-risk for motor vehicle crashes.ii Declines in cognitive functions affecting attention, reaction time, memory, abstract reasoning skills and complex visual motor processes would be the primary concern for driving competency. One study found that patients with COPD demonstrated significantly worse results in terms of accident frequency in a simulated driving situation, however no correlations existed between the severity of the disease and driving performance.iii Another study concluded that oxygen therapy does not improve the simulated driving performance or neurocognitive function in patients with hypoxaemic COPD.iv Therefore, decisions regarding fitness-to-drive should be made on an individual basis, with determinations of driving competence based on cognitive and on-road assessment.

Guidelines for physicians’ counseling patient’s driving with COPD and reporting to State Department of Motor Vehicles are limited. The American Medical Association (AMA) recommends no restrictions if symptoms are well controlled, and the patient does not experience significant side effects from the condition or the medications. Driving is not advised if the patient suffers dyspnea at rest or while behind the wheel, excessive fatigue, or significant cognitive impairment. If the patient requires supplemental oxygen to maintain hemoglobin saturation of 90 percent or greater they should be counseled to use the oxygen at all times while driving, and to avoid driving when they have other respiratory symptoms (e.g., infection, exacerbation of COPD, increased sputum production). If the physician is concerned that the patient’s symptoms compromise driving safety, referral to a driver rehabilitation specialist is recommended with periodic reevaluation due to the progressive nature of the disease.v The state of Maine utilizes a Functional Ability Profile identifying impairment levels which often precludes driving. Circumstances that would indicate concern are moderate to severe dyspnea on exertion, dyspnea at rest, and O2 saturation <88% with or without oxygen.vi No other state guidelines are known.
**Occupational Therapy.** The issues that an occupational therapist addresses with COPD patients include: symptom management (knowing activity limitations, including when not to go out), safe transfers, mobility aid management, oxygen storage and travel, positioning within the vehicle, controlling environment (use of AC or heater), and energy conservation and breathing techniques. These principles are addressed in the context of ADL or IADL, but should also be associated to driving.

**Consensus Statements:**

**A. Referral for COPD.** Referral to a Driver Rehabilitation Specialist (DRS) is indicated if one or any of these are present:

1. When cognitive decline is evident with either psychometric testing or while performing other ADL.
2. When concern is raised about driving safety through direct observation, family concern, or driving incidents.
3. When a patient has difficulty maintaining oxygen saturation < 90% at rest.
4. When a patient experiences dyspnea at rest or while behind the wheel.
5. When a loading device is needed to manage a powered mobility device or oxygen needs to be secure.

**B. Assessment/Intervention for COPD.** The DRS should monitor oxygen saturation while driving to measure the effects of driving tasks on oxygen levels in the blood. This information can be used to verify the need to drive with oxygen to improve cognition as well as heart and other organ functioning. Pulse oximetry is also an effective tool to demonstrate the effects of energy conservation (vehicle features, arm position etc.) and breathing techniques have while driving.

**C. Assessment/Intervention for COPD.** The DRS recommendations are able to provide guidance on overall driving skills and safety including driving limits and compensatory techniques, as well as assistance with loading devices for scooters or power chairs, and oxygen storage.

**D. Assessment for COPD.** What would you say are key assessments for this diagnosis for making a decision about fitness to drive?

**Research Questions**

- The best practice for storing oxygen in a personal vehicle is secure, upright, and out of heat and direct sunlight, but there are no approved guidelines (i.e. where in vehicle, method to secure)
- Limited research on the effects of hypoxia on driving performance and safety.

1. Most current data available. [http://www.copdfoundation.org/PressRoom](http://www.copdfoundation.org/PressRoom)
4 Pretto JJ, McDonald CF, Acute oxygen therapy does not improve cognitive and driving performance in hypoxaemic COPD, Rispirology 2008 Nov; 13(7):1039-44
5 American Medical Association’s Physician Guidelines to Assessing and Counseling Older Drivers. Section 10: Respiratory diseases
Referral Guidelines for a Person with a Physical Impairment
Anne Hegberg

Best Practice and Consensus Statements

1. Community mobility should be addressed with every occupational therapy client as part of the initial evaluation and most importantly as part of the discharge planning. The generalist OT should have resources to assist clients including: 1) education of caregivers in safe transport, 2) how to access community transportation and 3) where to refer to evaluate for independent driving if and when appropriate. Referral to a driver rehabilitation specialist will depend on the generalist’s knowledge base as well as the population served. Timing of a referral to a driver rehabilitation specialist will vary: 1) depending on the client/family’s needs and desires, 2) alternative transportation available and 3) the client’s state of recovery in the rehabilitation process.

2. Using a lower extremity prosthesis for activating either the accelerator and brake pedals is not recommended due to lack of sensation and fine motor control for accelerator modulation. Therefore, an individual with 1) amputation of either lower extremity secondary to circulation impairment, or 2) right lower extremity regardless of cause should be referred to a driver rehabilitation specialist to evaluate the need for adaptive equipment and training. Referral can be early in the rehabilitation process since adaptive equipment will likely not involve the amputee limb.

3. As vehicles are designed to drive safely with the use of two hands, client with an amputation of either upper extremity should be referred to a driver rehabilitation specialist for evaluation and assessment for need for adaptive equipment and training before resuming or learning to drive.

4. Client with a spinal cord injury at any level should be referred early in the rehabilitation process for consultation with a driver rehabilitation specialist. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the specialist early in the process will improve future outcomes. The specialist can assist with determining the appropriate time in the rehabilitation process to address driving, community mobility, or transportation alternatives with the client and family.

5. A client with a progressive condition which affects primarily sensation and/or motor function (i.e., multiple sclerosis, post-polio syndrome) should be referred to a driver rehabilitation specialist to determine a baseline need for adaptive equipment for their motor vehicle. The driver rehabilitation specialist can assist with planning for future needs and re-evaluation based on the progression of the condition.
6. A client with a non-progressive condition that affects primarily sensation and/or motor function (i.e., cerebral palsy, spina bifida, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfect, arthrogryposis) should be referred to a driver rehabilitation specialist to determine adaptive equipment needed as well as their potential to drive in the future. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the specialist early in the process will ensure comprehensive planning for community mobility for the client and family.
Appendix U

NHTSA/AOTA Cooperative Agreement: The Pathways Project to Foster Occupational Therapist Engagement in Older Driver Rehabilitation
Expert Panel Meeting, Bethesda, MD, March 6-7, 2012

Role of driving simulators for occupational therapy screening, assessment, and therapeutic intervention.
Sherrilene Classen PhD, MPH, OTR/L

Evidence on efficacy and appropriateness with respect to driving simulation for intervention and assessment in occupational therapy clinical setting.

The driving simulator is a viable modality to test the driving performance of at-risk drivers that cannot be tested on-the-road. As a safe alternative, it provides objective and repeatable performance measures for researchers, allows for control of the driving environment by modifying the degree of risk, and allows for driving assessment in a lab or office setting. Although driving simulators provide benefits related to safety (e.g., decreased risk exposure to crashes) and convenience (e.g., testing for a variety of weather, traffic, or geographic conditions in one place) when measuring driving performance, current evidence of their efficacy or effectiveness in testing interventions for occupational therapy practice is not known. However, evidence exist that simulator testing may:

1) detect underlying impairments in driving performance;
2) identify driving errors (e.g., maintaining lane, yielding, stopping, accepting safe gaps) in at-risk drivers;
3) differentiate between driving performance between impaired and healthy controls groups;
4) show driving errors with absolute and relative validity compared to on-road studies; and
5) simulator sickness (SS), also called simulator adaptation syndrome, may emerge during simulator use and that occupational therapy practitioners need to understand and manage SS.

Key evidence studies.

Although many researchers and other professionals are using driving simulators to test a variety of applications, these studies specifically address occupational therapy practice and are grouped in areas of research topics.

Validity of driving simulators to on-road studies:

In a paper “Validation of driving simulators” (Shectman, 2011) provides a literature review of driving simulator validation studies, addresses the possible reasons for the controversy in the literature and suggests using health measurement terminology for simulator validity. She also offers ways to match the types of measurement validity terms with examples of existing diving simulator validation studies. In fact, (Shechtman, Classen, Awadzi, & Mann, 2009), examined if
driver response validity (type and number of errors) were similar between on-road and in-simulator. They replicated real-world intersections in the STISIM M500W driving simulator (Systems Technology Inc, Hawthorne, California) and assessed the number and type of driving errors committed by the same 39 participants while negotiating a right and a left turn both on-the-road and in-the-simulator. They found no significant interactions between the type of vehicle (road vs. simulator) and the type of turn (right versus left) for any of the driving errors, indicating the same trends exist between driving errors made on-road and in-simulator and thus suggesting relative validity of the simulator. They also found no significant differences between the road and the simulator for lane maintenance, adjustment to stimuli, and visual scanning errors, indicating absolute validity for these types of errors.

Figure 1. More errors were made during left-turn than right-turn, on-road and in the simulator.

Validity and reproducibility of driving simulators using clinical battery of tests:

Bedard and colleagues examined the validity and reproducibility of simulator-based driving evaluations (Bédard, Parkkari, Weaver, Riendeau, & Dahlquist, 2010) in three experimental studies: two addressing the validity of simulators to clinical tests and one examining the reproducibility of data obtained from a driving simulator. In Study 1, they examined correlations among Trail Making Test Part A and B, demerit points for simulated drives, and simulator-recorded errors. With one exception, correlations ranged from .44 (p = .103) to .83 (p = .001), suggesting moderate to good correlations. In Study 2, they examined correlations among Trail Making Test Part A, Useful Field of View, and demerit points for simulated drives; correlations ranged from .50 to .82 (all ps < .001), again suggesting moderate to good correlations. The correlation between demerit points for on-road and simulated drives was .74 (p = .035). They also examined reproducibility of simulator assessments using the playback function; intraclass correlation coefficients ranged from .73 to .87 (all ps < .001).

Using a DriveSafety 250 simulator (Crizzle, et al., in press) determined which clinical tests, from a clinical battery, are correlated with driving errors in people with epilepsy using a simulator. The sample consisted of 16 drivers with epilepsy (mean age 44.3±12.0; 63% women) recruited from the epilepsy monitoring unit at the University of Florida. All participants completed a clinical battery of cognitive, visual and motor tests, as well as a 35-minute drive on a simulator. Significant correlations emerged between: visual acuity with visual scanning (r=.69, p<.01) and adjustment to stimuli (r=.60, p<.05); contrast sensitivity with lane maintenance (r=.54, p>.05), vehicle position (r=.61, p<.05) and total number of errors (r=.72, p<.01); and useful field of view scores (subtest 2) with visual scanning (r=.57, p<.05) and vehicle position (r=.63, p<.05).

Using the STISM M500W simulator and protocol for drivers with ADHD and Autism Spectrum Disorder (ASD), (Monahan & Classen, Under review ) are examining the relevance of clinical tests to driving errors made on a simulator. Preliminary findings are showing that some clinical tests, specifically the UFOV TM are not useful for adolescent drivers with ADHD and/or ASD, as there are no correlations between the UFOV and driving errors made on the simulator.

Driving simulators and group differences:
Using the STISM M500W simulator, (Classen, Levy, et al., 2011) determined differences in driving errors between post deployed combat veterans (CV) with mild traumatic brain injury and post traumatic stress disorder and healthy controls (HC). They analyzed the driving errors data of 18 CV from the North Florida/South Georgia Veterans Health System and compared that to the data of 20 HC. They found that CV were younger, had a higher percentage of men, more racial diversity, less formal education and lower cognitive scores than HC. HC made more signaling errors \((t=19, p= 0.046, SE = 0.395)\); but CV made more critical errors including over speeding \((t = 4.095, p = 0.001, SE = 0.708)\) and adjustment to stimuli \((t = 2.381, p = 0.029, SE = 0.140)\) errors.

Testing applications (highway design and in-vehicle technologies) on the driving simulator:

The Federal Highway Administration (FHWA) proposed guidelines for highway design to increase the safe driving ability of older drivers; however, little empirical evidence exists to support the effectiveness of these guidelines. (Shechtman, et al., 2007). The purpose of this study was to investigate the effects of implementing these guidelines (in 4 pairs of intersections) on safe driving performance of older and younger drivers using the STISM M500W high-fidelity driving simulator. Simulator scenarios were created from actual road locations, replicating road geometrics and traffic control devices from four intersection pairs (improved versus unimproved). Kinematic measures were obtained from the simulator in conjunction with driving errors recorded by trained driving evaluators sitting in the cab of the car. Thirty-nine subjects, 19 younger and 20 older adults, participated in the study. For the kinematic data they found greater lateral control during the turn phase, at all of the improved intersections when compared to the unimproved intersections. They also found significant age differences, but mostly in only one of the intersection-pairs. For the behavioral data, there were significant differences in driving errors between improved and unimproved intersections in two intersection-pairs; however, there were no significant differences in driving errors between the older and younger drivers.

Using the same simulator as in the Shechtman study, (Martin & Elefteriadou, 2010) assessed the use of in-vehicle technologies on the driving behaviors of adults. These technologies were designed mainly to improve roadway safety and provide comfort to drivers. Performance without the systems was compared to that obtained while the systems were in use. Results showed changes in driving behavior due to the systems and specific driver’s characteristics that are more likely to be affected by these technologies.

