



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

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In reply refer to: H-04-44 and -45

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Of the 291 million individuals living in the United States, approximately 191 million, or 65.6 percent, are licensed to drive. Every year, about 42,000 individuals die in traffic-related crashes. The National Highway Traffic Safety Administration (NHTSA) estimated in 2000 that highway crashes cost U.S. society about \$230.6 billion a year, with each roadway fatality costing an average of \$977,000, and each critical injury crash costing an average of \$1.1 million.¹

The act of driving requires the proper orchestration of sensory/perceptual, cognitive, and motor activities to be performed successfully. Certain medical conditions have been found to negatively affect one or more of these activities, thereby increasing the safety risk of drivers that suffer from them. The extent of the overall impact of medically impaired drivers is not known because data are not available (except for data on alcohol-related accidents) on the number of licensed drivers with high-risk medical conditions or on the number of accidents in which a driver's medical condition was a contributory factor. However, statistics on the number of Americans with one or more of the following high-risk medical conditions offer some perspective on the medical oversight issues that State licensing agencies face:²

- Epilepsy: 2.5 million (180,000 new diagnosed cases each year).³
- Diabetes: 18.2 million (1 million new cases diagnosed each year in those over 20).⁴
- Sleep Disorders: 50 to 70 million.⁵
- Cardiovascular Disease: 23.5 million (41.7 million additional have hypertension).⁶

¹ L. Blincoe, A. Seay, E. Zaloshnja, T. Miller, E. Romano, S. Luchter, and R. Spicer, *The Economic Impact of Motor Vehicle Crashes*, 2000, DOT HS 809 446 (Washington, DC: NHTSA, 2000).

² See the American Medical Association's *Physician's Guide to Assessing and Counseling Older Drivers* (Chicago 2003), <<http://www.ama-assn.org/go/olderdrivers>>, for a more exhaustive list of medical conditions and medications that may impair driving.

³ Epilepsy Foundation <<http://www.epilepsyfoundation.org/answerplace/statistics.cfm>>.

⁴ National Diabetes Information Clearinghouse <<http://diabetes.niddk.nih.gov>>.

⁵ U.S. Department of Health and Human Services, *2003 National Sleep Disorders Research Plan*, National Institutes of Health Publication No. 03-5209 (Washington, DC: HHS, 2003).

⁶ U.S. Department of Health and Human Services, *Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2001*, Series 10, Number 218 (Washington, DC: HHS, 2004).

- Alzheimer's Disease: 4.5 million (10 percent of those over 65 years and nearly 50 percent of those over 85 years suffer from the disease).⁷
- Arthritis: 40 million (over 7 million report limited activity due to the disease).⁸
- Eye Diseases: 5.5 million—cataracts, 2 million—glaucoma, and 1.2 million—later-stage macular degeneration.⁹
- Alcoholism: 14 million (alcohol linked to 40 percent of all automobile fatalities).¹⁰

The National Transportation Safety Board's interest in the medical oversight of noncommercial drivers stems from its examination of six noncommercial vehicle accidents in which a driver's medical condition played a role.¹¹ On March 23, 2002, a driver with a history of seizure-related accidents failed to stop his vehicle at a signalized intersection in Frederick, Maryland, resulting in a multiple-vehicle collision that claimed the lives of a father and three children.¹² On November 3, 2002, a driver with a history of epilepsy ran her vehicle through two intersections in Hagerstown, Maryland, and collided with two vehicles, resulting in one fatality.¹³ Evidence indicated that both drivers were suffering seizures at the time of the accidents. The Safety Board examined four other medical impairment-related accidents; one involved a diabetic driver and three involved drivers who experienced seizures.

The Safety Board has also investigated a substantial number of commercial vehicle and school bus accidents involving drivers with impairing or potentially impairing medical conditions, such as cardiovascular disease, visual impairment, renal disease, and sleep disorders.

On March 18 and 19, 2003, the Safety Board held a public hearing¹⁴ to discuss the factors that contribute to medically related accidents. Major topics included the:

- Current state of knowledge regarding potentially impairing medical conditions.
- Adequacy of procedures for reporting medically impaired drivers.
- State licensure and oversight of drivers with high-risk medical conditions.
- Programs to increase public awareness of State oversight laws and procedures.
- Rehabilitation and transportation options for medically impaired drivers.

The Safety Board learned during the course of the hearing and has noted in its recent report on the medical oversight of noncommercial drivers¹⁵ that the issues encompassing this subject are

⁷ National Institute on Aging, *Progress Report on Alzheimer's Disease, 1999*, NIH Publication No. 99-4664 (Bethesda, MD: National Institute on Aging, 1999).

