Medical Oversight of Noncommercial Drivers

Highway Special Investigation Report

NTSB/SIR-04/01

PB2004-917002
Notation 7673A

National Transportation Safety Board
Washington, D.C.

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Adopted November 9, 2004

National Transportation Safety Board
490 L'Enfant Plaza, S.W.
Washington, D.C. 20594

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Abstract: 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. 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.

As a result of its accident investigations and from its March 2003 public hearing, at which the factors that contribute to medically related accidents were discussed, the Safety Board identified the following safety issues:

- Need for more data on the extent to which medical conditions contribute to the cause of accident.
- Need for improved awareness and training for healthcare professionals, law enforcement, and the public regarding State medical oversight laws and practices.
- Existence of barriers to the reporting of medically impaired drivers.
- Lack of uniform medical assessment and oversight standards throughout the States.
- Deficiencies in alternative transportation options for those who should not drive.

The Safety Board has issued recommendations to the U.S. Department of Transportation, the National Highway Traffic Safety Administration, the National Committee on Uniform Traffic Laws and Ordinances, the American Association of Motor Vehicle Administrators, 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.

Contents

Acronyms and Abbreviations

AAA	American Automobile Association
AAMC	Association of American Medical Colleges
AAMVA	American Association of Motor Vehicle Administrators
AARP	American Association of Retired Persons
ADPE	Area Driving Performance Evaluation
AMA	American Medical Association
AOA	American Osteopathic Association
BAC	blood alcohol content
CALEA	Commission on Accreditation for Law Enforcement Agencies
CCAM	Coordinating Council on Access and Mobility
CDL	commercial driver's license
CFR	*Code of Federal Regulations*
CME	continuing medical education
DMV	Department of Motor Vehicles
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
DRE	drug recognition expert
DRIVerS	Driver Record Information Verification System
DWI	driving while intoxicated
ED	U.S. Department of Education
EMS	emergency medical service
EMT	emergency medical technician
FDA	Food and Drug Administration
FMCSA	Federal Motor Carrier Safety Administration
FSMB	Federation of State Medical Boards
FTA	Federal Transit Administration
GAO	U.S. Government Accountability Office
HHS	U.S. Department of Health and Human Services
IADLEST	International Association of Directors of Law Enforcement Standards and Training
LCME	Liaison Committee on Medical Education
MAB	Medical Advisory Board

MMUCC	Model Minimum Uniform Crash Criteria
MVA	Motor Vehicle Administration
NAEMT	National Association of Emergency Medical Technicians
NCSL	National Conference of State Legislatures
NDR	National Driver Register
NHTSA	National Highway Traffic Safety Administration
NPRM	notice of proposed rulemaking
PennDOT	Pennsylvania Department of Transportation
SAFETEA	Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2003
SDPE	Supplemental Driver Performance Evaluation
TRB	Transportation Research Board

Introduction

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 in order to be performed successfully. Certain medical conditions can negatively affect one or more of these activities, thereby increasing the safety risk of drivers who suffer from them. The extent of the overall impact of medically impaired drivers is not known because data are not available on the number of licensed drivers with particular medical conditions or (except for data on alcohol-related accidents) on the number of accidents where a driver's medical condition was a contributory factor. However, statistics on the number of Americans with one or more of the following 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]
- 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]

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[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, No. 218 (Washington, DC: HHS, 2004).

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

- 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. 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. 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. Evidence indicates that both drivers were suffering seizures at the time of the accidents. The Safety Board examined four other medical impairment-related accidents, one involving a diabetic driver and three involving 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. (See appendix B.)

In March 2003, the Safety Board held a public hearing 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.

As detailed in this report, the Safety Board learned during the course of the hearing that the issues that encompass the medical oversight of noncommercial drivers are 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.

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[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/ophthweb/statistics.htm>.

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

As a result of its accident investigations and discussions stemming from the public hearing, the Safety Board identified the following safety issues:

- Need for more data on the extent to which medical conditions contribute to the cause of accident.
- Need for improved awareness and training for healthcare professionals, law enforcement, and the public regarding State medical oversight laws and practices.
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- Lack of uniform medical assessment and oversight standards throughout the States.
- Deficiencies in alternative transportation options for those who should not drive.

The Safety Board is making recommendations to the U.S. Department of Transportation, the National Highway Traffic Safety Administration, the National Committee on Uniform Traffic Laws and Ordinances, the American Association of Motor Vehicle Administrators, 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.

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Accident Narratives

In November 2002, the National Transportation Safety Board investigated an accident that occurred in Hagerstown, Maryland, involving a driver with a history of epilepsy. The Safety Board subsequently identified five other accidents in which medical incapacitation was the probable cause. Four of the five accidents involved drivers with a history of seizures, which does not necessarily reflect the frequency with which seizure-related accidents occurred. While studying the problems associated with licensing drivers with a history of seizures, Safety Board investigators found that such problems were not restricted to drivers with epilepsy. These findings prompted the Safety Board to broaden its interest to encompass the medical oversight of all noncommercial drivers and was the impetus for the public hearing held in March 2003.

Hagerstown, Maryland

About 11:24 a.m. on November 3, 2002, a 1983 Chevrolet Caprice, operated by a 55-year-old driver, was heading northbound on U.S. Route 11 in Hagerstown, Maryland. As the Chevrolet crossed through the signalized intersection of Bower Avenue, it struck the left rear of a northbound 2000 Nissan Sentra operated by a 76-year-old driver, pushing the Nissan off the east side of the highway. The Chevrolet continued northbound approximately 571 feet, where, at the signalized intersection of Massey Boulevard, it struck the rear of a northbound 1993 Pontiac Grand Prix operated by an 81-year-old driver. The Chevrolet engaged the Pontiac, and both vehicles continued northbound on Route 11 approximately 349 feet, at which point the Pontiac struck a wooden utility pole on the east shoulder of the roadway. The Chevrolet continued northbound for another 230 feet before it came to final rest on the east roadway shoulder, against a vertical curbing. The Pontiac driver sustained fatal injuries, the Nissan driver sustained minor injuries, and the driver of the Chevrolet was uninjured. The Chevrolet driver stated to emergency medical service (EMS) personnel after the accident that she had a history of seizures. (See figures 1 and 2.)