Simulator Sickness:

(Classen, Bewernitz, & Shechtman, 2011) published the findings of examining, via an evidence-based literature review, the phenomenon of simulator sickness, also called simulator adaptation syndrome when using a driving simulator (Kennedy, Lane, Berbaum, & Lilienthal, 1993). They used the American Academy of Neurology’s classification criteria and extracted data from 10 studies, assigned each study a class of I-IV, with “I” indicating the highest level of evidence, made recommendation (A-C, with A being the strongest level of recommendation), and grouped primary studies into categories of specific aspects of simulator sickness (SS) using the American Occupational Therapy Practice Framework (client factors, performance patterns, environmental factors, and person-environment factors) (American Occupational Therapy Association, 2008). They found that Client factors (i.e., older clients [>70 yr; Level B], women [Level B]) and
context/environment factors (e.g., refresh rates, scenario design and duration, simulator configuration, and calibration; Level B) probably increase the rates of SS, whereas activity demands (vection, speed of driving, and postural instability; Level C) possibly contribute to SS.

Using this knowledge on SS (Classen & Owens, 2010) examined the differences in SS in combat veterans (CV) with mild traumatic brain injury and/or post traumatic stress disorder (mTBI/PTSD). In this retrospective simulator study, the occurrence of simulator sickness was analyzed for combat veterans compared to healthy controls. Susceptibility to simulator sickness occurred in combat veterans at two time periods and increased as driving exposure progressed. Overall, these findings suggest that combat veterans may have pre-existing conditions that make them more susceptible to simulator sickness; and that they are affected more severely compared to healthy controls. Simulator sickness is an important side effect incurred in simulator research, and this study illustrates possible additional considerations associated with head injury.

Overall:

Simulators provide a safe and perceptive means for studying, assessing and training drivers to positively affect their safe behaviors (Allen & Classen, 2010). New and innovative driving simulator applications continue as evidenced by the papers cited in this review. The application of driving simulation is becoming more appealing to a wide range of researchers in various disciplines and is encouraging new innovative assessment and training applications. However, efficacy and effectiveness studies are needed to illustrate translation of the research to the clinical practice area. Likewise feasibility, clinical utility and cost-effectiveness studies are necessary to examine the use of driving simulators in occupational therapy practice. Larger sample sizes are needed to increase the generalizability of the claims and to show ecological validity. Findings must also be confirmed in randomized controlled trials that are at the least matched for age and gender.

Based on the above studies, one can summarize:

• Assessing driving errors when negotiating turns in the simulator can be generalized or transferred to the road under the same testing conditions.

• Simulators could be used to facilitate the evaluation of fitness to drive.

• There is likely a relationship between visual and visual-cognitive clinical tests and driving errors, assessed on a simulator in people with epilepsy.

• Results of clinical tests are related to simulated driving performance in adolescents with ADHD and/or ASD.

• Combat veterans made more critical driving errors compared to healthy controls as assessed on a driving simulator.

• Simulator could detect improvements in driving performance as a result of roadways with safety features in both young and older drivers.
Simulators could be used to show changes in driving behaviors in adults due to the use of in-vehicle technologies.

Client, environmental, and person-environment factors provoke SS and clinicians and researchers must use recommended strategies to address SS when testing clients in a driving simulator.

Combat veterans may have pre-existing conditions that make them more susceptible to simulator sickness and show more severe symptoms.

Consensus Statements

1. Driving simulators should not be used as the sole determinant of fitness to drive for older adults, but might be used in conjunction with other methods of evaluation.

2. Driving simulators can be used as a mode to determine impaired visual, cognitive, and motor abilities underlying the task of driving.

3. Driving simulators offer potential benefits as training or intervention tools for at-risk-drivers; yet the evidence to support this claim is still emerging.

4. Driving simulators are useful and safe to test applications, such as environmental design and in-vehicle technologies, in adults and older adults.

5. Driving simulators show to be useful in determining aspects of driving performance in some high-risk groups (e.g., combat veterans with mild TBI/PTSD), where testing on the road will be deemed unsafe. Simulators can detect differences in impaired vs. control groups.

6. Driving simulators offer benefits in assessing the readiness of pre-driving and driving skills in adolescents with special needs.

7. Simulator sickness is a real and uncomfortable phenomenon that may affect clients during their simulated drive. As such, it must be understood, managed, prevented or reduced through simulator sickness mitigation strategies.

Questions that still need to be answered:

• Can we assume ecological (real world) validity with driving simulators?

• How does doing poorly on the driving simulator translate to doing poorly on the road?

• What are the implications for reporting and licensing if someone does poorly on the driving simulator?

• Turn-key simulator scenarios for occupational therapists with output data illustrating performance deficits- how far away are us from obtaining this?

• What training is needed for occupational therapist to use simulators as effective assessment and/or intervention tools?

References:


Physician’s attitudes toward using driving simulators in clinical settings

Johnell Brooks

Background.

As a primary source of referrals for occupational therapy, it is important to identify the attitudes of physicians about the need and value of driving simulator technology. Similarly, the attitudes of older adults who might be asked to use driving simulation is also important to assess.

Thirty-six volunteer physicians either participated in a structured interview or completed a survey representing Cardiology, Endocrinology, Family Practice, Geriatrics, Internal Medicine, Neurology, obstetrics/gynecology, Oncology, Orthopedic Trauma, Physical Medicine & Rehabilitation, or Pulmonology; with one pharmacist and one toxicologist.

The physicians overwhelmingly reported they provide service to patients with medical conditions that may impair activities of daily living such as driving. Physicians were asked about their willingness to refer patients to a driving simulator program for (1) therapeutic purposes and for (2) assessment purposes. All of the physicians were willing to refer their patients to a driving simulator for therapeutic purposes and all but one physician was willing to refer for assessment purposes (while not reported in the manuscript, the reason for the “no referrals for the driving simulator assessment program” was because his specialty was Palliative Care and his patients do not return to driving and therefore the need simply does not exist for his patients). The physicians provided recommendations for these types of programs including short reports and the desire for clear “cut off” scores.

In addition to assessing the attitudes of physicians, the study also examined the attitudes of 176 community dwelling volunteers who ranged in age between 50 to 93 years (mean = 70.7 years). The older adults felt the simulator could be an appropriate tool for therapeutic purposes to practice driving, learn new skills, and assess one’s driving after a significant medical event. However, the older adults were neutral in regards to using a driving simulator for assessment purposes, specifically whether a simulator could be used to replace a behind the wheel assessment.

Consensus Statements

1. Physicians and older adults view the utility of driving simulators in a clinical setting differently, while physicians are comfortable with the possibility of using a driving simulator for both therapeutic and assessment purposes, older adults are primarily comfortable with the use for therapeutic purposes.
2. Because physicians are willing to refer their clients to simulators for the purpose of assessment, therapists using driving simulator for assessment must be mindful that present evidence does not support driving simulation to replace behind the wheel evaluation and need to report or document accordingly.

3. Since physicians report a desire for knowledge about how safe or unsafe their patients are, it is recommended that reports include descriptive data in addition to number of errors or cutoff scores.

4. For occupational therapy clinicians with simulators, it may be more productive to develop driving simulator programs that focus on rehabilitation and training with older adults until more evidence is established for assessment.

5. Given the desire for detailed information about their patients as well as for simple and short reports, driver assessment or intervention reports to should include some breadth of information desired by physicians, but in a format that helps them quickly and efficiently understand the results and use them to enhance patient care.

Questions / issues that still need to be answered:

- Physicians report a desire for tools designed to investigate the effects of medication, medical procedures, and patient diagnoses on driving ability.
- Research in the area of simulator-based rehabilitation and assessment should investigate whether such regulation of driving based on assessment outcomes mitigates risk.
- There should be continued effort to design reports that include the breadth of information desired by physicians in a format that helps them quickly and efficiently understand the results and use them to enhance patient care.
- Though feedback provided to physicians involved in caring for at-risk drivers is extremely important, potential patients also expressed a desire for feedback both during and after simulator-based therapy and assessment. Determining the format of this feedback will be highly relevant in encouraging patients to change their driving behaviors or address their limitations with therapeutic interventions.

Reference.

Appendix W

NHTSA/AOTA Cooperative Agreement: The Pathways Project to Foster Occupational Therapist Engagement in Older Driver Rehabilitation
Expert Panel Meeting, Bethesda, MD, March 6-7, 2012

Ethical Obligations of Occupational Therapists to Address Driving
Deborah Yarett Slater, MS, OT/L, FAOTA

1. Occupational therapy evaluation identifies deficits in performance skills (and source, e.g. client factors) that affect ability to do daily activities (occupations). Driving is a daily occupation for a significant number of individuals across the entire lifespan.

2. The Occupational Profile (focused interview) should be part of the evaluation process and include/address driving if identified by client as a desired outcome.

3. Current, appropriate evaluation and assessment tools targeted to obtain meaningful data must be used and administered correctly.

4. Occupational therapists and occupational therapy Assistants have an obligation to work within their level of competence (Principle 1E, Code and Ethics Standards): Generalist occupational therapists are qualified to obtain basic data which is relevant to driving and should be familiar with appropriate referral sources for more specialized evaluation (Principle 1I).

5. Educational curricula prepare occupational therapists to assess impairment and safety issues with performance of daily occupations from a musculoskeletal, sensory perceptual, cognitive, and psychosocial perspective.

6. Driving is a high volume, high risk activity and the changing demographics will result in increasing demand and opportunity for occupational therapy evaluation and recommendations.

7. Data from occupational therapy evaluation and intervention identifies safety issues (requiring the therapist to address/document/make recommendations) related to ADLs and IADLs (e.g., bath transfers, meal prep): A client’s performance abilities/disabilities may impact ability to drive safely, if at all. Therefore, there is a professional and ethical obligation to identify and warn when safety deficits are identified, including driving.

8. Professional, clinical and ethical reasoning are taught in occupational therapy educational programs and utilized in the clinic to evaluate data and make judgments about realistic, appropriate goals and strategies (or alternate options) to achieve them. This includes driving and community mobility.

9. Avoiding Harm.
   a. Impaired cognition has been shown in the literature to increase difficulty and risk for driving (Carr, 1997; Dubinsky, Stein, & Lyons, 2000; Love, Welsh, Knabb, Scott, & Brokaw, 2008, p. 536). Impaired cognition also has safety implications for ADLs and IADLs. The challenge is gauging the potential risk that may result from the level of impairment and requires data, professional training and professional judgment.
support the overarching ethical obligation to provide services to benefit client and
AVOID HARM. Driving is an important occupation but also has potential for harm to
client as well as general public and must be considered by the practitioners.

10. All *Principles of the Code and Ethics* Standards have relevance for addressing and warning
about potential driving impairment (can provide specifics if needed/desired at the meeting).

11. Case law exists and sets precedent for professional obligation to warn based on foreseeable
likelihood of danger or harm due to impaired client (*Tarasoff v. Regents of the University of
California*, 17 Cal. 3d 425, 551 P.2d 334, 131 Cal. Rptr. 14 (Cal. 1976))

12. Confidentiality is presumed in client/therapist relationship but there are legal and ethical
considerations that supersede this principle and should lead to communication and
documentation of recommendations and possible reporting. Protection of potential victim(s)
may override confidentiality rights of client

13. Reimbursement should not drive decision-making related to providing driving services.

14. Occupational therapists have an ethical responsibility to know the laws in their state that
relate to their reporting obligations and options with impaired drivers.

AOTA official documents address driving as within scope of occupational therapy practice:

- *Occupational Therapy Practice Framework*
- *Standards of Practice for Occupational Therapy*
- *Code and Ethics Standards*
- *Standards for Continuing Competency*
- *Scope of Practice*

**References and resources**

- American Occupational Therapy Association. (2010). Enforcement procedures for the
  *Occupational Therapy Code of Ethics and Ethics Standards*. American Journal of
  Occupational Therapy, 64(6 Suppl.), S4–S16.

doi: 10.5014/ajot.2010.64S17–64S26


- Slater, D. Y. (2011). (Ed.), *Reference guide to the occupational therapy code of ethics and
  ethics standards*. Bethesda, MD: American Occupational Therapy Association Press

- “Everyday Ethics: Core Knowledge for Occupational Therapy Practitioners and Educators”.
  CE on CD available from the AOTA online Store.
• Ethics Section in Practitioner area of web site: http://www.aota.org/Practitioners/Ethics.aspx
Screening and Assessment Tools
Michel Bédard

Evidence on efficacy and appropriateness with respect screening and assessment in occupational therapy clinical setting.
There is a paucity of well-documented, well-validated screening tools and comprehensive assessment approaches to determine safety to drive. Both screening, and comprehensive assessment approaches, as they currently stand, have limitations.

For both screening and assessment approaches, the starting point is the limited associations between performance on the various tools studied and results based on the gold standard (often a road test). The low magnitude of these associations indicates that important other factors are at play in explaining results on the gold standard. Furthermore, it is reasonable to assume that in less controlled situations (outside the research environment) the associations would be even weaker. These limited associations result in poor sensitivity and specificity. However, using two cut-points, it is possible to achieve high sensitivity and specificity, although by creating a very large gray area.

In addition to the limited associations, candidate tools for screening often have limitations related to difficulty of administration (e.g., computer-based for some, lack of face validity) and duration of administration (screening tools should be short). Furthermore, the “gold standard” against which these tools have been “validated” differs depending on the researchers’ setting and may not be so “golden” after all.

Comprehensive assessments remain dependent on clinical judgment, with clinicians relying on the combination of results (triangulation) and clinical experience to make a determination. Approaches currently in use vary regarding the specific tools they rely on (although the general areas are similar). There are few studies that examined this process against a “gold standard”, and few that examined specifically the combination of several tools in predicting fitness to drive. (1, 2)

Consensus Statements:

1. A decision about driving for an older adult should never be made on the results of one tool in isolation, as there is not enough evidence on any one tool to make a decision.

2. In the hands of a general practice occupational therapist, screening/assessment tools serve as criteria for referral and action. In the hands of driver rehabilitation specialist, the same tools can serve as a decision for driving competence (fitness to drive).”
3. Any screening tool suggesting someone has a cognitive impairment (e.g., Alzheimer Disease) should lead to referral if mild/moderate, and revocation of the driving privilege if severe.