⁸ R.C. Lawrence, C.G. Helmick, F.C. Arnett, R.A. Deyo, D.T. Felson, E.H. Giannini, S.P. Heyse, R. Hirsch, M.C. Hochberg, G.G. Hunder, M.H. Liang, S.R. Pillemer, V.D. Steen, and F. Wolfe, "Estimates of the Prevalence of Arthritis and Selected Musculoskeletal Disorders in the United States," *Arthritis and Rheumatism*, 41(5) (1998): 778-799.

⁹ University of Washington Department of Ophthalmology <<http://depts.washington.edu/opthweb/statistics.html>>.

¹⁰ *Traffic Safety Facts 2003: Alcohol*, DOT HS 809 761 (Washington, DC: NHTSA, 2003).

¹¹ For additional information, read National Transportation Safety Board, *Medical Oversight of Noncommercial Drivers*, Highway Special Investigation Report NTSB/SIR-04/01 (Washington, DC: NTSB, 2004).

¹² National Transportation Safety Board Docket No. Highway-03-IH007.

¹³ National Transportation Safety Board Docket No. Highway-03-MH005.

¹⁴ Information on this hearing, including the full transcript, is available at <http://www.nts.gov/events/2003/med_noncomm/default.htm>.

¹⁵ NTSB/SIR-04/01.

complex and will require the close cooperation of Federal, State, and private organizations to create an effective and uniform system that protects public safety while being sensitive to the needs of individual drivers.

During the public hearing, several witnesses expressed the need for more research to establish a link between medical impairment and driving. Although most studies have found that drivers with high-risk medical conditions generally have more accidents, concern was voiced during the Safety Board's hearing with regards to the studies' methodological limitations, such as small sample size, lack of uniform criteria, lack of exposure data, and absence of evidence that the crashes were a direct result of driver medical conditions. Some hearing witnesses believed that because medical conditions can affect each person differently, the presence of a medical condition was in itself a poor predictor of an individual's driving risk.

One predictor of risk that received some support was a driver's history of traffic accidents. Epilepsy research has shown that previous seizure-related accidents are a good predictor of future crashes for drivers with epilepsy. The Safety Board's review of the hard-core drinking driver literature also showed a strong correlation between accident involvement and prior traffic-related convictions.¹⁶ Research has shown additional links between accident history and the risk for future accidents.^{17,18,19,20} One limitation in using crash history effectively as a predictor is that many accidents go unreported. The National Highway Traffic Safety Administration estimates that approximately half of property damage-only crashes, and a fifth of all injury crashes, are not reported to the police.²¹

In the Frederick accident, Safety Board investigators found that Maryland Motor Vehicle Administration (MVA) records did not contain the driver's full accident history, including three property damage accidents and one bodily injury accident that were also the result of epileptic seizures. Safety Board investigators were able to compile this information by reviewing the driver's insurance records and his vehicle's history report. The absence of the driver's previously verified seizure-related accident was of particular concern because law enforcement had referred the driver to the Maryland Medical Advisory Board after the accident, and the advisory board had suspended the driver's license. According to the manager of the Driver Wellness and Safety Division of the Maryland MVA, accident information would not be posted to a driver's driving record unless an official charge or summons was issued by investigating police. The Safety Board contacted 13 other States to determine how they treated accident information and found that 9 included all police-reported accidents in a driver's record, regardless of whether the driver received a citation. Two States recorded accidents only when a person was found to be at fault,

¹⁶ National Transportation Safety Board, *Actions to Reduce Fatalities, Injuries, and Crashes Involving the Hard Core Drinking Driver*, Safety Report NTSB/SR-00/01 (Washington, DC: NTSB, 2000).

¹⁷ G. Daignealut, P. Joly, and J.Y. Frigon, "Previous Convictions or Accidents and the Risk of Subsequent Accidents of Older Drivers," *Accident Analysis and Prevention*, 34 (2002): 257-261.

¹⁸ D. Zuin, H. Ortiz, D. Bromei, and O.L. Lopez, "Motor Vehicle Crashes and Abnormal Driving Behaviours in Patients with Dementia in Mendoza, Argentina," *European Journal of Neurology*, 9(1) (2002): 29-34.

¹⁹ L. Staplin, K.H. Lococo, J. Stewart, and L.E. Decina, *Safe Mobility for Older People Notebook*, NHTSA Report DOT-HS-808-853 (Washington, DC: NHTSA, 1999).