Driver Records

Drivers are licensed by their State of residence and must meet their State's medical requirement before licensure. At the time of the accident, the Chevrolet driver possessed a valid Class C Pennsylvania driver's license with no endorsements or restrictions. Her Pennsylvania driving history showed no violations, medical actions,[11] or accidents. A check

[11] In Pennsylvania, the Driver Safety Division can take action against drivers with specific medical conditions.

of the National Driver Register[12] (NDR) revealed no record of suspension or revocation. Automobile insurance records, obtained via subpoena from the Chevrolet driver's automobile insurance company, showed no claims made against the policy prior to this accident.[13]

Figure 1. Pontiac Grand Prix at final rest.

[12] The National Driver 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. The records maintained at the NDR consist of identification information including name, date of birth, gender, driver license number, and reporting State. States normally check the NDR prior to granting a new license to an individual. The NDR does not contain information on medical impairment, nor does it point to such information unless it was the cause of the license revocation, cancellation, or suspension.

[13] The driver had been a policy holder with this automobile insurance company since 1982.

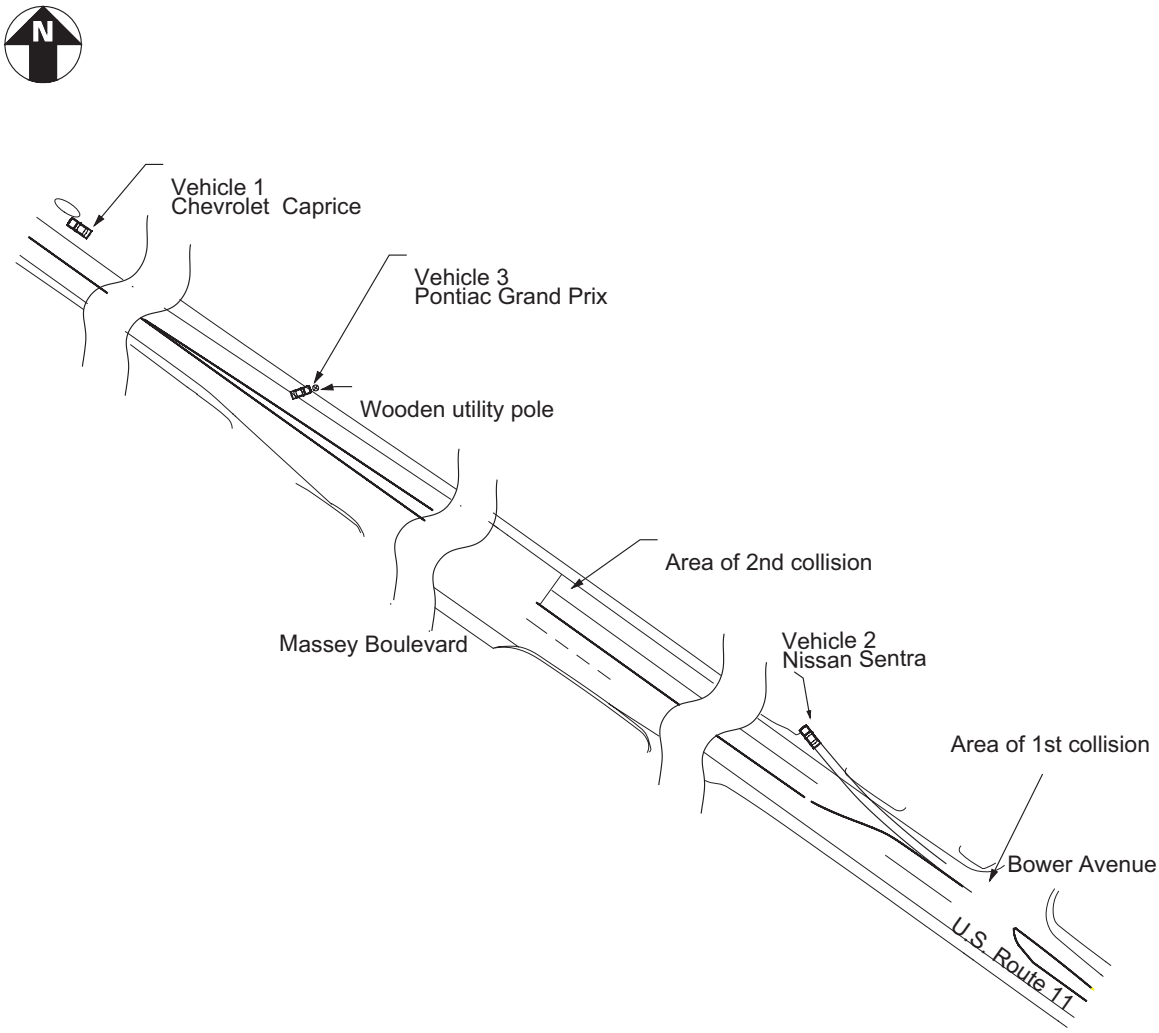

Figure 2. Schematic of Hagerstown accident.

Medical Records

Information on the Chevrolet driver's epilepsy[14] was gathered through a review of her medical records, which were obtained via subpoena from her neurologist, previous primary care physician, and current primary care physician.

Physician's records from October 1987 indicate that the Chevrolet driver noted a history of major motor seizures[15] as a child. Those records indicate that she noted no seizures from her teenage years until her mid-thirties and indicated that her seizures returned in November 1984, when she lost consciousness in an unwitnessed event. The

[14] A brain disorder in which nerve cells in the brain sometimes signal abnormally, causing unusual sensations, emotions, and behavior, or sometimes convulsions, muscle spasms, and loss of consciousness.

[15] Also known as *grand mal* or *tonic-clonic* seizures, this type of seizure is typified by symptoms that include stiffening of the body and repeated jerks of the arms and/or legs as well as loss of consciousness.

physician's records note that she made a visit in October 1987 for a "form to be filled out for driving license." The driver was a resident of Maryland at the time of that visit. The nature of this form was not specified in her medical records.

The driver moved from Maryland to Pennsylvania in 1992, but continued to see a physician in Hagerstown, Maryland. In January 1993, her family physician's records indicate that the Chevrolet driver complained of an occasional "tingling" sensation that she associated previously with the arrival of a seizure event.[16] In July 1995, those records indicate episodes in the evenings when she felt very lethargic and unable to respond to her husband when he spoke to her. She did not report loss of consciousness and indicated that she was able to raise her hand to show her husband how she felt.