4. Some screening tools appear to hold more promise than others (e.g., clock drawing test, Trails, MVPT (closure) and should be recommended as screening tools above others.

5. Both the SIMARD-MD and DriveAble lack sufficient evidence to be recommended.

6. In the absence of validated cut-points for most tools one approach to consider is the use of normative data. For example, individuals scoring in the bottom 20% of the overall population could be referred for assessment. Those in the bottom 5% may be advised to stop driving. Of course, these cut-points would have to be determined using appropriate data.

7. Occupational therapy practitioners should consider the multi-factorial nature of someone’s condition and potential for improvement. For example, depression symptoms may exacerbate cognitive impairment. Where remediation appears possible a team approach should be considered.

8. Regardless of a positive outcome (i.e., “safe”) of the driving evaluation the occupational therapists need to address future community mobility issues including enhancing safe driving as well as transitioning to non-driver status over time.

9. Screening or assessments tools that are developed specifically for a diagnostic group (e.g., dementia) should be interpreted carefully when used with other diagnostic groups unless there is sufficient evidence supporting the use of the tool with this other group.

Questions that still need to be answered.

- For screening purposes, we need to agree on the levels of sensitivity and specificity underlying the cut-points to be proposed for screening purposes.
- We need to examine what cut-points would provide the desired sensitivity and specificity determined in the previous point. To decide on what tools to select we should examine those for which there are at least 3 studies of decent quality.
- We need further standardization and evaluation of the comprehensive assessment process.
- We need to inform occupational therapists that the Candrive study will provide much information about potential screening tools.
- We need to determine if computer-based tools could be beneficial.

References:


Background.
Screening tools provide a means to differentiate drivers at increased risk due to limited visual, cognitive, and/or physical functioning. The Driving Health Inventory (DHI) is a computerized driver-screening battery comprised of measurement constructs validated as significant predictors of at-fault crashes by older drivers in the Maryland Pilot Older Driver Study (MaryPODS). This study identified two relevant physical domains and four perceptual and cognitive domains that were linked to increased crash risk. The specific peak valid odds ratios for crash involvement, i.e. “the odds of being in a crash if you fail a test compared to the odds of being in a crash if you pass” (Staplin, Lococo, Gish, & Decina, 2003, p. 5), as reported in Staplin, Gish, and Wagner (2003) include:

1. Leg Strength and Stamina (OR = 3.23, $\chi^2(1) = 13.32$)
2. Head/Neck Flexibility (OR = 2.01, $\chi^2(1) = 3.05$)
3. Short-term and Working Memory (OR = 3.34, $\chi^2(1) = 9.15$)
4. Visualization of Missing Information (OR = 3.60, $\chi^2(1) = 17.15$)
5. Visual Search with Divided Attention (OR = 1.80, $\chi^2(1) = 3.02$)
6. Visual Information Processing Speed (OR = 2.23, $\chi^2(1) = 7.99$)

(Staplin L., Lococo, Gish, & Decina, 2003; TransAnalytics, LLC, 2008).

Addressing these six domains, the following individual tests are included in the DHI. Trails A and Trails B tests (Bowie & Harvey, 2006) measure directed visual search. Useful field of view (UFOV®) (Ball & Owsley, 1993) subtest 2 provides a measure of information processing speed for divided attention tasks. The visual closure subtest of the Motor-Free Visual Perception Test (Colarusso & Hammill, 1972) measures visuospatial ability and requires subjects to visualize missing information. Delayed recall of a 3-word memory set (presented verbally) assesses working memory. Patients demonstrate head and neck mobility by turning their back to the computer and rotating their head and neck around so they can see an object presented on the computer screen. A 20-foot, timed walking task measures lower limb strength. The DHI also includes measures of high- and low-contrast visual acuity for consistency with current vision screening requirements for driver licensure across the U.S.

The DHI presents results as no impairment, mild impairment, or severe impairment. The cutoff for severe impairment is defined as the score on the individual screening measure that reflects the maximum valid odds ratio of increased crash risk observed in the MaryPODS research. The cutoff for mild impairment is defined as the score on the individual screening measure where a greater proportion of drivers was crash involved than was not crash involved. Scores better than the cutoff for mild impairment are reported as no impairment (Staplin, Lococo, Gish, & Decina, 2003; Staplin, Gish, & Wagner, 2003). For the low- and high-contrast
acuity measures, severe impairment is denoted by performance worse than 20/80 and mild impairment by performance in the 20/40 to 20/80 range.

In addition to the initial validation as a predictor of prospective crash outcomes, Edwards et al. (2008) have also investigated the acceptability and validity of the DHI as a screening tool for licensure and its validity for predicting retrospective, self-reported crash history. In this context, they found that DHI performance was worse for older drivers with a history of recent crashes, Wilk’s Λ = 0.789, F(7, 107) = 4.01, p < .001. More specifically, they found that the UFOV® and Trails B tests were most strongly related to recent crash involvement (p < 0.01). Edwards et al. also found that older drivers performed worse than younger drivers on the DHI. Validation and reliability information (in the context of driver screening) for the individual measures included in the DHI are summarized in detail by Vrkljan, McGrath, & Letts (2011).

Although there is significant support for the validity of the DHI and specifically the individual measures included, there are some studies that suggest limited predictive validity of a similar tool, Roadwise Review, that was developed for self-administration (Bedard, Riendeau, Weaver, & Clarkson, 2011; Scialfa, Ference, Boone, Tay, & Hudson, 2010). These studies suggest that further validation efforts using the DHI software would be prudent to ensure that the software, as implemented and used in clinical settings, has the ability to identify drivers at increased risk of traffic crash involvement. Unfortunately, much of the strongest evidence in favor of the DHI comes from the Maryland Pilot Older Driver Study which was used to identify the individual components that are included in the DHI. Moreover, this study did not utilize the DHI software as it is currently available to clinicians.

A recent study (Crisler, 2011) examined the acceptability of the DHI as a screening tool for clinical applications. 360 community-dwelling volunteers over age 50 were administered the DHI in a rehabilitation hospital. Participants then completed a survey regarding their impressions of the DHI. Volunteers reported strong agreement with statements that suggest they believe the DHI measures abilities important for safe driving and that they would seek or be willing to listen to advice about driving and safe mobility from medical professionals based on the results. Even drivers who scored poorly on the DHI were generally positive about its ability to help them understand their ability to drive safely, although these drivers were less positive than were drivers who scored well on the DHI. This suggests that early use of such screening measures may encourage acceptance of results as abilities decline later in life; however, further research will be necessary to firmly establish this link and investigate the benefits of using the DHI with diverse clinical populations.

Consensus Statements:
1. While the screening tool, Driving Health Inventory, was not originally designed for a clinical setting, it does appear to be a useful tool for generalists.
2. The Driving Health Inventory is more appropriate for a clinical setting than the Roadwise Review because of the additional data provided.

References:


Crisler, M., Brooks, J.O., Healy, S., & McKee, J. (2011, November). *The DrivingHealth® Inventory as a clinical screening tool for older drivers – An assessment of the face validity and acceptance of the DHI in a clinical setting.* Poster at the 2011 Gerontological Society of America 64th Annual Scientific Meeting, Boston, MA.


Appendix Z

Credentials for a Driving Rehabilitation Specialist

Wendy Stav, PhD, OTR, FAOTA

Two different credentials are available to driving rehabilitation specialists, although most jurisdictions do not require the credential, while many states do require certification as a driving instructor.

I. Certified driver rehabilitation specialist (CDRS) awarded by ADED
   A. Defined as certified to 'plans, develops, coordinates and implements driver rehabilitation services for individuals with disabilities.' (ADED, 2012)
   B. Eligible for certification if applicant meets one of the following:
      1. An undergraduate degree or higher in a health related area of study with 1 year full time experience in degree area of study and an additional 1 year full time experience in the field of Driver Rehabilitation.
      2. Four year undergraduate degree or higher with a major or minor in Traffic Safety and/or a Driver and Traffic Safety Endorsement with 1 year full time experience in Traffic Safety and an additional 2 years of full time experience in the field of Driver Rehabilitation.
      3. Two year degree in a health related area of study with 1 year experience in degree area of study and an additional 3 years full time experience in the field of Driver Rehabilitation.
      4. Five years of full time work experience in the field of Driver Rehabilitation.
         (ADED, 2012)
   C. Examination-based process of certification.
   D. Cost: $450
   E. Duration of credential: 3 years
   F. Levels of certification: 1 level for OT and OTA and other disciplines

II. Specialty Certified in Driving and Community Mobility (SCDCM/SCADCM) awarded by AOTA
   A. Grounded in Occupational Therapy Practice Framework and AOTA Standards of Continuing Competence
   B. Eligible for certification if all of the following are satisfied:
      1. OT or OTA degree
      2. In good standing with AOTA
      3. Minimum of 2000 hours and an OT or OTA
      4. Minimum of 600 hours delivering OT in the driving and/or community mobility
   C. Portfolio-based process of certification
   D. Cost: $375
   E. Duration of credential: 4 years
   F. Levels of certification: Two levels, SCDCM for OT and SCADCM for OTA

III. CDI (Certified driving instructor) awarded by different state agencies depending on the state (oftentimes the Department of Transportation, Department of Motor Vehicles, or Department of Highway Safety)
A. Process is highly variable depending on the state
B. Ranges from a weekend course through graduate level coursework

Levels of competence of an occupational therapy driving rehabilitation specialist

Stage 1 Novice
- Defined as recognizing “facts relevant to the acquisition of new skills” (Slater & Cohn, 1991, p. 1040). Essentially, know what needs to be learned. This is beyond the generalist level where practitioners don’t know everything that they don’t know.
- Capable to administering assessments and executing intervention plans according to guidelines, but are not yet able to interpret performance
- Very objective in practice
- Educational needs: Close mentoring, education in general components for driving rehabilitation, training in assessment tool interpretation, observation of skilled practitioner.

Stage 2 Advanced Beginner
- More experienced than novice to the extent there is an ability to consider other factors within the context of the client
- Instead of considering driving performance “in a vacuum”, the therapist also considers the client’s home driving environments and implications of the population density and typical destination for driving safety.
- Still rooted in patterns of behavior and may not be able to explain atypical behaviors.
- Not yet seeing the entire picture of the client and the context
- May recognize that driving behavior is unsafe or problematic but may not be able to identify the cause of the difficulty, limiting the opportunities to properly plan interventions
- Educational needs: Continued mentoring, education in specific elements of driving such as adaptive equipment options, scientific evidence related to assessment and intervention strategies, policies related to licensure and reimbursement, interdisciplinary collaboration, driving implications of diagnostic conditions /functional impairments, and transportation alternatives and community resources to sustain occupational engagement for clients, continued observation of skilled practitioner with expanding client diagnoses.

Stage 3 Competent
- “Seeing the situation as a set of facts” (Dreyfus & Dreyfus, 1986, p. 24)
- Able to distinguish which facts are relevant
- Can prioritize needs and interventions because the relative importance/relevance of the facts are understood
- Able to manage a larger, more involved workload with a “feeling” of a sense of mastery.
- Able to manager a larger workload because of more efficient assessment and intervention strategies and decision making with familiar and usual caseloads. Mastery in common diagnoses.
- Recognizes when mentoring is needed with more complex or unusual cases.
• Can formulate hypotheses such as, providing XYZ intervention will likely be able to return to driving, or no intervention will transition this person back to driving.
• Educational needs: Distance mentoring for complex or unfamiliar cases, continued monitoring and reading of the evidence for use in practice, training in non-clinical program skills such as marketing, billing, program evaluation, and risk management, and support for skill building in staff training and mentoring. Training in program evaluation, risk management or mentoring of students?

Stage 4 Proficient
• Defined as seeing the situation as a whole rather than as isolated parts
• Have a sense of direction but are also able to recognize and deal with unfamiliar situations
• Can problem solve the more complex situations without seeking assistance.
• Have a repertoire of options for clients and can think outside of the typical protocol if the circumstances are not typical
• For example, for a client who needs a certain type of adaptive equipment which they cannot afford or won’t fit in their vehicle, the proficient therapist is able to generate alternative options
• Educational needs: Mentor newer therapists as method to expand skills, reading evidence to use in practice, work collaboratively to generate evidence for new skills and knowledge, develop training materials, fieldwork experiences, and guest lectureships to hone skills

Stage 5 Expert
• “Institutive grasp of each situation and zero in on the accurate region of the program” (Benner, 1984, p. 32)
• Intuition is based on a thorough understanding of the situation and reflections of past experiences
• Rules are part of the background rather than the foreground of decision making
• An expert therapist could work with almost any client (age, diagnosis, functional impairment, vehicle, or driving environment) and effectively manage the case because of the vast array of knowledge and experiences from which to draw.
• Educational needs: Mentor others, provide education and training, generate evidence to offer new ideas or solutions

Consensus Statements:
1. The depth and breadth of knowledge and skills used in driving rehabilitation are both vast and therefore require years of experience and engagement in professional development to achieve higher levels of expertise.

2. Education, training, and professional development are required beyond the clinical practice of driving rehabilitation due to the range of non-clinical skills (marketing, development of referral pathways, documentation, scheduling, training of staff, policy development, etc.) required for successful practice in driving rehabilitation.

3. As evidence-based practitioners, scientific evidence should play a prominent role in the education and professional development of driving rehabilitation specialists while individuals
with higher levels of scholarship expertise have an obligation to generate evidence that is useful to practitioners for integration into practice.