²⁰ K. Ball, C. Owsley, M.E. Sloane, D.L. Roenker, J.R. Bruni, "Visual Attention Problems as a Predictor of Vehicle Crashes in Older Drivers," *Investigative Ophthalmology and Visual Science*, 34(11) (1993): 3110-23.

²¹ See <<http://www.nhtsa.dot.gov/people/economic/econimpact2000/summary.htm>>.

and two States listed citations associated with an accident without recording accident information.²²

The Safety Board understands that it is not often possible to establish definitively that a high-risk medical condition contributed to an accident. However, if all accident data for a driver were tracked, licensing agencies would be better able to determine whether drivers with multiple accident histories are potential candidates for assessments and on-the-road testing. An individual's particular accident history is a reliable predictor because it does not rely on aggregate data about a high-risk medical population to determine the risk level of an individual. Therefore, a driver who has not been involved in an accident is not put under scrutiny simply because he or she happens to have a medical condition. Although a full accident history would not have led licensing officials to identify the Hagerstown accident driver as a candidate for driver assessment, it might have helped the Maryland MVA to detect a pattern of crash involvement for the Frederick accident driver. This, in turn, might have caused the MVA to question the report from the Frederick driver's neurologist stating that the driver was physically and mentally capable of safely operating a motor vehicle. It might also have encouraged the MVA to track the driver's medical condition more attentively. The Safety Board concluded that the exclusion of certain accidents from a driver's record weakens the ability of licensing agencies to identify drivers who require further evaluation and assessment for impairing medical conditions.

During a 7-year period, the Frederick driver was involved in six accidents that resulted in property damage, injury, or death. However, crashes that result in injury or fatalities are infrequent events.²³ In its 2001 report on hard-core drinking drivers,²⁴ the Safety Board encouraged States to adopt a 10-year "look back" period for drivers with previous driving-while-intoxicated offenses due to the low likelihood of arrest and the need for long-term measures to change the behavior of hard-core drinking drivers. An extended "look back" period might likewise be beneficial in assessing the driving fitness of those with high-risk medical conditions.

If a driver were to have an accident outside his or her State of residence, nothing guarantees that the licensing agency in the State of residence will find out about it. No laws or formal agreements exist between States to share information about medically related traffic stops or accidents that involve out-of-state drivers. In addition, States do not routinely share medical information about a driver during a transfer of residence. When an individual applies for a license in a new State of residence, the licensing agency customarily checks the National Driver Register²⁵ to determine whether the individual's license to drive is currently revoked, suspended, canceled, or denied. However, the register only includes current violations and license suspensions; it does not direct the requesting party to any driving restrictions an individual might have due to medical impairment, nor to expired periods of suspension or revocation. Thus, even had the Maryland MVA known about the Hagerstown accident driver's condition before her move to Pennsylvania in 1992, this information would not have found its way to the

²² New Jersey, Alabama, Utah, Virginia, Nebraska, Florida, Wisconsin, North Carolina, and Tennessee record all police-reported accidents. Arkansas and Delaware record only at-fault accidents, regardless of whether those drivers receive a citation. West Virginia and Idaho record only the citations associated with an accident.

²³ According to NHTSA, roughly 110 injuries occur per 100 million miles traveled.

²⁴ NTSB/SR-00/01.

²⁵ The register is a central repository of information on individuals whose privilege to drive has been revoked, suspended, canceled, or denied or who have been convicted of serious traffic-related offenses.

Pennsylvania Department of Transportation. The Safety Board concluded that States do not routinely convey information to one another, or to any central repository, regarding medical impairment-related accidents or licensing actions, limiting their ability to track medically high-risk drivers effectively.

Licensing is a State function, and each State has developed a unique system of oversight for its medically high-risk drivers. States differ in the way they train license examiners, set policy, inform physicians and the public about their reporting requirements, identify and refer drivers for assessment, conduct assessments, deliberate licensure, provide due process, track fitness to drive, impose driving restrictions, and provide counseling or information to drivers whose licenses have been restricted or denied. States also differ in their license renewal periods, renewal procedures and options, and testing requirements during license renewals. To some extent, these differences reflect deficiencies in the availability and accessibility of information useful in creating an effective medical oversight system. They also reflect a lack of coordination among the States and an absence of Federal guidelines that States can use as a basis for their programs.