In May 1996, the Chevrolet driver reported to her family physician that she experienced seizures "every few days," but reported that they had "decreased to about once per week or 10 days" since increasing the dosage of her seizure medication, phenytoin. The Chevrolet driver was referred to a neurologist, who saw her in June 1996. According to the neurologist's records, the driver reported getting a "weird feeling" across her body immediately before a seizure. Her husband reported that during a seizure, the driver "would get a strange look on her face." The Chevrolet driver stated that she "would lose contact with the environment for a period of a few seconds." After the seizure, she would feel mildly confused, but would otherwise feel fine, with no postseizure headache, drowsiness, nausea, or vomiting.

The Chevrolet driver continued to experience seizures until the time of the accident. In January 2001, her physician counseled her not to drive "this week" and to see a neurologist regarding the abnormal sensations she was experiencing on the left side of her head. In June 2001, physician records document the Chevrolet driver calling to indicate that she had experienced two seizures within a span of 1½ weeks, and that she had felt no warning prior to their onset. The neurologist's records from January 2002 indicated that the Chevrolet driver was still having seizures and that they were "worse than before." He added a prescription for the medication gabapentin[17] for the first time, and recommended that she notify the Motor Vehicle Administration (MVA)[18] of her condition and not drive for 3 months. The family physician's records note the January 2002 neurologist's recommendation that the Chevrolet driver not operate a motor vehicle. The neurologist's records from February 2002 indicated that the Chevrolet driver was again instructed not to drive, this time for 6 months, and to notify the MVA of her condition. No evidence was found to indicate that the Chevrolet driver or her physicians ever notified the Pennsylvania or Maryland licensing authority of her condition.

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[16] Many individuals with epilepsy report feeling a bodily sensation immediately prior to, or up to several hours before, the onset of some seizures. This forewarning is generally referred to as an "aura." Auras vary among individuals.

[17] Also known by the trade name Neurontin, this is an anticonvulsive used to treat seizures and shingles.

[18] By this time, the driver was a resident of Pennsylvania, which refers to its licensing agency as the Department of Motor Vehicles.

In March 2002, the Chevrolet driver again reported to her family physician that she had experienced a seizure that lasted half a minute. In June 2002, after she reported having a seizure at work, her neurologist instructed her not to operate a vehicle for 6 months and to notify the MVA. Her neurologist described her disorder as "fairly controlled" since the addition of the gabapentin. Neurologist records from August 2002 indicate that the Chevrolet driver's seizures were "well under control" under the medications prescribed (gabapentin and phenytoin), noting that she had not had a seizure since June. It also indicated that the Chevrolet driver recently lost her job and would soon be without health insurance coverage.

In October 2002, 5 days before the accident, the Chevrolet driver indicated to her neurologist that she had experienced three seizures in the previous week, as well as episodes of falling not associated with a loss of consciousness. She told the neurologist further that she had stopped taking gabapentin during the 2 weeks prior to the accident due to the expense and her lack of insurance coverage.

Frederick, Maryland

On March 23, 2002, a 1997 Oldsmobile Cutlass driven by a 34-year-old driver was southbound on Butterfly Lane in Frederick County, Maryland. As the Oldsmobile approached traffic at a signalized intersection, the driver failed to stop and struck the rear of a 1994 Hyundai occupied by a 39-year-old driver and three passengers between the ages of 8 and 10. The Hyundai was pushed forward, causing a series of rear-end collisions involving a total of six vehicles. All four Hyundai occupants were fatally injured. (See figure 3.)

A preliminary police investigation revealed that the driver of the Oldsmobile suffered from epilepsy, had received a vagal nerve implant,[19] and was taking prescription medication to control seizures.

Driver Records

A review of the Oldsmobile driver's records revealed no moving violations, no alcohol-related offenses, and no previous accidents. These records indicated that the driver had no restrictions concerning physical or mental disabilities. However, the Oldsmobile driver's records stated that the Maryland MVA Medical Advisory Board (MAB) had previously suspended the Oldsmobile driver's operating privileges on February 12, 2001. The reason for this suspension did not appear in the driver's records. The Safety Board determined through further investigation that the suspension was apparently the result of a November 12, 2000, motor vehicle accident in which the driver suffered a seizure while driving and subsequently struck an occupied residence. The Oldsmobile driver was mailed

[19] Vagus nerve stimulation is a type of treatment in which short bursts of electrical energy are directed into the brain via the vagus nerve, a large nerve running from the brain through the neck and chest. The patient may also initiate a burst to help prevent an anticipated seizure. This treatment is used when medications fail to stop seizures and when surgery is not a viable alternative.

a medical package, which instructed him to undergo an evaluation by a physician and to complete a functional capacity test.[20] The suspension was withdrawn on April 20, 2001, after the MAB received a report from the Oldsmobile driver's neurologist stating that the driver was physically and mentally capable of safely operating a motor vehicle. The neurologist also noted that the Oldsmobile driver had been seizure-free since the November 12, 2000, accident. No record was found to indicate that the Oldsmobile driver ever underwent a functional capacity test.

Figure 3. Hyundai at final rest.

After the suspension, the driver was advised that he would have to submit a "loss of consciousness affidavit" every 3 months for a year, and a followup report from his physician after 1 year. The Oldsmobile driver sent the MAB an affidavit in June 2001, in which he mentioned his medication dosage and his vagal nerve implant. The Oldsmobile driver left blank a field that inquired about the date of his last seizure episode. No indication exists that the MAB followed up on either the Oldsmobile driver's vagal nerve implant or on the missing date.

The Oldsmobile driver voluntarily surrendered his license to the MVA on October 11, 2001, shortly after his next affidavit would have been required. During a postaccident interview, the Oldsmobile driver indicated to Safety Board investigators that he surrendered his license because he did not think that he was safe to drive. Further investigation revealed that the Oldsmobile driver was involved in another accident on

[20] A battery of physical and cognitive tests used to assist in determining an individual's ability to safely operate a motor vehicle.

August 28, 2001, a month before surrendering his license. He requested, and was reissued, a duplicate Maryland operator's license on February 16, 2002. His file contained no other entries before the Frederick, Maryland, accident.

Law enforcement and Safety Board investigators were able to gather further information about the Oldsmobile driver's accident history by reviewing his insurance records and his vehicle's history report.[21] (See table 1 for a chronology of the Oldsmobile driver's activities after 1995.) According to the Manager of the Driver Wellness and Safety Division of the Maryland MVA, accident information is not posted to a driver's driving record unless an official charge or summons is issued by investigating police. Although a driver may be at fault for an accident, this information is not available to the MVA unless police charge the driver.