**Accreditation Council for Occupational Therapy Education (ACOTE)**

All programs in occupational therapy are required to be accredited by the ACOTE. Below are select standards from the *Accreditation Standards for a Master’s-Degree-Level Educational Program for the Occupational Therapist.*

http://aota.org/Educate/Accredit/StandardsReview.aspx

There are ample opportunities to infuse content related to driving and community mobility into the curriculum, however most of these standards can be addressed without specifically identifying driving and community mobility. It is up to the individual curriculum or faculty member to apply this content to driving and community mobility.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.6.1</td>
<td>The curriculum must include preparation for practice as a generalist with a broad exposure to current practice settings (e.g., school, hospital, community, long-term care) and emerging practice areas (as defined by the program). The curriculum must prepare students to work with a variety of populations including, but not limited to, children, adolescents, adults, and elderly persons in areas of physical and mental health. 2011 Standard approved; Remains the same.</td>
</tr>
<tr>
<td>B.4.4</td>
<td>Evaluate client(s)’ occupational performance in activities of daily living (ADL), instrumental activities of daily living (IADL), education, work, play, leisure, and social participation. Evaluation of occupational performance using standardized and nonstandardized assessment tools includes  • The occupational profile, including participation in activities that are meaningful and necessary for the client to carry out roles in home, work, and community environments.  • Client factors, including body functions (e.g., neuromuscular, sensory, visual, perceptual, cognitive, mental) and body structures (e.g., cardiovascular, digestive, integumentary systems).  • Performance patterns (e.g., habits, routines, roles) and behavior patterns.  • Cultural, physical, social, personal, spiritual, temporal, and virtual contexts and activity demands that affect performance.  • Performance skills, including motor (e.g., posture, mobility, coordination, strength, energy), process (e.g., energy, knowledge, temporal organization, organizing space and objects, adaptation), and communication and interaction skills (e.g., physicality, information exchange, relations). 2011 New standard approved; starting 2013.</td>
</tr>
</tbody>
</table>
and necessary for the client to carry out roles in home, work, and community environments.

- Client factors, including values, beliefs, spirituality, body functions (e.g., neuromuscular, sensory and pain, visual, perceptual, cognitive, mental) and body structures (e.g., cardiovascular, digestive, nervous, genitourinary, integumentary systems).
- Performance patterns (e.g., habits, routines, rituals, roles).
- Context (e.g., cultural, personal, temporal, virtual and environment (e.g., physical, social).
- Performance skills, including motor and praxis skills, sensory-perceptual skills, emotional regulation skills, cognitive skills, and communication and social skills.

| B.5.1. | Use evaluation findings based on appropriate theoretical approaches, models of practice, and frames of reference to develop occupation-based intervention plans and strategies (including goals and methods to achieve them) based on the stated needs of the client as well as data gathered during the evaluation process in collaboration with the client and others. Intervention plans and strategies must be culturally relevant, reflective of current occupational therapy practice, and based on available evidence. Interventions address the following components:
| | • The occupational profile, including participation in activities that are meaningful and necessary for the client to carry out roles in home, work, and community environments.
| | • Client factors, including body functions (e.g., neuromuscular, sensory, visual, perceptual, cognitive, mental) and body structures (e.g., cardiovascular, digestive, integumentary systems).
| | • Performance patterns (e.g., habits, routines, roles) and behavior patterns.
| | • Cultural, physical, social, personal, spiritual, temporal, and virtual contexts and activity demands that affect performance.
| | • Performance skills, including motor (e.g., posture, mobility, coordination, strength, energy), process (e.g., energy, knowledge, temporal organization, organizing space and objects, adaptation), and communication and interaction skills (e.g., physicality, information exchange, relations).


Use evaluation findings to diagnosis occupational performance and participation based on appropriate theoretical approaches, models of practice, and interdisciplinary knowledge. Develop occupation-based intervention plans and strategies (including goals and methods to achieve them) on the basis of the stated needs of the client as well as data gathered during the evaluation process in collaboration with the client and others. Intervention plans and strategies must be culturally relevant, reflective of current occupational therapy practice, and based on available evidence. Interventions address the following components:

- The occupational profile, including participation in activities that are meaningful and necessary for the client to carry out roles in home, work, and community environments.
- Client factors, including values, beliefs, spirituality, body functions (e.g., neuromuscular, sensory and pain, visual, perceptual, cognitive, mental) and body structures (e.g., cardiovascular, digestive, nervous, genitourinary, integumentary systems).
- Performance patterns (e.g., habits, routines, rituals, roles).
- Context (e.g., cultural, personal, temporal, virtual and environment (e.g., physical, social).
- Performance skills, including motor and praxis skills, sensory-perceptual skills, emotional regulation skills, cognitive skills, and communication and social skills.
structures (e.g., cardiovascular, digestive, nervous, genitourinary, integumentary systems).
- Performance patterns (e.g., habits, routines, rituals, roles).
- Context (e.g., cultural, personal, temporal, virtual and environment (e.g., physical, social).
- Performance skills, including motor and praxis skills, sensory-perceptual skills, emotional regulation skills, cognitive skills, and communication and social skills.

| B.5.4. | Provide training in self-care, self-management, home management, and community and work integration. |
| B.5.5. | 2011 Standard approved; Remains the same with different number. |
| B.5.8. | Modify environments (e.g., home, work, school, community) and adapt processes, including the application of ergonomic principles. |
| B.5.9. | 2011 New standard approved; starting 2013. Evaluate and adapt processes or environments (e.g., home, work, school, community) and applying ergonomic principles and principles of environmental modification. |
| B.5.11. | Provide recommendations and training in techniques to enhance mobility, including physical transfers, wheelchair management, and community mobility, and address issues related to driver rehabilitation. |
| B.5.13. | 2011 New standard approved; starting 2013. Provide recommendations and training in techniques to enhance community mobility, including public transportation, community access, and issues related to driver rehabilitation. |
| B.5.15. | Develop and promote the use of appropriate home and community programming to support performance in the client’s natural environment and participation in all contexts relevant to the client. |
| B.5.17. | 2011 Standard remains the same with different number. |
| B.6.5. | Articulate the trends in models of service delivery and their potential effect on the practice of occupational therapy, including, but not limited to, medical, educational, community, and social models. |
| B.6.5. | 2011 New standard approved; starting 2013. Articulate the trends in models of service delivery and their potential effect on the practice of occupational therapy, including, but not limited to, medical, educational, community, social models, and their potential effect on the practice of occupational therapy. |
This table has been developed for the members of the expert panel to clarify, modify, or add to the “brainstorming” topics that may be forwarded as research ideas/topics and as mini-funded projects. This is step 1. Once this feedback is received, you will be asked to approve each statement and rank them by importance.

In the first column is EXACTLY what was on the yellow “post it.” The second column is Anne and Elin’s clarification and reflecting our recollection of the discussion. The third column was duplicated for your edits (can use track changes or completely reword). Please propose a 1-2 line description in the fourth column that will eventually be used as the description of the projects as we move them forward. Note: Expert members may not choose to comment on all ideas; leaving blanks is acceptable.

<table>
<thead>
<tr>
<th>Research Section</th>
<th>Anne &amp; Elin Interpretation</th>
<th>Expert Panel Clarification: please modify/add</th>
<th>Final “two line” description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brainstorm Ideas (exact wording on post its)</strong>&lt;br&gt;1. Developing probability calculator (David Carr) to help assess times to drive.</td>
<td>Developing a “probability calculator,” that is used with assessment tools, to help determine fitness to drive.</td>
<td>Developing a “probability calculator,” that is used with assessment tools, to help determine fitness to drive.</td>
<td></td>
</tr>
<tr>
<td>2. Evidence-based committee developed to make decisions on products.</td>
<td>Establish a committee who will contribute evidence-based information to help the OT make an informed decision about a product.</td>
<td>Establish a committee who will contribute evidence-based information to help the OT make an informed decision about a product.</td>
<td></td>
</tr>
<tr>
<td>3. Rating the evidence on screening and assessment tools.</td>
<td>Develop a system to rate the application of the screening and assessment tools to offer guidance for clinical application recognizing the distinct settings or context these tools may be used in.</td>
<td>Develop a system to rate the application of the screening and assessment tools to offer guidance for clinical application recognizing the distinct settings or context these tools may be used in.</td>
<td></td>
</tr>
<tr>
<td>4. Develop framework to apply justification for tool selection.</td>
<td>Develop a framework of evaluative criteria that OTs can use for driving tools (not equipment).</td>
<td>Develop a framework of evaluative criteria that OTs can use for driving tools (not equipment).</td>
<td></td>
</tr>
<tr>
<td>5. Tool development: Factors that</td>
<td>Include in the framework</td>
<td>Include in the framework in #</td>
<td></td>
</tr>
<tr>
<td>Prompt action technology’s glitzy “score.” The process under which it is used.</td>
<td>in # 4 should include a process that usability, technology (the glitz), data generated/reports factor.</td>
<td>4 should include a process that usability, technology (the glitz), data generated/reports factor.</td>
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<tr>
<td>6. Older drivers and use of technology (e.g., GPS, cell phones, texting).</td>
<td>Research on older drivers impact when using technology when driving.</td>
<td>Research on older drivers impact when using technology when driving.</td>
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<tr>
<td><strong>Terminology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. AOTA and ADED &amp; consistent terms Driver rehabilitation/Driving Rehabilitation Define “fit to drive.” Define “addressing driving.” Reconcile AOTA versus ADED terminology Screen/assessment Driving/driver Occupation centered focus Definitions considerations for stakeholders including AOTA, ADED, Consumers Terminology related to disability/impairment/normal aging Functional community mobility assessment versus driving evaluation</td>
<td>AOTA &amp; ADED need to work together to develop a glossary of terms and definitions (see attached list). Definitions need to be considered in terms of stakeholders including AOTA, ADED, &amp; Consumers.</td>
<td>AOTA &amp; ADED need to work together to develop a glossary of terms and definitions (see attached list). Definitions need to be considered in terms of stakeholders including AOTA, ADED, &amp; Consumers.</td>
<td></td>
</tr>
<tr>
<td>8. Clarify levels of driving evaluation.</td>
<td>The term driving evaluation involves pathways to difference services and decision points. We need to chart what they are in terms of labels or models or terms.</td>
<td>The term driving evaluation involves pathways to difference services and decision points. We need to chart what they are in terms of labels or models or terms.</td>
<td></td>
</tr>
<tr>
<td>9. Contextual barriers of program development To affect change in practice you need to understand and address the contextual barriers. To affect change in practice you need to understand and address the contextual barriers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia) CVA/Stroke Visual system impairments To justify referral to specialists (to the client, physician, insurer, and OT generalist), we need evidence to demonstrate benefit.</td>
<td></td>
<td>To justify referral to specialists (to the client, physician, insurer, and OT generalist), we need evidence to demonstrate benefit.</td>
<td></td>
</tr>
<tr>
<td>Lower level amputee</td>
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<td>---------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. ADHD &amp; ASD; Adolescents and driving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable to this project.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable to this project.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mini Funded Projects

| 13. List medical conditions that should trigger a referral for a driving evaluation. |
| Develop taxonomy of medical conditions and functional conditions that trigger a referral. |
| Develop taxonomy of medical conditions and functional conditions that trigger a referral. |

| The taxonomy above would distinguish between short term and long terms. |
| The taxonomy above would distinguish between short term and long terms. |

| 15. Reportable conditions |
| The taxonomy above would factor in the issue of reportable conditions. |
| The taxonomy above would factor in the issue of reportable conditions. |

| 16. Storage of oxygen tanks |
| Summarize the information from other studies for a handout. |
| Summarize the information from other studies for a handout. |

| 17. Help manage risk; risk management versus safety; documentation |
| Educational module/fact sheet for informing the generalists and specialists about risk. |
| Educational module/fact sheet for informing the generalists and specialists about risk. |

| 18. Bridging the gap: Helping generalist translates their existing skills to implications for driving. |
| Education at generalists’ level to identify candidates for driving rehabilitation. |
| Education at generalists’ level to identify candidates for driving rehabilitation. |

| 19. Sample driving reports from seasoned DRS. |
| Education on terminology related to documentation for generalists and specialists (e.g., safe) |
| Education on terminology related to documentation for generalists and specialists (e.g., safe) |

| 20. Mentoring programs |
| Expanding mentorship opportunities for generalists and specialists (including ADED’s current program) |
| Expanding mentorship opportunities for generalists and specialists (including ADED’s current program) |

| 21. Tool selection framework for clinicians. |
| Develop a framework of evaluative criteria that OTs can use for driving tools (a list of questions to ask vendors.) |
| Develop a framework of evaluative criteria that OTs can use for driving tools (a list of questions to ask vendors.) |

| 22. Interview candidates for DRS. |
| Develop a screening/interviewing tool for DRS candidates. |
| Develop a screening/interviewing tool for DRS candidates. |

<p>| 23. Update educational module/ACOTE standards. |
| Update and expand the educational module to include |</p>
<table>
<thead>
<tr>
<th></th>
<th>24. Reimbursement</th>
<th>Develop tutorial on how to document driving rehabilitation within our medical systems.</th>
<th>Develop tutorial on how to document driving rehabilitation within our medical systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25. Develop a process for referral from generalist to specialist to discuss the OT process.</td>
<td>Develop the framework (or possibly descriptive for current practice) for the process of referral from the generalist to the specialist in various settings.</td>
<td>Develop the framework (or possibly descriptive for current practice) for the process of referral from the generalist to the specialist in various settings.</td>
</tr>
<tr>
<td></td>
<td>26. Subcommittee on credentials: Certification for different skills within driver rehabilitation. Clinical evaluation for older drivers Equipment On-road for seniors New drivers, etc.</td>
<td>With a subcommittee, develop a of the work at varies level of driver rehab services as a pre-step DRS at specific skills levels (contribute to glossary?)</td>
<td>With a subcommittee, develop a of the work at varies level of driver rehab services as a pre-step DRS at specific skills levels (contribute to glossary?)</td>
</tr>
<tr>
<td></td>
<td>27. Rating the evidence and updating evidence based reviews</td>
<td>Current project: Anne</td>
<td>Current project: Anne</td>
</tr>
<tr>
<td></td>
<td>28. More normative data: screen, assess, and evaluate.</td>
<td>Gather normative data on OT used screening or assessment tools or evaluation process.</td>
<td>Gather normative data on OT used screening or assessment tools or evaluation process.</td>
</tr>
</tbody>
</table>
This table (second round) has been developed for the members of the expert panel to clarify, modify, or add to the “brainstorming” topics that may be forwarded as research ideas/topics and as mini-funded projects. **This is step 2.** Soon after this step, you will also be asked rank them the mini projects by priority for funding.

