Brain Waves

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DRIVING AFTER TBI

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Director, UAB TBI Model System

Driving a car is a major goal for those who have experienced a Traumatic Brain Injury (TBI). Although driving is often restricted early in recovery following injury, a return to driving is a sign of progress and increasing independence. In fact, return to driving after TBI has been a major focus of the UAB TBI Model System program, with research projects extending back 15 years.

What skills are needed to drive?

Driving is a huge responsibility because it is the most dangerous thing we do in our everyday lives. It is important to know what skills are necessary for driving and how a brain injury can affect those skills.

Driving requires more than simple clarity of vision. A driver has to be aware of and respond to what is happening all around the car. A driver must be able to pick out what is important and direct attention there.

A driver has to know the position of the vehicle in terms of the lane spacing and other vehicles close by, including those to left, right, front and behind. This means being able to judge distances for purposes of changing lanes, turning, stopping, and merging.

Hearing is also important. Warnings often come to us through sound, such as a siren or car horn, which requires an immediate reaction. This brings to mind the importance of reaction time, which involves being able to deal with a lot of information in a moment of time and react in an appropriate, safe way.

Driving can be viewed as the ultimate multi-tasking experience. At every moment the driver must be aware of everything that is going on. Then there is the proper judgment needed to use this information to maintain safety, even in emergency situations. Now picture doing this not just for a few moments, but for hours at a time when a person is driving a distance. Maintaining the vigilance required—no matter how long the drive—is a challenge to anyone.

Finally, there is the matter of knowing when—and when not—to drive. Every driver faces situations in which the best choice to make is to not drive. For instance, when faced with a severe rainstorm, it is sometimes better to pull off the road and remain stopped until there is an improvement in the weather. Or, a person with poor night vision should limit driving to daylight hours. Making such judgments involves matching our level of skill as a driver with the conditions.

What does a brain injury do to driving ability?

A TBI can disrupt thinking skills important to driving. Poor driving performance is associated with poor outcomes on tests of visual memory, reaction time to visual material, accuracy of visual perception, visual problem solving, hand coordination and speed. Processing speed (how quickly a person can respond to things) can also be affected by TBI. People with TBI sometimes experience problems in perceiving visual stimulation when it occurs quickly, particularly in the range of vision, which is related to driving performance.

The importance of good judgment and self-awareness should also be emphasized. Those who

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return to driving after TBI have a better understanding of their skills than people who do not return to driving. This reflects good self-awareness on the part of the person with TBI. Self-awareness may be very important in preventing situations in which a person's driving abilities do not match the driving situation. A failure to recognize even mild difficulties on the part of the person with TBI may lead to increased risk of accidents when driving.

Will you drive again?

Based on multiple studies, between 30 and 60% of people with severe TBI return to driving following injury, and there is no consistent information indicating that people with TBI are at greater risk of having a crash. However, these facts may be because changes in driving habits lessen the chance of encountering problems when driving. Although some people with TBI may end up driving without any restrictions, others may be restricted to driving less frequently than before the injury, driving only during restricted times, on familiar routes, or driving when traffic is light.

There is reason to hope that difficulties which prevent driving can improve with time following TBI. Studies have shown that attention and visual skills can be improved with training. To demonstrate that slowed visual processing speed can be improved by training, the UAB TBI Model System is currently doing a study that involves playing video games. If you are interested in hearing more about this study, please contact Dr. Novack at Novack@uab.edu. If you do not have access to email, you can call 205-934-3454.

DRIVING EVALUATION SERVICES

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Simply put, having the ability to drive increases independence. Driving obviously improves mobility, but people who drive are more likely to participate in work, school and other social interests. Plus, driving contributes to feelings of self control, self worth and happiness.

Unfortunately, people who experience a brain injury often have physical, cognitive, and sensory impairments that can limit their ability to safely operate a vehicle. Such impairments can make driving dangerous. Therefore, most people who experience a head injury will likely need a driving evaluation, most likely by an occupational therapist at a Driver Assessment Clinic, like the one at UAB Spain Rehabilitation Center.

You will need to meet all of these eight conditions to be evaluated:

1. Doctor's prescription;
2. Independently transfer in and out of the car;
3. Independently operate any needed assistive devices such as a wheelchair, scooter, walker, or other device;
4. Independently load and unload any assistive device;
5. Have a valid driver's license or permit;
6. Provide a list of medications you are currently taking;
7. Wear prescription eyewear if needed; and
8. Pay for the evaluation, which costs around $300 (insurance does not cover this expense, but checks and credit cards are generally accepted).

If a person meets all eight conditions, a two part evaluation is scheduled at the driver clinic. The first part is an in-clinic test. The second part is a driving test on the road. Each part takes about an hour to complete, so the evaluation is usually completed in two hours.