Medical Records

Medical information on the Oldsmobile driver was obtained via subpoena from his neurologist and family physician. Medical records indicated that the Oldsmobile driver had a history of seizures since childhood, consisting of "staring spells," often with loss of awareness, with occasional involvement of the left leg, and usually followed by a period of sleepiness and some visual field defects that resolved over time. The seizures occurred as frequently as several times a day and were only intermittently controlled with medication.

His neurologist's medical records also indicated that the Oldsmobile driver was routinely "noncompliant" with his neurologist's instructions, did not take medication as scheduled, cancelled or did not show for appointments, and was frequently unaware of his own seizures. The records also indicated that the neurologist questioned the Oldsmobile driver about his driving habits on several occasions. On November 17, 2000, after the Oldsmobile driver mentioned that he crashed into a house following a seizure, the neurologist told the Oldsmobile driver that "he should not drive for at least the next 3 months, and if he continues to be noncompliant, should not be driving at all." Nonetheless, after the Oldsmobile driver's license was suspended in February 2001, his neurologist indicated to the MAB on February 26, 2001, that the Oldsmobile driver was "reliable in taking medications," that the "patient's seizures/medical condition is controlled," and that the driver "is physically/mentally capable of safely operating a motor vehicle at this time."

[21] The Oldsmobile vehicle history was obtained through <www.carfax.com>.

Table 1. Driving history of the Oldsmobile driver involved in the Frederick, Maryland, accident. (Items in bold are those not included in the Oldsmobile driver's official driving records.)

Date	Event
Before 1995	No information available
December 21, 1995	Name change
January 28, 1996	**Involved in property damage accident**
November 5, 1997	**Involved in bodily injury accident**
February 5, 1998	**Involved in property damage accident**
November 12, 2000	**Involved in an accident in which his vehicle struck an occupied residence**
November 13, 2000	**Frederick police requested a reexamination for medical condition**
February 12, 2001	Suspended by MVA
April 20, 2001	Suspension withdrawn by MVA
August 28, 2001	**Involved in property damage accident**
October 11, 2001	Driver's license voluntarily turned in to MVA
February 16, 2002	Reapplied for and obtained driver's license
February 16, 2002	Address change
March 23, 2002	Involved in fatal accident involving a seizure
March 26, 2002	Investigation division requested to secure driver's license
March 27, 2002	Driver privilege suspended by MVA
March 28, 2002	Driver's license received and destroyed
April 2, 2002	**Police request reexamination**
March 2, 2003	Driver sentenced to 6 years in prison due to deaths resulting from March 2002 accident Driving privileges suspended permanently

Other Accidents

Lady Lake, Florida

At about 7:45 p.m. on December 11, 2002, a 54-year-old driver licensed in Georgia and operating a 2000 Jeep Cherokee was traveling westbound on Main Street in Lady Lake, Florida. According to the police, as the Jeep driver crossed the intersection of Paige Place, he suffered a seizure, lost control of his vehicle, and struck a 74-year-old pedestrian who was helping to direct traffic in the intersection as part of an outdoor festival. The Jeep then left the roadway and struck several more pedestrians. Two pedestrians were killed, and 13 others sustained various injuries; the Jeep driver was uninjured. (See figure 4.)

Figure 4. Jeep at final rest.

The Jeep driver told Safety Board investigators that he began having seizures in his early teens. According to his medical records, he told his physician that he had experienced about eight to nine grand mal seizures in his lifetime, and partial seizures[22] about once or twice a year. In January 1999, he suffered a grand mal seizure and fell down a flight of steps, resulting in head injuries that led to speaking difficulty and mild right-sided weakness. Medical records from February 1999 indicate that the physician and the Jeep driver discussed Georgia's law restricting driving for 1 year after a seizure.[23] Medical records from January 2002 indicated that although the Jeep driver believed that he had not been experiencing seizures, his wife reported that he had about one seizure every 2 months. The physician's records indicated that he reminded the driver about the Georgia driving restrictions.

Records from February 2002 indicate that the Jeep driver was experiencing memory difficulties that were likely due to the fall he suffered in 1999. The Jeep driver had brain surgery in April 2002 to relieve a subdural hematoma[24] resulting from the fall.

[22] Seizures that affect a limited area of one cerebral hemisphere.

[23] Georgia State Code Section 40-5-35 was modified in February 2000 to reduce the required seizure-free period from 1 year to 6 months.

[24] Bleeding into the space between the dura (the brain cover) and the brain itself. If the hematoma puts increased pressure on the brain, neurological abnormalities, such as slurred speech, impaired mobility, and dizziness may result. Untreated, this condition could lead to coma and even death.

Medical records from August 2002 indicate that Jeep driver continued to show moderate to severe problems with verbal and visual memory despite the surgery. In addition, the records noted that his wife reported that the driver was also "having significant difficulty doing simple tasks, and requires much structure and instruction, as though he is having to relearn things."

Medical records dated 6 days after the crash note that the Jeep driver had been seizure-free for over a year before the events leading to the accident and that he had been taking his medication as prescribed. It also indicated that he experienced symptoms of a partial complex seizure immediately before losing control of the vehicle.

Washington County, Maryland

On June 7, 2001, a 70-year old driver, licensed in Virginia, was driving a 1997 Ford Windstar van westbound on Interstate 70, Washington County, Maryland. The weather was clear, the roadway dry, and the visibility was good. The Ford approached a right-hand curve, failed to negotiate it, and ran off the roadway, into the median. The Ford continued through the median and encroached into the eastbound travel lanes, where it struck a 1992 Chevrolet Lumina, a 2001 Volvo tractor-semitrailer, and a 1992 Chevrolet Beretta. The operator of the Lumina suffered fatal injuries; the two occupants of the Ford suffered serious injuries. The operator of the tractor-semitrailer and the Beretta suffered minor injuries. (See figure 5.)

Figure 5. Chevrolet Lumina and Volvo tractor-semitrailer at final rest.

After the crash, the investigating trooper interviewed the passenger in the Ford, who stated the driver had suffered a brain injury in 1996 and had experienced blackouts since then, with the last blackout occurring over a year before the accident. The Ford's passenger also told the trooper that the driver was currently taking medication known to

treat seizures. A check of the Ford driver's Virginia operator's license did not indicate any previous history of accidents, suspensions, or medical restrictions.