In the first column is EXACTLY what was on the yellow “post it.” The second column is a reflection of the edits received from expert panel members since the expert meeting. The third column is a description that will be used as the description of the mini projects as we move them forward. Please comment on columns two and especially column three.

Note: Expert members may not choose to comment on all ideas; leaving blanks is acceptable.

<table>
<thead>
<tr>
<th>Research Section</th>
<th>Expert Panel Clarification Results of feedback.</th>
<th>Final “two line” description. Does this describe the statement?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorm Ideas (exact wording on post its)</td>
<td>1. Developing probability calculator (David Carr) to help assess times to drive.</td>
<td>Develop a probability calculator with evidence-based assessment tools for determining need for a specialist referral.</td>
</tr>
<tr>
<td></td>
<td>2. Evidence-based committee developed to make decisions on products.</td>
<td>Establish a committee of experts to contribute and review evidence on a product to assist in the decision making of occupational therapists.</td>
</tr>
<tr>
<td></td>
<td>Second interpretation?</td>
<td>Establish a committee of experts to develop and revise an evidence-based review of the driving literature to help occupational therapists make an informed decision about assessment tools.</td>
</tr>
<tr>
<td></td>
<td>3. Rating the evidence on screening and assessment tools.</td>
<td>Develop a framework of evaluative criteria for the application of the screening and assessment tools to offer guidance for clinical application recognizing the distinct settings or context these tools may be used.</td>
</tr>
<tr>
<td></td>
<td>4. Develop framework to apply justification for tool selection.</td>
<td>Combining #3 and #4 and #5.</td>
</tr>
<tr>
<td></td>
<td>5. Tool development: Factors that prompt action technology’s “score.” The process under which it is used.</td>
<td></td>
</tr>
</tbody>
</table>
6. Older drivers and use of technology (e.g., GPS, cell phones, texting).  
Examine factors related to cognitive load or overload in older drivers’ performance.  
Research examining how older drivers use technology, cognitive load when using GPS while driving, and safety implications of technology.

7. AOTA and ADED & consistent terms  
Driver rehabilitation/Driving Rehabilitation  
Define “fit to drive.”  
Define “addressing driving.”  
Reconcile AOTA versus ADED terminology  
Screen/assessment  
Driving/driver  
Occupation centered focus  
Definitions considerations for stakeholders including AOTA, ADED, Consumers  
Terminology related to disability/impairment/normal aging  
Functional community mobility assessment versus driving evaluation  
Define and clarify the terminology used in the field of driver rehabilitation by AOTA and ADED.  
AOTA & ADED should determine a glossary of terms and definitions. All definitions will mean the same for all stakeholders, including AOTA, ADED, & consumers.

8. Clarify levels of driving evaluation.  
Define/describe the various program models used to provide driver rehabilitation and community mobility services.  
The term driving evaluation involves different services and decision points. Operationalize the pathways, decision services so consumers, therapists, and stakeholders can understand the various pathways.

9. Contextual barriers of program development  
Develop a better understanding of barriers to program development and address them to effect changes in practice.  
To change practice, the barriers to program development need to be understood, especially when developing the programs that might be developed in the future. Demystifying these barriers and strategies will be effective in changing current practice.

10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia)  
CVA/Stroke  
Visual system impairments  
Lower level amputee  
Conduct efficacy and effectiveness studies on occupational therapy driving evaluation and interventions.  
To justify referral to specialists (to the insurer, and OT generalist), we need to demonstrate benefit. The research is common diagnostic categories.

**Mini Funded Projects**

10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia)  
In research and mini-project.  
Complete an evidence-based review of common diagnosis for evaluation and intervention.  
Complete an evidence-based review and intervention for CVA/stroke, vision impairments, lower level amputee, and sclerosis based on the evidence now.
<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVA/Stroke</td>
<td>Visual system impairments Lower level amputee</td>
</tr>
<tr>
<td></td>
<td>dementia and Parkinson’s Disease. With increasing information, more consensus statements were developed.</td>
</tr>
<tr>
<td>13. List medical conditions that should trigger a referral for a</td>
<td>Develop taxonomy for functional and medical conditions that trigger a referral to a driver rehabilitation specialist who is an occupational therapist.</td>
</tr>
<tr>
<td>driving evaluation.</td>
<td>The taxonomy of medical conditions could be used to trigger a referral to a driver rehabilitation specialist. The taxonomy might also be used to distinguish between temporary or chronic conditions. The taxonomy might also be used to determine if medical conditions should be reported to licensed professionals.</td>
</tr>
<tr>
<td>15. Reportable conditions</td>
<td></td>
</tr>
<tr>
<td>16. Storage of oxygen tanks</td>
<td>Summarize the information from other studies for a handout.</td>
</tr>
<tr>
<td>17. Help manage risk; risk management versus safety; documentation</td>
<td>Develop a resource to inform generalists and specialists about risk management in driver rehabilitation.</td>
</tr>
<tr>
<td></td>
<td>Empower generalists to use risk management tools to help identify and intervene with older adults who may be unfit to drive by developing an educational module or sheet for informing the generalists about risk.</td>
</tr>
<tr>
<td>18. Bridging the gap: Helping generalist translates their existing</td>
<td>Enhance education at generalists’ level to help them identify seniors who are candidates for driving rehabilitation.</td>
</tr>
<tr>
<td>skills to implications for driving.</td>
<td>Develop an educational module to assist generalists in identifying what older adults might benefit from driving rehabilitation, both in terms of evaluation and intervention. This would be an example of typical intervention strategies (ADL) for older adults.</td>
</tr>
<tr>
<td>19. Sample driving reports from seasoned DRS.</td>
<td>Education module or unit for terminology related to documentation for generalists and specialists (e.g., safe)</td>
</tr>
<tr>
<td></td>
<td>Develop a template with key phrases that driver rehabilitation specialists use with accuracy and labels that promote the effective implementation of strategies. Develop the educational module or unit to accompany any sample driving report.</td>
</tr>
<tr>
<td>20. Mentoring programs</td>
<td>Expand mentorship opportunities for generalists and specialists.</td>
</tr>
<tr>
<td></td>
<td>Develop strategies for occupational therapists to ask vendors questions about driving assessment or intervention tools. Develop a list of questions that would be useful for occupational therapists to ask vendors about driving assessment or intervention tools.</td>
</tr>
<tr>
<td>21. Tool selection framework for clinicians.</td>
<td>Develop a framework of evaluative criteria that OTs can use for driving tools (a list of questions to ask vendors.)</td>
</tr>
<tr>
<td>Same as 3, 4, and 5 above from research? Should also be a mini project?</td>
<td>Develop a framework of evaluative criteria for the application of the screening and assessment tools to offer guidance for clinical application recognizing the distinct settings or context these tools may be used. A process should include usability, technology, data generated and ease of reports (glitz factors).</td>
</tr>
<tr>
<td></td>
<td>This is developing a framework that occupational therapists would be able to use to determine the importance, level of evidence, and use of assessment depending on diagnosis and other conditions. The framework would be a list of questions that could be applied to most tools being evaluated. The framework should focus on the criteria to be applied to most tools being evaluated.</td>
</tr>
</tbody>
</table>