The assessment is used to test a person's ability to drive in regard to four driving functions:

1. Seeing and hearing situations while driving;
2. The driver's ability to recognize his/her part in that situation;
3. Deciding how to correctly react to the situation; and
4. Physically executing the maneuver.

All results and recommendations will be discussed after the evaluation. One possibility is that the person being evaluaed may need to be retrained to be able to drive in complex situations such as you might find in rush-hour traffic. If specialized

equipment or basic training is needed to operate the equipment, the occupational therapist will facilitate equipment selection, purchase, installation, and training.

The Alabama Department of Public Safety states that "when it appears that you have some physical or mental impairment which might affect your driving ability, you may be required to furnish a statement by a doctor showing your medical history and present condition as it pertains to your driving ability." After the therapist completes the driver rehabilitation program, a report is sent to the physician of the person seeking to return to driving. It is the physician's decision as to whether or not a person is allowed to drive again and under what conditions the person can drive.

SPECIAL NOTE FOR PERSONS WITH TBI

Tom Novack, PhD
Director, UAB TBI Model System

Wanting to drive is a natural thing in our society and return to driving should be a goal for everyone with a TBI. Realistically, that goal will not always be achieved.

All you can ask for is a fair assessment of your abilities through a driver's evaluation clinic like the one at UAB Spain Rehabilitation Center. If the doctors and therapists working with you conclude that driving would be dangerous, it is important to accept that information.

Remember that safety is the most important issue—not just your safety, but also the safety of other people on the road. Arguing that your skills are as good as those of many other drivers will not convince anybody to let you drive. Driving skills are necessary for safe operation of a vehicle but are not sufficient to drive.

There is no reason to be angry with your family about this. Your family members are not the ones concluding that you should not drive. Keep in mind that not being able to drive is a hassle, but it is survivable! A bad crash is often not survivable.

Passing a driving evaluation is not a release to return to driving like you did before your injury. You may still have to consider driving during restricted times when traffic is light and only in familiar areas. Driving long distances, even if familiar, may not be a good idea.

Also, you have to have a car and insurance. These are costly things. Be sensitive to your family in this regard.

Finally, think about your driving habits. Many times people are involved in crashes that result in a head injury because they do not follow traffic rules, such as stop signs and speed limits. Consumption of alcohol and drugs also often contributes to wrecks. Distractions in the car, such as a cell phone or the radio, can be a factor in a crash. You don't want to resume bad driving habits and risk a crash!

About the Authors

Dr. Novack is a Professor of Physical Medicine & Rehabilitation at the University of Alabama at Birmingham. He received his Ph.D. in Clinical Psychology from Memphis State University. He has practiced neuropsychology at the Spain Rehabilitation Center since 1985 with an emphasis on assessment and treatment of people experiencing traumatic brain injury.

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WWW.UAB.EDU/TBI

The University of Alabama at Birmingham Traumatic Brain Injury Model System (UAB-TBIMS) web site was established in 2003 and offers educational materials along with information on ongoing research and clinical services of the UAB-TBIMS. The web site also contains links to national organizations, government agencies, and educational resources related to traumatic brain injury.

Consumer Educational Resources
Produced by the TBI MSKTC

The Model System Knowledge Translation Center (MSKTC) has developed information for individuals with Traumatic Brain Injury (TBI) and their family members and caregivers. Although more resources are development, 10 topics are currently available.

1 **Understanding TBI, Part 1: What happens to the brain during injury and in the early stages of recovery from TBI?**
http://msktc.washington.edu/consumer_info/tbi/understanding/TBI_understanding_Part1.pdf

2 **Understanding TBI, Part 2: Brain injury impact on individuals' functioning**
http://msktc.washington.edu/consumer_info/tbi/understanding/TBI_understanding_Part2.pdf

3 **Understanding TBI, Part 3: The recovery process**
http://msktc.washington.edu/consumer_info/tbi/understanding/TBI_understanding_Part3.pdf

4 **Understanding TBI, Part 4: The impact of a recent TBI on family members and what they can do to help with recovery**
http://msktc.washington.edu/consumer_info/tbi/understanding/TBI_understanding_Part4.pdf

5 **Sleep and TBI**
http://msktc.washington.edu/consumer_info/tbi/sleep/TBI_sleep.pdf

6 **Driving after TBI**
http://msktc.washington.edu/consumer_info/tbi/driving/TBI_driving.pdf

7 **Cognitive Problems after TBI**
http://msktc.washington.edu/consumer_info/tbi/cognitive/TBI_cognitive.pdf

8 **Emotional Problems after TBI**
http://msktc.washington.edu/consumer_info/tbi/emotional/TBI_emotional.pdf

9 **Fatigue and TBI**
http://msktc.washington.edu/consumer_info/tbi/fatigue/TBI_fatigue.pdf

10 **Facts about the Vegetative and Minimally Conscious States after Severe Brain Injury**
http://msktc.washington.edu/kb/disorders_of_consciousness.pdf

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