Lebanon, Pennsylvania

On October 15, 2003, a 1995 Chevrolet Astro was traveling eastbound on East Lehman Avenue in Lebanon, Pennsylvania. The 49-year-old driver was the sole occupant of the Chevrolet. The weather was clear and the roadway was dry. According to witnesses, the Chevrolet made a right turn into the parking lot of the Turkey Hill convenience store located at 716 East Lehman Avenue. After the turn, the Chevrolet continued straight through the lot and struck the front window of the store. The Chevrolet drove into the building, struck two persons standing near the checkout counter, continued through the store, struck a third person standing by the soda counter, and came to rest near the rear wall of the store. During the accident sequence, three additional persons in the store were struck by flying debris. The accident resulted in serious injuries to one individual, moderate injuries to another, and minor injuries to the driver and four others.

A witness outside the store told police the brake lights of the Chevrolet never came on. Another witness, a store employee inside the store at the time of the accident, told police that the Chevrolet driver exited the vehicle after the accident, looking "hysterical," and then appeared to suffer a seizure, falling to the ground. In an interview with police after the accident, the Chevrolet driver stated that she had not been feeling well and had decided to pull into the store to get something to drink. She stated that she could not remember anything from that point on, including how she got to the hospital. The postaccident investigation by Lebanon police revealed that the Chevrolet driver had a history of seizures but had been cleared to drive following brain surgery about a year before the accident.

Deerfield Beach, Florida

On January 31, 2003, a 61-year-old driver lost control of her late-model Lincoln Continental, traveled approximately 25 feet from the intersection of South Federal Highway near Deerfield Beach, Florida, and crashed into a Winn-Dixie food store. Two occupants of the store were injured and transported to a local hospital. According to police, after the accident, the Lincoln driver stated that she had been diagnosed with diabetes and may have blacked out before the accident. Her driving record indicated no previously reported crashes in the 3 years before this accident. At the time of the accident, the roadway was dry, the skies were clear, and the visibility was good.

Medical Oversight

In its public hearing on March 18 and 19, 2003, the Safety Board examined the state of noncommercial driver medical oversight (appendix D).[25] Healthcare experts from academia, advocacy organizations, and Federal and State governments participated in this hearing, which included the following major topics: (1) current knowledge regarding potentially impairing medical conditions, (2) identification and reporting of medically high-risk drivers, (3) procedures for assessing the driving fitness of medically high-risk drivers, (4) State licensure and oversight of noncommercial drivers with high-risk medical conditions, (5) programs to increase public awareness of State oversight laws and procedures, and (6) rehabilitation and transportation options for medically high-risk drivers.

The following sections summarize the issues pertaining to the medical oversight of noncommercial drivers and derive primarily from discussions held during the Safety Board's hearing.

Research

Medical conditions such as epilepsy have the potential to adversely affect a driver's ability to operate a motor vehicle, as the accident investigations described earlier indicate. Research has identified several other conditions associated with an increased risk of motor vehicle accidents: visual impairments, cardiovascular diseases, metabolic diseases, psychiatric diseases, cerebrovascular diseases, renal diseases, respiratory diseases, and musculoskeletal diseases.[26] The role of medical impairment in accident causation is an issue of concern that may become more prominent due to the growing number of senior[27] and obese[28] citizens.

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

[26] B.M. Dobbs, *Medical Conditions and Driving: Current Knowledge,* contract #DTNH22-94-G-05297. Submitted to the Association for the Advancement of Automotive Medicine under contract with NHTSA (2002).

[27] Aging has been associated with visual impairments, cardiovascular diseases, metabolic diseases, psychiatric diseases, cerebrovascular diseases, respiratory diseases, pulmonary diseases, and musculoskeletal diseases. See *Physician's Guide to Assessing and Counseling Older Drivers,* <http://www.ama-assn.org/go/olderdrivers>.

[28] In the United States, 61 percent of adults are overweight or obese**.** The Centers for Disease Control and Prevention lists several diseases that are associated with obesity, including Type 2 diabetes, stroke, coronary heart disease, osteoarthritis, obstructive sleep apnea and respiratory problems, and psychological disorders like depression (<http://www.cdc.gov/nccdphp/dnpa/obesity>).

Researchers have attempted to estimate the increased crash risk for medically high-risk drivers.[29, 30, 31] A comprehensive longitudinal study of restricted and unrestricted drivers with high-risk medical conditions[32] found that medically high-risk drivers generally had a higher rate of at-fault crashes when compared with matched controls, but that the relative risk differed greatly depending on the condition (table 2). For example, unrestricted drivers[33] with cardiovascular disease had an at-fault accident risk equal to that of drivers in a comparison group, whereas unrestricted drivers with learning, memory, or communication deficits (such as Alzheimer's disease and mental retardation) were 3.32 times more likely to cause an accident than drivers in a comparison group. The authors recommended that licensing authorities place greater consideration on the functional ability categories that show a higher risk of crashes (such as learning and neurological and episodic conditions) or that comprise a greater number of drivers.

Table 2. Relative risk for at-fault crashes for medically high-risk drivers as compared with a matched comparison group, Utah 1992-1996.[34]

Functional ability category	Licensing status[a]	
	Unrestricted	**Restricted**
Diabetes and other metabolic conditions	1.46	1.77
Cardiovascular	1.00	1.54
Pulmonary	1.26	1.60
Neurological	2.20	1.40
Epilepsy and other episodic conditions	2.02	2.39
Learning, memory, and communication	3.32	-
Psychiatric or emotional conditions	1.85	2.89
Alcohol and other drugs	2.22	5.75
Visual acuity	1.52	1.56
Musculoskeletal abnormality or chronic medical debility	1.84	11.29
Functional motor impairment	1.71	-

a.Unrestricted drivers have full license privileges, while restricted drivers have speed, area, or time-of-day limitations.

[29] T.D. Koepsell, M.E. Wolf, L. McCloskey, D.M. Buchner, D. Louie, E.H. Wagner, and R.S. Thompson, "Medical Conditions and Motor Vehicle Collision Injuries in Older Adults," *Journal of the American Geriatric Society*, *42*(7) (1994): pp. 695-700.

[30] G. McGwin, R.V. Sims, L. Pulley, and J.M. Roseman, "Relations Among Chronic Medical Conditions, Medications, and Automobile Crashes in the Elderly: A Population-Based Case-Control Study," *American Journal of Epidemiology*, *152*(5) (2000): 424-31.