**Could this be questions rather than a framework as below?**

```markdown
<table>
<thead>
<tr>
<th>Task</th>
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</tr>
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<tbody>
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<td>Same as 3, 4, and 5 above from research? Should also be a mini project?</td>
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</tr>
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</table>
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<table>
<thead>
<tr>
<th></th>
<th>Guidelines for Parkinson’s Disease, page 158</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>Interview candidates for DRS.</td>
</tr>
<tr>
<td></td>
<td>Develop a screening/interviewing tool for DRS candidates.</td>
</tr>
<tr>
<td></td>
<td>Using the knowledge from experienced rehabilitation specialists, develop a list of important skill sets to be included in the interviewing therapist who want to provide DRS rehabilitation.</td>
</tr>
<tr>
<td>23.</td>
<td>Update educational module/ACOTE standards.</td>
</tr>
<tr>
<td></td>
<td>Update and expand the educational module to include ACOTE standards.</td>
</tr>
<tr>
<td></td>
<td>Using the available resources, including peer-reviewed journals and promoting effective program models, update and expand the educational module for all occupational therapy programs.</td>
</tr>
<tr>
<td>24.</td>
<td>Reimbursement</td>
</tr>
<tr>
<td></td>
<td>Define the issues regarding reimbursement for driving rehabilitation services and how to comply with established guidelines.</td>
</tr>
<tr>
<td></td>
<td>Develop an educational module or textbook chapter on how to document driving rehabilitation with insurance systems.</td>
</tr>
<tr>
<td>25.</td>
<td>Develop a process for referral from generalist to specialist to discuss the OT process.</td>
</tr>
<tr>
<td></td>
<td>Develop a framework for the process of referral from the generalist to the specialist in various settings.</td>
</tr>
<tr>
<td></td>
<td>Develop a template or framework that generalist occupational therapist identify salient factors for driving and discussing referrals with the specialist. It might be different for different categories or settings.</td>
</tr>
<tr>
<td></td>
<td>Establish a committee for credentialing levels of driver rehabilitation services.</td>
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<tr>
<td></td>
<td>Identify the levels of expertise needed for each category of driver rehabilitation specialists and certification for the various categories or settings.</td>
</tr>
<tr>
<td>27.</td>
<td>Rating the evidence and updating evidence based reviews</td>
</tr>
<tr>
<td></td>
<td>Current evidence reviews in progress for intervention, screening/assessment, and vehicle equipment.</td>
</tr>
<tr>
<td></td>
<td>Gather normative data on screening, assessment tools, or evaluation processes used by occupational therapists.</td>
</tr>
<tr>
<td></td>
<td>With select tools, gather normative data.</td>
</tr>
</tbody>
</table>
This table (third round) has been developed for the members of the expert panel to clarify, modify, or add to the “brainstorming” topics that may be forwarded as research ideas/topics and as mini-funded projects. **This is step 2.** Soon after this step, you will also be asked rank them the mini projects by priority for funding.

In the first column is EXACTLY what was on the yellow “post it.” The second column is a reflection of the edits received from expert panel members since the expert meeting. The third column is a description that will be used as the description of the mini projects as we move them forward. Please comment on columns two and especially column three.

Note: Expert members may not choose to comment on all ideas; leaving blanks is acceptable.

<table>
<thead>
<tr>
<th>Research Section</th>
<th>Expert Panel Clarification</th>
<th>Final “two line” description. Does this describe the statement?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brainstorm Ideas</strong>&lt;br&gt;(exact wording on post its)</td>
<td><strong>Expert Panel Clarification</strong>&lt;br&gt;<strong>Results of feedback.</strong>&lt;br&gt;<strong>Final “two line” description.</strong> Does this describe the statement?</td>
<td><strong>Final “two line” description.</strong> Does this describe the statement?</td>
</tr>
<tr>
<td>1. Developing probability calculator (David Carr) to help assess times to drive.</td>
<td>Develop a probability calculator with evidence-based assessment tools for determining need for a specialist referral.</td>
<td>Using a “nomogram,” a select number of evidence-based screening tools would be used to calculate the odds of passing/failing a basic driving test. Research is needed to determine the tools, 2) appropriate diagnostic groups, and 3) acceptable scores for determining referrals to a driving rehabilitation specialist who may conduct more specialized evaluations or intervention.</td>
</tr>
<tr>
<td>2. Evidence-based committee developed to make decisions on products.</td>
<td>Establish a committee of experts to review evidence in the driving literature to assist occupational therapists in making informed decisions about assessment tools on assessment tools and/or intervention products</td>
<td>Develop a committee of experts to review and update literature reviews on specific tools and/or products that come on the market. This will assist therapists in making appropriate decisions about the use.</td>
</tr>
<tr>
<td>3. Rating the evidence on screening and assessment tools.</td>
<td>Develop a framework of evaluative criteria for the application of the screening and assessment tools to offer guidance for clinical application recognizing the distinct settings or context these tools may be used.</td>
<td>Develop a framework that occupational therapists can use to determine select and justify the best assessments tools used in determining fitness to drive. The framework would provide guidance on tool selection, diagnosis specific criteria (if appropriate), intervention guidance, and recommendations. The framework would consider factors including, but not limited to:</td>
</tr>
<tr>
<td>4. Develop framework to apply justification for tool selection.</td>
<td></td>
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<tr>
<td>5. Tool development: Factors that prompt action technology’s glitzy “score.” The process under which it is used.</td>
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<td></td>
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</tbody>
</table>
|   |   | affordability (therapist and clients), related to outcomes, adaptability, access to technological advantages, and data use would be necessary for determining usefulness of the framework for the future.
---|---|---
| 6. Older drivers and use of technology (e.g., GPS, cell phones, texting). | Examine factors related to cognitive load or overload in older drivers’ performance. | Research examining how older drivers use technology, 2) usefulness of technology distractibility due to cognitive load (phone or GPS while driving), and/or implications of the use of technology.
| 7. AOTA and ADED & consistent terms<br>Driver rehabilitation/Driving Rehabilitation<br>Define “fit to drive.”<br>Define “addressing driving.”<br>Reconcile AOTA versus ADED terminology<br>Screen/assessment<br>Driving/driver<br>Occupation centered focus<br>Definitions considerations for stakeholders including AOTA, ADED, Consumers<br>Terminology related to disability/impairment/normal aging<br>Functional community mobility assessment versus driving evaluation | Define and clarify the terminology used in the field of driver rehabilitation by AOTA and ADED. | AOTA & ADED should determine a glossary of terms and definitions. All definitions will mean the same for consumers, therapists, and third party payers.
| 8. Clarify levels of driving evaluation. | Define/describe the various program models used to provide driver rehabilitation and community mobility services. | The term “driving evaluation” involves different services and decision points. We need to define and operationalize the pathways, determine what strategies are effective, and services so consumers, therapists, and diverse programs can provide.
| 9. Contextual barriers of program development | Develop a better understanding of barriers to program development and address them to effect changes in practice. | To expand the availability of driving evaluations, barriers to development need to be identified and addressed. This research would identify and determine what strategies are effective in different contexts.
| 10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia) CVA/Stroke<br>Visual system impairments | Conduct efficacy and effectiveness studies on occupational therapy driving evaluation and interventions. | To justify driving program referral to clients, physicians, insurers, and general therapists to specialists, we need evidence that demonstrates benefit from these services. Evidence is needed for all common diagnostic categories, including, but not limited to: stroke, CVA.
<table>
<thead>
<tr>
<th>Mini Funded Projects</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia)</strong></td>
<td>Complete an evidence-based review of common diagnosis for evaluation and intervention. <em>In research and mini-project.</em></td>
</tr>
<tr>
<td>CVA/Stroke Visual system impairments Lower level amputee</td>
<td>Complete an evidence-based review of evaluation and intervention for specific diagnoses: CVA/stroke, visual system impairments, lower level amputee, and multiple sclerosis. Based on current evidence (Dementia and Parkinson’s completed.) Based on these reviews, consensus statements will be developed.</td>
</tr>
<tr>
<td><strong>13. List medical conditions that should trigger a referral for a driving evaluation.</strong></td>
<td>Develop taxonomy for functional and medical conditions that trigger a referral to a driver rehabilitation specialist who is an occupational therapist. <em>Combining #13 and #14 and #15.</em></td>
</tr>
<tr>
<td><strong>14. Acute versus long-term conditions – impact.</strong></td>
<td>Develop taxonomy of medical conditions that could be used to distinguish between temporary or chronic conditions. The taxonomy might also be used to identify older adults who are candidates for driving rehabilitation.</td>
</tr>
<tr>
<td><strong>15. Reportable conditions</strong></td>
<td>Research the best methods of storing oxygen tanks safely in vehicles and summarize in a handout.</td>
</tr>
<tr>
<td><strong>16. Storage of oxygen tanks</strong></td>
<td>Summarize the information from other studies for a handout.</td>
</tr>
<tr>
<td><strong>17. Help manage risk; risk management versus safety; documentation</strong></td>
<td>Empower generalists to use risk management strategies to help identify and intervene with others who are unfit to drive by developing an educational tool for informing the generalists about potential risk. This includes ethical obligations and family members about potential risk.</td>
</tr>
<tr>
<td><strong>18. Bridging the gap: Helping generalist translates their existing skills to implications for driving.</strong></td>
<td>Develop an educational module to enhance education at generalists’ level to help them identify older adults who are candidates for driving rehabilitation.</td>
</tr>
<tr>
<td><strong>19. Sample driving reports from seasoned DRS.</strong></td>
<td>Develop an educational module to accompany any sample driving report.</td>
</tr>
<tr>
<td><strong>20. Mentoring programs</strong></td>
<td>Develop strategies to promote mentoring opportunities for driver rehabilitation specialists and allied health professionals.</td>
</tr>
<tr>
<td>22. Interview candidates for DRS.</td>
<td>Develop a screening/interviewing tool for DRS candidates.</td>
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<tr>
<td>23. Update educational module/ACOTE standards.</td>
<td>Update and expand the educational module to include ACOTE standards.</td>
</tr>
<tr>
<td>24. Reimbursement</td>
<td>Define the issues regarding reimbursement for driving rehabilitation services and how to comply with established guidelines.</td>
</tr>
<tr>
<td>25. Develop a process for referral from generalist to specialist to discuss the OT process.</td>
<td>Develop a framework for the process of referral from the generalist to the specialist in various settings.</td>
</tr>
<tr>
<td>27. Rating the evidence and updating evidence based reviews</td>
<td>Current evidence reviews in progress for intervention, screening/assessment, and vehicle equipment.</td>
</tr>
<tr>
<td>28. More normative data: screen, assess, and evaluate.</td>
<td>Gather normative data on screening, assessment tools, or evaluation processes used by occupational therapists.</td>
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</tbody>
</table>
In the first column is exactly what was expressed at the expert meeting through notes. The second column is a reflection of the edits received from expert panel members since the expert meeting. The third column is a description after two opportunities of review by members of the expert panel.

<table>
<thead>
<tr>
<th>Research Section</th>
<th>Expert Panel Clarification</th>
<th>Final description of research idea</th>
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<tr>
<td><strong>Brainstorm Ideas</strong></td>
<td><strong>Result of feedback.</strong></td>
<td></td>
</tr>
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<td>Develop a probability calculator with evidence-based assessment tools for determining need for a specialist referral.</td>
<td>Using a “nomogram,” a select number of evidence-based screening tools would be used to predict probabilities of passing/failing a behavioral driving test. Research is needed to develop tools, 2) appropriate diagnostic groups, 3) acceptable scores for determining needs and 4) the calculator should be tied to justification for tool selection.</td>
</tr>
<tr>
<td>2. Evidence-based committee developed to make decisions on products.</td>
<td>Establish a committee of experts to review evidence in the driving literature to assist occupational therapists in making informed decisions about assessment tools on assessment tools and/or intervention products</td>
<td>Develop a committee of experts in driving to update a literature review incorporating evidence on specific tools and/or intervention products on the market. This will assist therapists in making appropriate decisions about assessment tools.</td>
</tr>
<tr>
<td>3. Rating the evidence on screening and assessment tools.</td>
<td>Develop a framework of evaluative criteria for the application of the screening and assessment tools to offer guidance for clinical application recognizing the distinct settings or context these tools may be used. A process should include usability, technology, data generated and ease of reports (glitz factors). <strong>Combining #3 and #4 and #5.</strong></td>
<td>Develop a framework that occupational therapists can use to determine select and justify 1) assessments tools used in determining the need to drive and 2) intervention tools to mediate cognitive load. The framework would provide tool selection, diagnosis specific criteria, intervention guidance and recommendations. The framework would consider factors including, but not limited to, affordability (therapist and clients), related to outcomes, adaptability, accessibility and technological advantages, and data that would be necessary for determining the usefulness of the framework for therapists.</td>
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<td>Examine factors related to cognitive load or overload in older drivers’ performance.</td>
<td>Research examining how older drivers use technology, 2) usefulness of technology.</td>
</tr>
</tbody>
</table>
7. AOTA and ADED & consistent terms
Driver rehabilitation/Driving Rehabilitation
Define “fit to drive.”
Define “addressing driving.”
Reconcile AOTA versus ADED terminology
Screen/assessment
Driving/driver
Occupation centered focus
Definitions considerations for stakeholders including AOTA, ADED, Consumers
Terminology related to disability/impairment/normal aging
Functional community mobility assessment versus driving evaluation

<table>
<thead>
<tr>
<th>7. AOTA and ADED &amp; consistent terms</th>
<th>Define and clarify the terminology used in the field of driver rehabilitation by AOTA and ADED.</th>
<th>AOTA &amp; ADED should determine a glossary of terms and definitions. All definitions will mean the same for consumers, and third party payers.</th>
</tr>
</thead>
</table>

8. Clarify levels of driving evaluation.

| 8. Clarify levels of driving evaluation. | Define/describe the various program models used to provide driver rehabilitation and community mobility services. | The term “driving evaluation” involves different services and decision points, and operationalize the pathways, define services so consumers, therapists, and diverse programs can provide. |

9. Contextual barriers of program development

| 9. Contextual barriers of program development | Develop a better understanding of barriers to program development and address them to effect changes in practice. | To expand the availability of driving services so consumers, therapists, and diverse programs can provide. Barriers to development need to be identified and determined what strategies are effective in those contexts. |

10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia)
CVA/Stroke
Visual system impairments
Lower level amputee

| 10. Evidence-based review of diagnosis for the evaluation and intervention (as done with PD and dementia) | Conduct efficacy and effectiveness studies on occupational therapy driving evaluation and interventions. | To justify driving program referral to clients, physicians, insurers, and general therapists to specialists, we need evidence that demonstrates benefit from these services. Evidence is needed for all common diagnostic categories including, but not limited to: stroke, visual system impairments, and lower extremity amputees. |

26. Subcommittee on credentials: Certification for different skills within driver rehabilitation.
Clinical evaluation for older drivers

<p>| 26. Subcommittee on credentials: Certification for different skills within driver rehabilitation. | Establish a committee for credentialing levels of driver rehabilitation services. | Identify the levels of expertise needed to set a site for driver rehabilitation specialists. Certification for the various categories should be developed by doing a feasibility study. |</p>
<table>
<thead>
<tr>
<th>Equipment</th>
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<tbody>
<tr>
<td>On-road for seniors</td>
<td></td>
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<tr>
<td>New drivers, etc.</td>
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</tbody>
</table>
1. This is the integrated list of ideas for funded mini-projects. What is needed now is for our expert members to help us determine which projects should be funded for 2012. Review the ideas below and select whether it should be: 1) a priority project, 2) a good project, but not priority and therefore considered secondary, or 3) unsure or even though it may be a good idea, it should not be funded for a variety of reasons (e.g., already being done, not important enough, etc).

<table>
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Statistic | Value
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Min Value | 1
Max Value | 1
Mean | 1.00
Variance | 0.00
Standard Deviation | 0.00
Total Responses | 15

2. Complete an evidence-based review of driving evaluation and intervention for specific diagnoses, specifically: CVA/stroke, visual system impairments, lower level amputee, and multiple sclerosis based on current evidence (Dementia and Parkinson’s Disease completed.) Based on these reviews, potential consensus statements will be developed.

<table>
<thead>
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<td>Secondary project</td>
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<tr>
<td>3</td>
<td>Unsure, please explain:</td>
<td>2</td>
<td>13%</td>
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</table>
Unsure, please explain:

one diagnosis per mini-project (similar to process in experts meeting)

EBLR are LARGE projects taking months, this is not likely a mini-project- speak with Deborah Lieberman about this

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<th>Statistic</th>
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<td></td>
<td>Total</td>
<td>16</td>
<td>100%</td>
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</tbody>
</table>

Unsure, please explain:
do not think this has enough weight to it - can check with equipment companies and AARC. DME companies deliver oxygen....how do they store it? that may be our answer already being done.

we have been looking into this and the information is painfully limited. frustratingly so, but that may also make it an excellent project to summarize suggestions to date

