There are 3 key functions for safe driving: Vision, Cognition, and Motor Function. The ADReS assesses these 3 functions. As occupational therapists, we can perform some of these assessments to provide our residents' physicians with meaningful information re: recommendations for continued driving or referral to a driver rehabilitation specialist.

**Visual Acuity (Snellen E Chart):** The Snellen Chart is used to test visual acuity. With the chart hanging on the wall, instruct the patient to stand 20 feet away. Wearing his/her usual glasses or contact lenses, the patient reads the smallest line possible with both eyes open. The patient’s visual acuity is based on the lowest full row that he/she successfully reads. For example, if the best the patient can see is 20/40, then his/her acuity is 20/40 OU (oculus uterque). This process can be repeated for each eye individually (right eye: OD or oculus dexter; left eye: OS or oculus sinister). This test is best performed in a hallway with good lighting. Tape can be used to mark off the distance of 20 feet.

**Testing Results:** Although many states currently require far visual acuity of 20/40 for an unrestricted license, current research indicates that there is no scientific basis for this cut-off. Studies in some states have demonstrated that there is no increase crash risk between 20/40 and 20/70. Recommendations re: visual acuity testing follow; however, these recommendations are subject to each state licensing requirements.

- For Visual Acuity less than 20/40: ensure the patient has consulted with his/her physician or optometrist re: most appropriate glasses or contact lenses; may recommend the patient reduce the impact of decreased visual acuity by restricting travel to low-risk areas and conditions; the patient may require further re-testing of visual acuity for vision decline or changes.
- For Visual Acuity less than 20/70: Refer/consult with the physician as this resident may require assessment by a driver rehabilitation specialist.
- For Visual Acuity less than 20/100: Refer to the physician as the “Physician’s Guide” recommends that the patient not drive and requires assessment by a driver rehabilitation specialist.

**Visual Fields by Confrontation Testing:** The examiner sits or stands 3 feet in front of the patient, at the patient’s eye level. The patient is asked to close his/her right eye, while the examiner closes his/her left eye. Each fixes on the other’s nose. The examiner then holds up a random number of fingers in each of the four quadrants, and asks the patient to state the number of fingers. With the fingers held slightly closer to the examiner, the patient has a wider field of view than the examiner. Provided that the today tips examiner’s visual fields are within normal limits, if the examiner can see the fingers, then the patient should be able to see them unless he/she has a visual field deficit.

The process is repeated for the other eye (patient’s left eye and examiner’s right eye closed). The examiner indicates any visual field deficits by shading in the area of deficit on a visual field representation.

**Testing results:** It is known that “adequate” visual fields are important for safe driving; however, there is no conclusive evidence to define what is meant by “adequate”. For occupational therapy purposes, impaired results should be reported to the resident’s physician.
**Trail-Making Test:** This test of general cognitive function also specifically assesses working memory, visual processing, visuospatial skills, selective and divided attention, and psychomotor coordination. The test involves connecting, in alternating order, encircled numbers (1-12) and encircled letters (A-L) randomly arranged on the page. The test is scored by overall time required to complete the connections accurately. The examiner points out mistakes as they occur; the effect of the mistakes, then, is to increase the time required to complete the test. It usually takes 3-4 minutes to administer the test. The examiner administers the test stating: “Now, I will give you a paper and pencil. On the paper are the numbers 1-12 and the letters A-L scattered across the page. Starting with 1, draw a line to A, then 2 to B, and so on, alternating back and forth between numbers and letters until you finish with the number 12. I will time how fast you can do this. Are you ready? Go.” The examiner records the time taken to complete.

**Testing results:** A time for completion greater than 180 seconds signals a need for intervention. Many studies have shown an association between poor performance of the Trail-Making Test and poor driving performance.

**Clock Drawing Test:** Preliminary research indicates an association between specific scoring elements of the Clock Drawing Test and poor driving performance. In this form of the CDT, the examiner gives the patient a pencil and a blank sheet of paper and says, “I would like you to draw a clock on this sheet of paper. Please draw the face of the clock, put in all of the numbers and set the time to ten minutes after eleven.” This is not a timed test. The examiner scores the test by assessing the drawing for each of eight specific elements (on score sheet).

**Testing results:** Any incorrect element signals the need for intervention. Errors on these principal components were found to correlate significantly with specific hazardous driving errors, signaling the need for formal driving evaluation.

**Rapid Pace Walk:** This is a measure of LE strength, endurance, ROM, and gross proprioception. A 10-foot path is marked on the floor with tape. The patient is asked to walk the 10-foot path, turn around, and walk back to the starting point as quickly as possible. If the patient normally uses a walker or cane, he/she may use it during the test. The total walking distance is 20 feet. The examiner begins timing when the patient picks up first foot off the floor and stops timing when the last foot crosses the finish mark. The test is scored by the total number seconds required to complete the exam.