[31] C. Owsley, G. McGwin, and K. Ball, "Vision Impairment, Eye Disease, and Injurious Motor Vehicle Crashes in the Elderly," *Ophthalmic Epidemiology*, *5*(2) (1998), 101-13.

[32] E. Diller, L. Cook, E. Leonard, J. Reading, J.M. Dean, and D. Vernon, *Evaluating Drivers Licensed With Medical Conditions in Utah, 1992-1996*, DOT-HS-809-023 (Washington, DC: NHTSA, 1999).

[33] Drivers whose driving privileges are not limited by the State licensing agency to a specified time, place, or method of operation.

[34] Medically high-risk drivers and the comparison group were matched on age, gender, and location of residence. The numbers indicate the relative risk for at-fault crashes for medically high-risk drivers when compared with the matched comparison group. For example, a relative risk of "2.00" means that the medically high-risk group is twice as likely to be involved in an at-fault crash as the comparison group.

Driver Assessment

During the Safety Board's hearing on medical oversight of noncommercial drivers, several witnesses testified that not enough was known about the effects of certain medical conditions on driving ability. According to Dr. Allan Krumholz, Professor of Neurology and Director of the Maryland Epilepsy Center, many studies suffer from methodological limitations, such as small sample size, lack of uniform criteria, lack of exposure data, and the absence of evidence that the crashes were a direct result of driver medical conditions.[35] Dr. Bonnie Dobbs, Associate Director of the University of Alberta Rehabilitation Research Centre in Alberta, Canada, stated that because medical conditions may result in various levels of impairment among individuals, individualized assessment based on functional ability was the fairest and most accurate screening technique.[36] According to Dr. Dobbs, functional impairments associated with driving can generally be classified as chronic or acute, and this classification has important implications for assessment. Acute conditions are characterized by periods of impairment that are sporadic and often unpredictable, such as epilepsy and cardiovascular disease. Making fitness-to-drive decisions for drivers with acute conditions cannot be based solely on direct measurement because of the nature of such illnesses. Driver screening for those with acute conditions instead must be based on clinical judgments of individual cases and on a policy of acceptable risk for society. Conversely, chronic conditions are characterized by impairments that are often stable or that show fairly predictable functional declines, such as visual and musculoskeletal conditions. These characteristics allow fitness-to-drive decisions to be based on performance rather than estimates of risk.

In assessing acute conditions, licensing agencies must determine an acceptable level of risk. According to Dr. Krumholz, "the issue is really how one can predict who is likely to have a problem while driving." He related the results of a study he co-authored, which found that the best predictors of crash risk among drivers with epilepsy were the length of seizure-free intervals, the presence of reliable auras, the number of previous seizure-related accidents, and changes in antiepileptic drugs.[37] He believed that many of these factors are oftentimes not considered adequately in the licensing regulations. Dr. Krumholz noted that advances in the knowledge and treatment of diseases such as epilepsy have allowed licensing agencies to lower the accident risks associated with them. Before 1949, no individual diagnosed with epilepsy was allowed to drive in the United States. However, this restriction was changed with the understanding that epilepsy is a condition that can be controlled and predicted in some individuals. According to the Centers

[35] Testimony of Dr. Allan Krumholz, Professor of Neurology and Director of the Maryland Epilepsy Center, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[36] Testimony of Dr. Bonnie Dobbs, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[37] G.L. Krauss, A. Krumholz, R.C. Carter, G. Li, and P. Kaplan. "Risk Factors for Seizure-Related Motor Vehicle Crashes in Patients with Epilepsy," *Neurology*, *52*(7) (1999): 1324-9.

for Disease Control and Prevention, treatment can control seizures for 75 percent of people with epilepsy.[38] Dr. Krumholz stated, "In the United States today, just about every State in the United States permits people with controlled seizures to drive."[39]

In assessing chronic conditions, licensing agencies must find the right technique to measure performance related to driving, determine a threshold that can be used to screen drivers, and follow up periodically to gauge changes in performance. In assessing dementia, Dr. Richard Marottoli, Director of the Geriatrics and Extended Care section at the Connecticut Veterans Administration, testified that a variety of tests have been used to measure cognitive function. According to Dr. Marottoli, general assessment procedures, such as the mini mental state exam,[40] are frequently used, but they tend to have a relatively low association with actual driving performance. Tools that measure specific functions, such as those that measure visual spatial ability, require training to administer and are not often available to licensing agencies, but seem to have more validity in terms of measuring aspects of driving fitness. However, these tests can only raise one's awareness that a driver with a medical condition might be at increased risk for an accident. They lack the validity of an on-the-road assessment.[41]

Some high-risk medical conditions, such as Parkinson's and Alzheimer's disease, change over time, necessitating regular followups.[42] Studies show that drivers over 65 with degenerative medical conditions do self-regulate to a limited extent, but that many continue to drive despite poor health.[43] A survey of 1,470 adults over 65 years old, found seven factors of significance in predicting driving cessation: age, female gender, macular degeneration, stroke, hospitalization in the past year, eye problems caused by general health, and Parkinson's disease.[44] Another survey of 402 visually impaired drivers between

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[38] See <http://www.cdc.gov/nccdphp/epilepsy/seizures.htm>.

[39] Testimony of Dr. Allan Krumholz, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003. According to the Epilepsy Foundation, 41 States and the District of Columbia allow those who have been seizure free for a specified amount of time to drive. Nine states do not specify a seizure-free period and rely on the driver's physician or the State Medical Advisory Board to determine driving fitness and licensure.

[40] A short series of simple evaluations requiring no special tools or training that are commonly conducted in clinical practice.

[41] Testimony of Dr. Richard Marottoli, Director of the Geriatrics and Extended Care section at the Connecticut Veterans Administration and Associate Professor of Medicine at the Yale University School of Medicine, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[42] Testimony of Dr. Dana Clarke, Chairman of the Utah Medical Advisory Board and Director of the University of Utah Diabetes Center, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[43] A. Dobbs and B. Dobbs, *The Unsafe Older Driver: Identification, Assessment and Minimizing the Negative Consequences of Loss of Driving Privileges*, Continuing Education Seminar sponsored by the Canadian Psychological Association and the American Psychological Association (2003).