Unsure of the volume?

<table>
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<th>Statistic</th>
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<tr>
<td>Total Responses</td>
<td>16</td>
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</table>
4. Empower generalists to use risk management strategies to help identify and intervene with older drivers who are unfit to drive by developing an educational module/fact sheet for informing the generalists and specialists about risk. This includes ethical obligations to warn clients and family members about potential risk to self and others.

<table>
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<th>Answer</th>
<th>Response</th>
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Unsure, please explain:
unclear on whom is deciding fitness to drive; statement is confusing

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<tr>
<th>Statistic</th>
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<tbody>
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<td>16</td>
</tr>
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</table>

5. Develop an educational module to assist generalists in identifying older adults who might benefit from driver rehabilitation, both in terms of evaluation and intervention. This would be educating the generalist that scope of practice includes driving as an IADL with older adults.

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<td>Total</td>
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</tbody>
</table>
6. Develop a template with key phrases that experienced driver rehabilitation specialists use to assist generalists with accurate terminology and effective documentation strategies. Develop the educational module to accompany any sample driving reports.

Unsure, please explain:

crossing a line in that a generalist may not want to document all driving related activities as it may affect reimbursement

are we in agreement of the terminology and do we have a good enough understanding of all of the documentation issues to address this issue in the amount of time allocated?
7. Develop strategies to promote mentorships between the occupational therapy generalist and specialists, including expansion of the ADED mentoring program.

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<td>Total</td>
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<td>16</td>
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Unsure, please explain:
maybe in progress with AOTA???

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<td>Total Responses</td>
<td>16</td>
</tr>
</tbody>
</table>
8. Develop a framework that occupational therapists could use to determine select and justify 1) specific assessments tools used in determining fitness to drive and 2) intervention tools to mediate skills and abilities to drive. The framework would provide guidance on tool selection, diagnosis specific criteria (when appropriate), intervention guidance, and outcome recommendations. The framework would address factors including, but not limited to: Availability, affordability (therapist and clients), usability, evidence related to outcomes, adaptability, acceptability, technological advantages, and data reporting.

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<td>Total</td>
<td>16</td>
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Unsure, please explain:

a worthy goal but question the ability to achieve in short time frame.
again, this sounds like more than a mini project

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</table>
9. Using the knowledge from experienced driver rehabilitation specialists, develop a list of essential or important skill sets to be included in screening or interviewing therapists who want to move into the driver rehabilitation area of practice to ensure the candidate can develop the needed clinical competencies.

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10. Using the available resources, including new standards, and promoting effective program models, update and expand the educational model for driving and community mobility for all professional occupational therapy programs.

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Unsure, please explain:
11. Develop an educational module or tutorial on how to document driving rehabilitation within our medical systems.

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| 1  | Priority project.               | 6        | 38%
| 2  | Secondary project              | 8        | 50%
| 3  | Unsure, please explain:         | 2        | 13%
|    | Total                           | 16       | 100%

Unsure, please explain:

need to watch the reimbursement piece
again a worthy goal but may not be able to achieve in the time frame.
12. Develop a template or framework that will help the generalist occupational therapist identify the most salient factors for driving in order to describe them in the referral for the specialist. It might be different for different diagnostic categories or settings.

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<td>Secondary project</td>
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<tr>
<td>3</td>
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13. Gather normative data for specific screening tools, assessment tools, or evaluation processes.

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<td>19%</td>
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<td>Total</td>
<td>16</td>
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GRS diagnosis sheets???
Unsure, please explain:
more a research issue
I think this is incredibly important but which tools? It is so expensive to collect a large sample may be outside scope
This is methodological research and not a mini project

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14. The next three potential mini-projects are ideas generated from our experts on interactive driving simulation. These ideas have not been presented to the all expert group members in the "Brainstorming" document as our discussion on driving simulation at the expert meeting was deferred due to time. Since most of us agree that driving simulation is a potential evaluation and assessment tool to be explored, we wanted to include some ideas for possible mini projects. Develop a template with key phrases to use for documentation of interactive driving simulation assessment or intervention as they relate to on-road driving skills.

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<th>Answer</th>
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<tr>
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<td>3</td>
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<td>31%</td>
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<td>Total</td>
<td>16</td>
<td>100%</td>
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</table>
Unsure, please explain:

- but not always a covered service
- Not sure exactly what this would do
- not convinced that simulation is a replacement for traditional driver evaluation program
- I would defer to the simulator experts
- this should be done by the researchers doing simulation research

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15. An evidence-based review and meta-analysis to identify the effectiveness of simulator interventions on the driving performance of older adults.

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<tr>
<td>1</td>
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<td>2</td>
<td>Secondary project</td>
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<td>3</td>
<td>Unsure, please explain:</td>
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<td>Total</td>
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<td>16</td>
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</table>

Unsure, please explain:

- not a mini project
- think it is too early for this
- Defer to experts on driver simulators
- again, EBLR are not mini-projects, they take upwards of a year- speak with Deborah Lieberman
### Statistic Table

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### Question

16. The effectiveness of a training program using a left-foot accelerator pedal in a driving simulator.

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<th>#</th>
<th>Answer</th>
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<tbody>
<tr>
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<tr>
<td>2</td>
<td>Secondary project</td>
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<tr>
<td>3</td>
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<td>Total</td>
<td>16</td>
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**Unsure, please explain:**

Would this be studied or is there evidence that would be disseminated? Do you really need a simulator to do this, as opposed to a real car?
Appendix FF

NHTSA/AOTA Cooperative Agreement: The Pathways Project to Foster Occupational Therapist Engagement in Older Driver Rehabilitation

Consensus Statements: Results from the Expert Members

A group of invited transportation experts met on March 6-7, 2012 to join together to discuss and build consensus on how the occupational therapy practitioners can meet the need of driving and community mobility of our aging population; a population that depends almost exclusively on motor vehicles for personal transportation. The group consisted of occupational therapy practitioners, both generalists and driving rehabilitation specialists, and researchers with occupational therapy backgrounds and other related professions. Through grant funding by the National Highway Traffic Safety Administration to the American Occupational Therapy Association, this meeting was a keystone in the launch of this initiative.

The meeting was planned with the expert committee preparing discussion papers and generating statements that were presented as possible consensus guidelines for occupational therapy practice in this area. Both research and practice ideas were captured at the meeting for further planning and use.

*The priority of the meeting was to develop criteria for referral to driver rehabilitation specialists to serve as guidance for program development. The objective was to develop pathways assuring a continuum of services for clients in diverse settings.* This handout summarizes the specific statements that the expert panel generated as consensus statements.

Specifically, five major areas were covered and discussed. These included 1) definitions of terms and models of programs, 2) specific client groups typical of services, 3) driving simulation, 4) screening and assessment tools, and 5) occupational therapy education. The resulting series of statements should assist occupational therapists in building and expanding practice in this critical area of occupational therapy practice.

Types of Consensus Statements

There were two types of consensus statements established at the meeting. One type was an *Agree or Disagree*. The group established a criterion of at least 85% of the group members had to agree to achieve consensus with each individual statement.

The other type of consensus statements was evaluated in terms of the degree of evidence supporting the statement. For statements that had clear and convincing evidence, the statement would be considered Level 1: Evidence is strong and allows for an evidence-based consensus statement. If the evidence were not as strong, it would be considered a Level 2: Evidence is suggestive and allows for a consensus statement. Level 3 was when the evidence is conflicting, inconclusive, or not available; thus recommendations are based on clinical judgment and theory.

As with the agree/disagree statements, the criterion was set at 85% for a statement to be considered a consensus statement at any particular level.

- Level 1: Evidence is strong and allows for an evidence-based consensus statement.
- Level 2: Evidence is suggestive and allows for a consensus statement.
- Level 3 was when the evidence is conflicting, inconclusive, or not available; thus recommendations are based on clinical judgment and theory.

Definition of Terms and Models of Programs.
Driver rehabilitation is a multidisciplinary field within a complex environment that is balanced between: 1) the legal context of the fifty states’ individual department of motor vehicle laws and procedures, 2) the occupational therapist educated in medical conditions, and 3) the aging baby boomers that view driving as a right rather than a privilege. Layered on the complexity of the issues is a language barrier and diversity of programs without the necessary terminology for consumers to understand the differences. Depending on the perspective of the stakeholder, the terminology and interpretation of outcomes remains inconsistent. At the expert meeting, there was a rich discussion of language and various models of programs. In this area, rather than defining terminology and programs, the outcome was an agreement of need to work jointly together to develop a glossary from the perspective of specific stakeholders and a commitment to define programs along a common language for the consumer and other stakeholders to understand the language and how to use different program models.

The statements in this area that achieved consensus as Agreed were:

- Language/terminology is an issue and we want to strive to be consistent so that the community and other professionals understand and this is a priority for future work.
- There is a need to differentiate programs based on their levels of service and compliance with ADED Best Practices.
- If program models are clearly defined, then there is a need for improved and understandable descriptors/definitions for the public and other stakeholders.
- There is a need to identify a level of education, training, or experience to use DRS as a credential.
- There is a clear need for clear definition of DRS and who can use this title as compare to those who use the CDRS title.
- There is a need to explore the training and expertise required of a provider offering a driver rehabilitation program.

Client Groups

In preparation for this meeting, several expert members summarized the current evidence about specific client groups with the goal and providing guidance for occupational therapists in developing criteria for referral to driver rehabilitation specialists. The goal of the pathways projects is to utilize the skill set of the occupational therapy generalist in providing screening for clients so that the client is referred for a comprehensive driving evaluation at the appropriate time, if at all. The diagnoses specifically discussed included dementia, COPD, physical impairments, and Parkinson’s disease with other common diagnoses targeted for future discussion and consensus statements.

DEMENTIA

The following statements reached consensus for Level 1: Evidence is strong and allows for an evidence-based consensus statement.

- An individual with moderate to severe dementia should not drive.
- Those with very mild or mild dementia may be appropriately referred for further testing when risk factors for unsafe driving are present.
- If the patient has a neurodegenerative dementia, mobility counseling (to include alternative methods of transportation) should start immediately anticipating that driving cessation will likely occur in the near future.
- Self-report regarding driving capability is often inaccurate; therefore observation of occupational performance is necessary.
Co-piloting, in which a passenger verbally assists the individual to drive or follow a route, is not recommended. The need for co-piloting is an indication that the patient should stop active driving, as verbal instructions are insufficient in a driving situation where a rapid response is required to prevent a crash.

Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:

- Regardless of diagnosis, assessment and recommendations for optimal and safest community mobility should be provided.
- Regardless of the driving assessment outcome, when an individual is diagnosed with dementia, the general OT should start planning exploration of alternative transportations options early and begin to use these options to increase the person’s familiarity with them.
- Occupational therapy practitioners need to know legal and ethical obligations related to driving and community mobility.

**PARKINSON’S DISEASE**

The following statements reached consensus for Level 1: Evidence is strong and allows for an evidence-based consensus statement.

- Drivers with PD who have **mild motor disability** as measured by low scores on the UPDRS Part 3, and no or few risk factors (anti-Parkinson drugs, >75 years of age), may be safe. However, we recommend that the individual who fits this profile and those who are newly diagnosed with PD:
  - Undergo a baseline comprehensive driving evaluation
  - Follow-up annually with repeat comprehensive driving evaluations
  - Start planning for driving cessation because of the progressive nature of the disease
  - Start conversations with the family about retirement from driving
  - Start developing a plan for use of alternative transportation options.

- For those with **severe motor impairment** and disease severity (high UPDRS Part 3 scores) and multiple risk factors (decreased information processing speed, e.g. scoring greater or equal to 3 on the UFOV risk index, impaired contrast sensitivity, scoring greater than 180 seconds on the Trails B, and scoring greater than 7.5 seconds on the Rapid Pace Walk) we recommend: 1) forfeiting the license, 2) mandatory reporting, and 3) travel training.

The following statements reached consensus for Level 2: Evidence is suggestive and allows for a consensus statement.

- Research is in progress to provide better guidelines for the “middle” group: i.e., those with **mild to moderate motor disability** and several risk factors. This group is the most challenging and we recommend
  - A required comprehensive driving evaluation
  - Providing them with opportunities for rehabilitation, including behind-the-wheel training, compensatory strategies, driving restriction, self-regulation
  - Providing them with strategies to address transitioning to non-driving including starting conversations about driving retirement, family involvement in driving retirement, consultation, referral for counseling
COPD
Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:

- When an individual has COPD, a referral for a driving evaluation is indicated if one or any of these are present: 1) cognitive decline is evident with either psychometric testing or while performing other ADL, 2) concern is raised about driving safety through direct observation, family concern, or driving incidents, 3) when individual has difficulty maintaining oxygen saturation less than 90% at rest, 4) when the individual experiences dyspnea at rest or while behind the wheel, or 5) when a loading device is needed to manage a powered mobility device or oxygen needs to be secure.

- When an individual has COPD, the driving rehabilitation specialist should monitor oxygen saturation while driving to measure the effects of driving tasks on oxygen levels in the blood. This information can be used to verify the need to drive with oxygen to improve cognition as well as heart and other organ functioning. Pulse oximetry is also an effective tool to demonstrate the effects of energy conservation (vehicle features, arm position etc.) and breathing techniques have while driving.

- When an individual has COPD, the driving rehabilitation specialist’s recommendations are able to provide guidance on overall driving skills and safety including driving limits and compensatory techniques, as well as assistance with loading devices for power mobility devices, and oxygen storage.

- Community mobility should be addressed with every occupational therapy client as part of the initial evaluation and most importantly as part of the discharge planning.

PHYSICAL DISABILITIES
Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:

- An individual with a non-functional lower limb, lower extremity prosthesis, or an orthotic on a lower limb used for operation of vehicle should be referred for a driving evaluation.

- An individual with a non-functional upper limb or upper extremity prosthesis should be referred for a driving evaluation.

- An individual with a spinal cord injury at any level should be referred early in the rehabilitation process for consultation with a driver rehabilitation specialist.

- A client with a progressive condition which affects primarily sensation and/or motor function (i.e., multiple sclerosis, post-polio syndrome) should be referred to a driver rehabilitation specialist to determine a baseline need for adaptive equipment for their motor vehicle. The driver rehabilitation specialist can assist with planning for future needs and re-evaluation based on the progression of the condition.