**Testing results:** A time for completion of greater than 9.0 seconds signals the need for intervention. Recent studies demonstrated a correlation between performance on the rapid pace walk and future at-fault crashes.

**ROM:** Neck Rotation, Finger Curl, Shoulder and elbow flexion, Ankle plantar flexion, ankle dorsiflexion.

**Testing results:** If the patient’s ROM is not within normal limits, it may signal need for intervention or more formal driving testing. ROM requirements vary with automobile design and it is difficult to specify exact requirements.

**MMT:** Shoulder adduction, abduction and flexion; Wrist flexion and extension; Hand-grip strength; Hip flexion and extension; Ankle dorsiflexion and plantar flexion.

**Testing results:** Less than grade 4/5 in either UE or Right LE signals need for intervention.
ASSESSMENT OF DRIVING-RELATED SKILL (ADReS)

The following tests have been completed according to the recommendations of the Dept of Transportation related to the ADReS to provide relevant information to physician's as they make determinations regarding safe return to driving. Find more information at http://www.nhtsa.dot.gov/people/injury/olddrive/olderdriversbook/pages/Chapter3.html

Patient Name:______________________________Facility:_________________________

Visual Acuity Score
Right eye _____/______ Left eye _____/_____
Visual acuity <20/40 may indicate need for follow up

Visual Fields by Confrontation Testing:
Right visual field □ WFL □ Impaired
Left visual field □ WFL □ Impaired

Trail-Making Test Time: _______seconds
>180 seconds associated with poor driving performance

Clock Drawing Test: _______/8
Any incorrect element signals the need for intervention. Errors on these principal components were found to correlate significantly with specific hazardous driving errors, signaling the need for formal driving evaluation.

Rapid Pace Walk: _______ seconds
> 9.0 seconds signals deficit; correlation between rapid pace walk deficits and future at-fault crashes.

<table>
<thead>
<tr>
<th>ROM</th>
<th>MMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint function for driving safety</td>
<td>WFL</td>
</tr>
<tr>
<td>Neck rotation</td>
<td></td>
</tr>
<tr>
<td>Shoulder add/abd/flexion</td>
<td></td>
</tr>
<tr>
<td>Wrist flex/ext</td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td></td>
</tr>
<tr>
<td>Finger curl/grip strength</td>
<td></td>
</tr>
<tr>
<td>Hip flex/ext</td>
<td></td>
</tr>
<tr>
<td>Ankle Plantar flex/dorsiflex</td>
<td></td>
</tr>
</tbody>
</table>

Findings & Recommendations
☐ Visual Acuity less than 20/40. Consult with physician or optometrist re: most appropriate corrective lenses recommended; may recommend the patient reduce the impact of decreased visual acuity by restricting travel to low-risk areas and conditions.
☐ Visual Acuity less than 20/70: Consult with physician as this resident may benefit from driver rehabilitation specialist eval.
☐ Visual Acuity less than 20/100: Consult with physician. “Physician’s Guide” recommends that the patient not drive and requires assessment by a driver rehabilitation specialist.
☐ Visual field deficit noted which may impact driving safety
☐ Trail making test time >180 seconds may indicate impairments in working memory, visual processing, visuospatial skills, selective & divided attention, & /or psychomotor coordination which may impact safe driving
☐ Clock drawing test errors may indicate cognitive function deficits that may be indicate increased risk of driving errors
☐ Rapid pace walk score of > 9 seconds may indicate LE function and proprioception deficits that may increase risk of driving errors
☐ ROM &/or strength impairments for movements required for driving have been identified

Comments:__________________________________________________________________________

Therapist Signature ___________________________  ____/___/___
Trail-Making Test, Part B

Patient's Name: ___________________________________________ Date: ________________________
Ask the person to draw the face of a clock, putting the numbers in the correct positions. After he/she has drawn a circle and placed the numbers in position, ask him/her to draw in the hands indicating ten minutes after eleven.

**Draw a clock**

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
<th>Score criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>All 12 hours in correct numeric order, starting with 12 at the top</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Only the numbers 1-12 are included (no duplicates, omissions, or foreign marks)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbers are drawn inside the clock circle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbers are equally spaced or nearly equally from each other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbers are equally spaced or nearly equally from the edge of the circle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>One clock hand correctly points to 2 o’clock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>One clock hand correctly points to 11 o’clock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>There are only 2 clock hands</td>
</tr>
</tbody>
</table>

Total accurate out of 8
Dear Dr._____________________________,

Mr./Ms. __________________expressed that he/she plans to return to driving within the community after discharge to home. I have administered the Assessment of Driving-Related Skills as part of the occupational therapy plan of treatment. Attached is the summary of the results for your review to determine if referral to a rehabilitation driving specialist is warranted. Scoring of the following areas indicated further intervention is recommended:

- _____ Visual Acuity
- _____ Visual Fields
- _____ Cognition
- _____ Motor Ability

Please contact me if you would like additional information re: the results of this assessment.

Thank you,