[44] R. Stewart, M. Moore, R. Marks, F. May, and others. "Driving Cessation in the Elderly: An Analysis of Symptoms, Diseases, and Medications, *Journal of Geriatric Drug Therapy*, 8(2) (1993): 45-60.

the ages of 60 and 91, reported that although 80 percent of the sample acknowledged that avoiding certain driving situations (for example, left turns, interstate highways) would help decrease their risk of crashing, 75 percent reported rarely avoiding such situations.[45]

A study of patients with Alzheimer's disease[46] found that although the patients tended to restrict their driving habits, many continued to drive despite their caregivers' perception that they should discontinue driving altogether. The authors noted that attention deficits were significantly associated with an absence of self-imposed driving restrictions. Witnesses at the Safety Board's hearing favored an active role by physicians and close associates in determining the driving fitness of a medically high-risk individual.

Every State has laws that regulate the driving privileges of medically high-risk drivers. Many place license restrictions on these drivers in an attempt to lessen the risk to all road users while granting the medically high-risk drivers some mobility.[47] Disagreement currently exists among experts and in the literature regarding the merits of restricted licenses. The data in table 2[48] suggest that drivers on restricted licenses still present a hazard to the motoring public. Another study[49] found that at-fault crashes decreased almost 13 percent among Saskatchewan drivers with high-risk medical conditions after restrictions had been imposed on them. Although restricted drivers in this study did have a slightly higher incidence of crashes than unrestricted drivers (incident ratio = 1.13), the authors noted that this crash rate was still lower than that for male and urban drivers (incident ratio = 2.01). Yet another study[50] found that the availability of a restricted license option for their patients positively influenced the decision of Saskatchewan, Canada, physicians to report those who were perceived as unfit to drive.

During the Safety Board's hearing, Dr. Dobbs maintained that further research into the applicability or the appropriateness of restricted licenses was required. She related an example in the dementia literature that suggested that individuals be restricted to within 5 miles of home and stated that, "if an individual is cognitively impaired to the extent that they're unsafe to drive, they're unsafe to drive 5 miles or 20 miles or a hundred miles within an area." Other witnesses advocated licensing restrictions over revocation, with Dr. Krumholz noting evidence that harsher restrictions on European drivers with medical impairments resulted in reduced compliance with the regulations. He added that harsher rules might discourage drivers from disclosing their disabilities to physicians and licensing authorities, which could actually result in an increased risk to the public. Dr. Krumholz

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[45] B. Stalvey and C. Owsley, "Self-Perceptions and Current Practices of High-Risk Older Drivers: Implications for Driver Safety Interventions," *Journal of Health Psychology*, 5(4) (2000): 441-456.

[46] V. Cotrell and K. Wild, "Longitudinal Study of Self-Imposed Driving Restrictions and Deficit Awareness in Patients with Alzheimer Disease," *Alzheimer Disease and Associated Disorders*, *13*(3) (1999): 151-6.

[47] K.H. Lococo, *Summary of Medical Advisory Board Practices in the United States*, prepared for the National Highway Traffic Safety Administration by Transanalytics, contract #DTNH22-02-P-0511 (2003).

[48] Diller, *Evaluating Drivers Licensed With Medical Conditions in Utah* (1999).

[49] S.C. Marshall, R. Spasoff, R. Nair, and C. Van Walraven, "Restricted Driver Licensing for Medical Impairments: Does It Work?" *Canadian Medical Association Journal*, 167(7) (2003): 747-51.

[50] S.C. Marshall and N. Gilbert, "Saskatchewan Physicians' Attitudes and Knowledge Regarding Assessment of Medical Fitness-to-Drive," *Canadian Medical Association Journal*, 161(6) (1999): 687-8.

concluded by stating that, "it seems kind of counterintuitive, but making rules less severe, less restrictive, but still reasonable, I think, has the potential to increase public safety for many people when you look at people driving with disabilities."

Reporting Medical Conditions

Physician Reporting

During the Safety Board's hearing on medical oversight of noncommercial drivers, three issues were discussed as affecting the probability that physicians will report patients with a high-risk medical condition to State licensing authorities: knowledge of State reporting laws, the existence of mandatory reporting laws, and liability concerns.

Knowledge of Reporting Laws. A 1997 study[51] found that although personal physicians are the primary source of information about driving restrictions for patients with neurological impairments, many are unaware of relevant State laws. A 2000 study[52] found that over 28 percent of geriatricians[53] in the United States were unaware of the procedures for reporting drivers with potentially unsafe degrees of dementia. In California, where physicians are required to report drivers having moderate to severe dementia, about 6 percent of geriatricians did not know how to report drivers with dementia.

Dr. Claire Wang, medical advisor to the American Medical Association (AMA) Older Drivers Project, testified during the Safety Board's hearing[54] that many of the 670,000 physicians involved with patient care are not familiar with their own State's reporting policies and procedures. Dr. Wang added that the level of knowledge can vary greatly between States, between urban and rural areas, and between areas of medical specialization.

Dr. Wang believed that medical schools could do more to inform students about the medical and legal aspects of patient driving safety. These medical aspects include the awareness that certain medical conditions and medications can impair driving safety, and the knowledge of how to counsel patients in those situations and on driving cessation. The legal aspects include knowing that reporting laws and procedures exist for each State. Dr. Wang believed that most physicians learn about their State's reporting laws through word of mouth.

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[51] K.K. Selmo, D.S. Asp, and D.C. Anderson, "Seizures and Spells: Physician Awareness of Minnesota Driving Laws," *Minnesota Medicine,* 80(5) (1997): 42-6.

[52] G. Cable, M. Reisner, S. Gerges, and V. Thirumavalavan, "Knowledge, Attitudes, and Practices of Geriatricians Regarding Patients with Dementia Who Are Potentially Dangerous Automobile Drivers: A National Survey," *Journal of the American Geriatric Society*, 48(1) (2000): 100-2.

[53] Geriatricians are physicians who specialize in treating diseases associated with aging.

[54] Testimony of Dr. Claire Wang, Medical Advisor to the American Medical Association's Older Drivers Project, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

Several States have published guidebooks and held training sessions to boost physician awareness of State reporting laws. For example, North Carolina published and distributed almost 10,000 copies of *The North Carolina Physician's Guide to Driver Medical Evaluation*[55] to physicians who would likely see medically high-risk patients. In 2001, Pennsylvania mailed a brochure of its reporting laws to all physicians licensed in that State. Every year in January, the Wisconsin Department of Motor Vehicles (DMV) conducts outreach at major hospitals to inform physicians about the purpose and function of the Wisconsin medical review board. Wisconsin also mails brochures on its reporting laws to all physicians in the State who are registered with the AMA in order to reach the rural physician. In 2002 and 2003, Oregon conducted a public awareness campaign to inform drivers and physicians of newly implemented physician-reporting laws. This campaign included awareness seminars for physicians and training for social workers on how to counsel functionally impaired individuals and provide alternative transportation options.