- A client with a non-progressive condition that affects primarily sensation and/or motor function (i.e., cerebral palsy, spina bifida, muscular dystrophy, spinal muscular atrophy, osteogenesis imperfect, arthrogryposis) should be referred to a driver rehabilitation specialist to determine adaptive equipment needed as well as their potential to drive in the future. Since wheelchair, vehicle, and funding decisions made early in the process impact the potential for driving independence, involving the
specialist early in the process will ensure comprehensive planning for community mobility for the client and family.

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<th>Ethical Obligations</th>
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<td>Driving and community mobility presents a unique ethical challenge to occupational therapists. Specifically, when making recommendations about safety in the home, for example, the therapist has an ethical obligation to inform the client and family that he or she may be at risk for a fall or other safety issues if he or she chooses not to follow the therapist’s recommendation. The client has a choice and may choose to go home alone in spite of the risk. The issue with driving is that the client may choose to take the risk, but with this activity, may endanger the public if deemed an at-risk driver by the therapist. Thus, the group discussed the ethical obligations, agreeing that safety is the key issue. Who should report and how to report were discussed with identification that guidelines to manage risk needed to be developed. All members of the expert panel agreed that 1) no evidence is needed for to support ethics, 2) ethical statements applied to everyone, 3) the principles underlay what all occupational therapists do, and 4) ethical standards agreed upon here are supported by professional standards and official documents. Based on Level 3: Recommendations are based on clinical judgment and theory, the following statement achieved consensus:</td>
</tr>
<tr>
<td>• Driving is a high volume, high risk activity and the changing demographics will result in increasing demand and opportunity for occupational therapy evaluation and recommendations. Occupational therapy practitioners are obligated to follow the ethical principles as applicable to practice.</td>
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</table>

All other statements pertaining to ethical obligations (below) achieved consensus as Agreed: |
| • Occupational therapy evaluation identifies deficits in performance skills (and source, e.g. client factors) that affect ability to do daily activities (occupations). Driving is a daily occupation for a significant number of individuals across the entire lifespan. |
| • The Occupational Profile (focused interview) should be part of the evaluation process and include/address driving if identified by client as a desired outcome. |
| • Current, appropriate evaluation and assessment tools targeted to obtain meaningful data must be used and administered correctly. |
| • Occupational therapists and occupational therapy assistants have an obligation to work within their level of competence: Generalist occupational therapists are qualified to obtain data, assess skills related to driving, should take steps to manage risks relevant to driving and should be familiar with appropriate referral sources for more specialized evaluation (Principle 11). |
| • Educational curricula prepare occupational therapists to assess impairment and safety issues with performance of daily occupations (e.g. driving and community mobility) from a musculoskeletal, sensory perceptual, cognitive, and psychosocial perspective. |
| • Data from occupational therapy evaluation and intervention identifies safety issues (requiring the therapist to address/document/make recommendations) related to ADLs and IADLs (e.g., bath transfers, meal prep): A client’s performance abilities/ disabilities may impact ability to drive safely, if at all. Therefore, there is a professional and ethical obligation to identify and warn when safety deficits or risks are identified, including driving. |
• Professional, clinical, and ethical reasoning are taught in occupational therapy educational programs and utilized in the clinic to evaluate data and make judgments about realistic, appropriate goals and strategies (or alternative options) to achieve them. This includes driving and community mobility.

• Principles in the *Occupational Therapy Code of Ethics and Ethics Standards (2010)* support the overarching ethical obligation to provide services to benefit client and avoid harm. Driving is an important occupation but also has potential for harm to client as well as general public and must be considered by the practitioners.
  • Impaired cognition has been shown in the literature to increase difficulty and risk for driving (Carr, 1997; Dubinsky, Stein, & Lyons, 2000; Love, Welsh, Knabb, Scott, & Brokaw, 2008, p. 536). Impaired cognition also has safety implications for ADLs and IADLs. The challenge is gauging the potential risk that may result from the level of impairment and requires data, professional training and professional judgment. This is also true for vision and physical impairments.

• All principles of the Code and Ethics Standards have relevance for addressing and warning about potential driving impairment.

• Case law exists and sets precedent for professional obligation to warn based on foreseeable likelihood of danger or harm due to impaired client.

• Confidentiality is presumed in client/therapist relationships but there are legal and ethical considerations that supersede this principle and should lead to communication, documentation of recommendations and possible reporting.

• Reimbursement should not influence decision making related to providing driving services.

• Occupational therapists have an ethical responsibility to know the laws in their state that related to their reporting obligations and options with impaired drivers.

• If the therapist reports the patient’s name to the DMV, it is the therapist’s ethical responsibility to make every effort to inform the patient that he/she is doing so.

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**Screening and Assessment**

The topic of evaluation, screening and assessment was a rich discussion that included the issues of language (e.g., distinguishing between assessment and evaluation, driving evaluation versus comprehensive driving evaluations,), Medicare billing for evaluations that include driving, and most significantly, the role of the occupational generalist in driving evaluation. Part of the discussion was reviewing the evidence, or lack of conclusive evidence, about assessment tools. Although only a few were discussion in detail, the emphasis was on the appropriate use of assessment and screening tools for referral from the generalist to the specialist.

The following statements reached consensus for Level 1: Evidence is strong and allows for an evidence-based consensus statement.

• A decision about continued, restricted, or cessation of driving should never be made on the results of one tool in isolation, as there is not enough evidence on any one tool to make a decision.

• Measurement tools that are developed specifically for a diagnostic group should be interpreted carefully when used with other diagnostic groups unless there is sufficient evidence supporting the use of the tool with this other group.
• Measurement tools that are developed based upon specific outcomes (i.e., crash versus driving performance) should be interpreted carefully when used to assess other outcomes.
• Measurement tools must be administered according to the protocol in order to use the norms and/or evidence.

The following statements reached consensus for Level 2: Evidence is suggestive and allows for a consensus statement.
• If the client is determined unfit to drive, the occupational therapist should provide intervention or an appropriate referral for intervention and planning to address transportation options and community mobility.
• Some screening tools appear to hold more promise than others. Therapists should use evidence-based tools in making decisions.

Although there was not enough conclusive evidence for the next statements, the expert panel reached consensus for these recommendations, Level 3: Based on expert clinical judgment and theory.
• The ethical application of research knowledge depends on the critical appraisal of the research, its replication, and adequate synthesis.
• Occupational Therapists need to apply a framework to identify the criteria required to select the tools best suited to their needs and practices.
• In the hands of a general practice occupational therapist, screening/assessment tools serve as criteria for referral and action. In the hands of the driver rehabilitation specialist, the same tools can contribute to a decision for fitness to drive.
• Occupational therapy generalist should consider the multi-factorial nature of someone’s condition and potential for improvement.
• If the client is determined fit to drive the occupational therapists need to address future community mobility issues including enhancing safe driving as well as transitioning to non-driver status over time.
• Processes should be followed for occupational therapy generalists to start the driving discussions with sufficient clinically related evidence.

Driving Simulation

Due to time restraints, the discussion about issues of driver simulation was not extensive, although two members had written two brief papers discussing current evidence and issues with interactive driving simulation as both an assessment and intervention tool. After the meeting, these two members met through conference call and presented joint consensus statements that were sent to all expert members to ask for their agreement or not. The five consensus statements achieved consensus by the group through electronic voting. It was clearly discussed that there was not enough time to devote to this unique tool and will continue to be a topic that needs further research and application in practice. However, what was clear is the strong message that those who choose to use driving simulation must do so with clear objectives, seek appropriate training, and be prepared for dealing with simulator adaptation issues.
The statements in this area that achieved consensus as Agreed were:
Due to driving simulator adaptation, unfamiliarity and anxiety with technology, and a lack of standardization and validation of outcome metrics, driving simulators should not be the sole determinant of fitness to drive for older adults.

Occupational therapists using driving simulation need to seek and obtain the appropriate education and training to use this tool effectively, appropriately, and with the knowledge to minimize simulation sickness.

Carefully designed and tested driving simulation activities may offer controlled and repeatable driving conditions for intervention that are unavailable or limited in open-roadway conditions, allowing clients/patients to practice the abilities and skills that will be required for driving during the rehabilitation process understanding that the evidence to support this claim is still emerging.

Simulators may be valuable as part of a more comprehensive assessment.

Driving simulators can be used as a tool to determine impaired visual, cognitive, and motor abilities underlying the task of driving when used by an occupational therapist knowledgeable and skilled in its use.

**Occupational Therapy Education**

Due to time restraints, the discussion about issues of occupational therapy education was limited. The expert members discussed the complexities of the driver rehabilitation specialist’s knowledge and debated the educational needs of the generalist versus specialists. The levels of novice, beginner, competent, proficient, and expert were discussed, but not agreed upon, recognizing that this also is an area of continued debate and discussion. There was one statement agreed upon at a level of evidence and a second statement agreed upon through electronic means after the meeting.

- Driving rehabilitation is a multi-tiered complex practice area that requires advanced knowledge, skills and experience. *Consensus at Level 3: Recommendations are based on clinical judgment and theory.*

- Scientific evidence should be prominent in the education and professional development of driving rehabilitation specialists while individuals with higher levels of scholarship expertise should generate evidence that is useful to practitioners for integration for practice. *Consensus: Agreed.*

*Members of the Expert Panel*

Michel Bedard, PhD, Lakehead University  
Johnell Brooks, PhD, Clemson University  
David Carr, MD, Washington University  
Felicia Chew, MS, OTR/L, Genesis Rehab Services  
Sherrilene Classen, PhD, MPH, OTR/L, FAOTA, University of Florida  
Elin Schold Davis, OTR/L, CDRS, American Occupational Therapy Association  
Anne Dickerson, PhD, OTR/L, FAOTA, East Carolina University  
Anne Hegberg, OTR/L, CDRS, Marianjoy Rehabilitation Hospital  
Elizabeth Green, OTR/L, CDRS, Association for Driver Rehabilitation Specialists  
Amy Lane, OTR/L, CDRS, University of Pittsburgh
Participant Feedback Requested

We will consider the success of the Pathways Project as fulfilled when 1) occupational therapy generalists who work with older adults address driving and community mobility consistently, efficiently, and appropriately either directly or by referral and 2) driver rehabilitation specialists are able to meet the needs of older adults needing comprehensive driving evaluations in a timely and effective manner and in the older adult’s own community. Since the overall objective is to develop pathways assuring a continuum of services for clients in diverse settings, we want your input on how to make this project meaningful and useful as you strive to develop your pathways for addressing driving and community mobility. Please take the time to answer the questions below and return this sheet to the session leaders, the AOTA Driver Safety Booth, or email it to dickersona@ecu.edu or escholddavis@aota.org.

1. Considering the Pathways Project, what goals of this Older Driver Initiative (ODI) project would you consider most useful to the occupational therapy generalist?

2. In considering the Assessment and Screening Tables, how can this table of evidence be modified or expanded to support your development of pathways in your practice setting?
   a. Where do you need more detail?
   b. What specifics seem to be missing or could be added that would improve its usefulness as a resource for practice?

3. In considering the Consensus Statement Document:
   a. How do you see the use of consensus statements supporting your confidence in the development of your evaluation and intervention pathways?
   b. What practice related challenges, questions or concerns would you suggest the expert panel explore for future consensus statements?

4. What other feedback or suggestions do you have for the Pathways Project?
5. Considering the Pathways Project, what goals of this Older Driver Initiative (ODI) project would you consider most useful to the occupational therapy generalist?
   - Tools to use and direction it leads to.
   - To have an easy access point for resources to refer to this would make it easier to refer client/people to one place vs. multiple places.

6. In considering the Assessment and Screening Tables, how can this table of evidence be modified or expanded to support your development of pathways in your practice setting?
   a. Where do you need more detail?
      - N/A for my setting.
      - Where do you find these assessments on internet or forms to print out tests.
   b. What specifics seem to be missing or could be added that would improve its usefulness as a resource for practice?
      - Provide copy of screening tools so that therapist would have better understanding

7. In considering the Consensus Statement Document:
   a. How do you see the use of consensus statements supporting your confidence in the development of your evaluation and intervention pathways?
      - The practical evidence.
      - Good starting point.
   b. What practice related challenges, questions or concerns would you suggest the expert panel explore for future consensus statements?
      - Bioptic driving-Expanding states scope of practice to include driving
      - How to educated COTA and OTs and get the word out with easily accessible information.

8. What other feedback or suggestions do you have for the Pathways Project?
   - Both the goal of the generalist making referrals and the DRS being able to meet needs of referrals in a timely and effective manner. Each goal is interrelated and will impact the success of the goal of reaching consumers. It may even be possible for an outcome to be development of generalists using tools to screen so the CDRs may complete the road evaluation and not need to spend as much time in the clinical portion.
   - The most important concern I have is to make it clear that a generalist should never determine fitness to drive based only on standardized tests and research outcomes-only the CDRs. And it is necessary to complete testing in all key areas not to pick and choose when basing on diagnosis. High SCI also have underlying cognitive issues due to possible frontal brain trauma=impact from diving or MVA.
   - I values all of the statements for use in practice but caution the use of these by persons in practice who may not have the experience to apply them when it is appropriate. I would like to see more focus on studies regarding multiple medication
use, types of MS such as chronic progressive and relapsing/remitting and vision loss. Also best practice doc’s from ADED and research should be included.

- Keep the great work up and include ADED leadership including an OTA in the discussion. Also consider specialty certified practitioners in the panel = you.
- 2 day workshop for Genesis-working to make it available for everyone
- Need to define moderate/severe dementia – how do we know? Need that definition with that consensus statement.
- On the feedback-(and I should have asked earlier)-but my answers would be different as asking about the profession vs. my practice. What is the utility of this statement for my practice vs. OT practice. What workshops was presented to The Genesis champions?
- Wonderful information-I would like to explore info on web more to be able to present it to my facility to especially the generalist who will send referrals or who will start the initial conversations with patients and their family members.
- Quick reference to info-websites links
- Guidelines on how to approach introduction to generalists and MDs; especially when the cost of evaluations are an issue How to report clients that are not fit to drive.
- Guidelines on what to say to clients who do not see the need for evaluation and modifications.
- Support network on how to communicate importance of addressing issues related to driving and importance of correctly addressing return to independent driving in your facility if you do not have support from your facility/ co-workers.
- Assistance on how to not have MDs just clear patients to drive without consulting OTs involved on if they don’t care to consult with OT.
- Communication to not just go to BMV/DMV for voluntary drive
- How to discuss topic with physicians to encourage them to report clients who does not follow through on recommendations not to drive.
- Ethical and liability; requirements needed to perform driving assessments
- Why is the ACL not used?
- -It’s not listed on screening and assessments paper
- How to get word out-> Market to rehab companies to provide the education for free to their employees and contact the clinical consultants of the therapy companies.
- I enjoyed the information! The need for organizing/educating in the area of driving at multiple levels was certainly noted today. This was very helpful to me.
- -Make it more accessible and clear about certification process
- -Continue to make info accessible to older drivers
- -Have better diagnostic tools to access older drivers
- -Get word out to the southern states since they are very limited in knowledge/resources as compared to all states in the US
- -Have contact list for CarFit Coordinators that they could contact when the Event Coordinator/Tech is the only one in the entire state and there are no CDRS in the state either
- -Make CarFit more cost effective since it is volunteer (Not all people have laptops that are event coordinators)
- -Have local AARP and AAA and AOTA send info in flyers
- Don’t have CarFit/Driving Seminars offered same time.
- Definitions of diagnoses need to be very specific, especially for those which are not easily offered—such as dementia or amputation.
- Need to also address importance of involving caregivers and family early in plans to D/C driving—they can’t do it alone, but need to be on board in the plan.