These divergent State oversight systems have resulted in significant differences in the way high-risk drivers are identified and evaluated. For example, driving suspensions after a seizure range from no required seizure-free interval to up to 18 months. Some States require those diagnosed with moderate dementia to immediately surrender their licenses; others have no requirements pertaining to dementia. Some States employ medical specialists to evaluate drivers, while others use civil servants with no prior medical experience. Some States provide information and counseling for former drivers, but many do not. These inconsistencies have the potential of leading to a wide range of outcomes in licensing countermeasures among States. Because noncommercial drivers are not restricted in where they may drive, these differences could undermine the intent of an effective driver screening program in some States. Each State should consider the oversight systems used in other States and share information and experiences to strengthen the overall effect of its own medical oversight system. The Safety Board concluded that deficiencies exist in the availability and accessibility of information necessary for States to identify the most effective countermeasures for restriction, modification, or prohibition of driving privileges for medically impaired drivers.

In June 2003, NHTSA published a report²⁶ summarizing the States' medical oversight program. This report described each State's medical impairment reporting procedures; identification, evaluation, and evaluation outcome procedures; licensing appeal processes; and counseling, information, and educational materials. The report also described the organization and duties assumed by the medical department of each State licensing agency. Your organization has advocated the report as the first step in a larger effort to create a best practices guideline that would encourage the development of model laws that could be used to promote uniformity among State licensing jurisdictions.

Since then, the AAMVA and NHTSA have conducted another survey²⁷ asking State medical review representatives to rank the important procedural elements in a medical review

²⁶ K.H. Lococo, *Summary of Medical Advisory Board Practices in the United States*, National Highway Traffic Safety Administration, DTNH22-02-P-0511 (2003).

²⁷ K. Lococo and L. Staplin, *In-Depth Study to Identify Best Practices for Licensing Drivers With Medical and Functional Impairments and Barriers to Their Implementation*, National Highway Traffic Safety Administration, DTNH22-02-P-05111 (2004).

program. The report generated from the survey does not indicate how best to implement these procedural elements, but it does note suggestions from respondents. From this survey, and through meetings with jurisdictional representatives and the Driver Fitness working group,²⁸ the AAMVA and NHTSA hoped to generate a best practices report by fall 2004.

The Safety Board is encouraged by the progress that has been made by the AAMVA and NHTSA toward creating a best practices guideline and a model medical oversight program. The Safety Board anticipates that the adoption of these guidelines by the States will likely involve significant procedural, regulatory, and statutory changes that may extend across several agencies, including law enforcement and emergency medical services. Communication among State representatives will be necessary to facilitate the sharing of experiences, data, and strategies, so that each State can gather the tools necessary to implement an effective program while minimizing costs. Advances in medical research, driving assessment tools, and rehabilitation and counseling programs will necessitate a continual evaluation of the guidelines.

In addition, the Safety Board understands that your organization is working to integrate the National Driver Register and other commercial and noncommercial driver information repositories into a system called the Driver Record Information Verification System,²⁹ which is being designed to accommodate more than 200 million records and could potentially include all licensed drivers in the United States.

Therefore, the National Transportation Safety Board recommends that the American Association of Motor Vehicle Administrators:

Modify the Driver Record Information Verification System to allow licensing agencies to ascertain current and previous medically related actions on a driver's license (for example, citations, suspensions, revocations, denials, and cancellations), as well as any current medically related license restrictions, and to ensure the timely transfer of medically related citation or accident information involving out-of-state drivers to the licensing State. (H-04-44)

Establish a standing medical evaluation unit working group to facilitate communication, standardization, and cooperation among medical evaluation units of member States. (H-04-45)

The Safety Board also issued safety recommendations to the U.S. Department of Transportation, the National Highway Traffic Administration, the National Committee on Uniform Traffic Laws and Ordinances, the Commission on Accreditation for Law Enforcement Agencies, the Liaison Committee on Medical Education, the American Osteopathic Association, the Association of American Medical Colleges, and the Federation of State Medical Boards.

Please refer to Safety Recommendations H-04-44 and -45 in your reply. If you need additional information, you may call (202) 314-6177.

²⁸ For more information, see <<http://www.aamva.org/committees/comDriverFitnessWorkingGroup.asp>>.

²⁹ See <http://www.aamva.org/drivers/drv_AutomatedSystemsDRIVeRS.asp>.

Chairman ENGLEMAN CONNERS, Vice Chairman ROSENKER, and Members CARMODY, HEALING, and HERSMAN concurred in these recommendations.

By: Ellen Engleman Connors
Chairman