The AMA and NHTSA have taken steps to inform physicians through their Older Driver program and the *Physician's Guide to Assessing and Counseling Older Drivers.*[56] The AMA has also developed a training-of-trainers program, based on the *Physician's Guide*, to educate physicians and other healthcare professionals on the public health issue of older driver safety and to train them on assessing and counseling patients for medical fitness to drive. As of September 2004, 24 instructors from various healthcare fields have been taught the five modules of the training-of-trainers program and have subsequently conducted about 40 seminars based on the *Physician's Guide* throughout the nation. Upcoming training sessions are listed on the AMA website.

Dr. Laurel Broadhurst, a practicing physician in North Carolina and advisor for the North Carolina Driver Medical Evaluation Program, suggested that because physicians in North Carolina are required to take 150 hours of continuing medical education (CME) credits every 3 years, one of those hours could cover State reporting laws.[57] State CME requirements vary by State, with 9 States[58] and the District of Columbia having no such requirement, and 39 States requiring that physicians take, on average, between 20 and 50 hours of CME credits annually to maintain their licenses.[59] According to the AMA, a few of the *Physician's Guide* training sessions that have been offered have provided CME credit.[60] The *Physician's Guide* itself includes a self-administered test and a form for physicians to apply for CME credits.

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[55] T.B. Cole, M.L. Vinsant, and C.L. Popkin, *The North Carolina Physician's Guide To Driver Medical Evaluation*, North Carolina Department of Health and Human Services (1995).

[56] See *Physician's Guide to Assessing and Counseling Older Drivers* <http://www.ama-assn.org/go/olderdrivers>.

[57] Testimony of Dr. Laurel Broadhurst, physician, Family Medicine Associates, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[58] Colorado, Connecticut, Indiana, Montana, New York, Oregon, South Dakota, Vermont, and Wyoming.

[59] American Medical Association, *State Medical Licensure Requirements and Statistics, 2004*. Some States have different CME requirements for Doctors of Osteopathy.

[60] Dr. Claire Wang, advisor to the AMA, telephone interview, March 17, 2004.

Mandatory Reporting. An additional issue that could factor into the level of physician reporting is the presence of mandatory reporting laws. Currently, Nevada, California, Delaware, New Jersey, Oregon, and Pennsylvania have laws that require physicians to report drivers with certain high-risk medical conditions to the licensing agency (appendix E). As mentioned previously,[61] geriatricians in California, where physicians are required to report drivers with moderate dementia, were more likely to be aware of State reporting laws than geriatricians nationwide. A 1997 study[62] found that in the five Canadian provinces with mandatory reporting laws, 84 percent of the physicians reported patients with seizures, as compared to 19 percent in the five provinces with discretionary laws. A survey[63] of physicians in Connecticut, a State that does not have a mandatory physician reporting law, found that 77 percent discussed driving with their patients, and 14 percent reported high-risk patients to the licensing authority. Another survey[64] found that 28 percent of individuals at a seizure clinic in Oregon would not inform their physicians of seizures if a mandatory physician reporting law were implemented. A 2000 study[65] reported that mandatory reporting laws for cardiac patients in Ontario have only a negligible impact on accident reduction.

Several differing views about mandatory reporting were expressed during the Safety Board's hearing. Dr. Krumholz and Dr. Dana Clarke, Chairman of the Utah Medical Advisory Board, argued that mandatory reporting would discourage patients from seeking treatment or disclosing the extent of their illnesses to their physicians. They believed that physicians should only be encouraged to report to the licensing authorities any person who is of immediate and imminent danger to the public safety. Dr. Wang testified that the primary goal of physicians should be to keep their patients on the road safely as long as possible, through medical interventions, medical treatments, and driver rehabilitation programs. Only after these options have been exhausted should a doctor recommend retirement from driving. Dr. Marottoli agreed that mandatory reporting may not give physicians the flexibility to educate patients and caregivers about impairing conditions and driving, but he also believed that the risk of not reporting a medically unfit driver could outweigh the risk of breaching patient-doctor confidentiality. Ms. Jill Reeve, Program Supervisor of the Medical Review Unit of the Wisconsin Department of Transportation, favored mandatory reporting because she believed that few physicians would voluntarily report their patients.

Liability Concerns. Liability issues may also influence the level of physician reporting. Dr. Laurel Broadhurst testified that many physicians worry about the liability

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[61] Cable (2000).

[62] R.S. McLachlan, "Medical Conditions and Driving: Legal Requirements and Approach of Neurologists," *Med Law*, 16(2) (1997): 269-275.

[63] M.A. Drickamer and R.A. Marottoli, "Physician Responsibility in Driver Assessment," *American Journal of Medical Science*, 306(5) (1993): 277-81.

[64] M.C. Salinsky, K. Wegener, and F. Sinnema, "Epilepsy, Driving Laws, and Patient Disclosure to Physicians," *Epilepsia*, 33(3) (1992): 469-72.

[65] C.S. Simpson, G.J. Klein, F.J. Brennan, A.D. Krahn, R. Yee, and A.C. Skanes, "Impact of a Mandatory Physician Reporting System for Cardiac Patients Potentially Unfit to Drive," *The Canadian Journal of Cardiology*, 16(10) (2000): 1257-63.

issues in both reporting high-risk patients and *not* reporting those individuals. She testified further that giving physicians immunity from liability would help promote physician reporting. Dr. Clarke also voiced concern about the absence of immunity statutes in some States, calling it a barrier that "encourages non-reporting."[66] Currently, 32 States provide physicians legal immunity when reporting medically high-risk patients (appendix F);[67] 18 States and the District of Columbia do not.[68] A recent NHTSA-sponsored nationwide survey of State licensing representatives indicated that providing physicians who report an unfit driver with immunity from liability was among the five most important elements to have in a model medical oversight program.[69]

Emergency Medical Technicians

Emergency medical technicians (EMTs) and paramedics are among the first individuals called to an automobile crash. They are trained in lifesaving procedures and the identification of certain medical conditions. According to Mr. Richard Wiederhold, District Chief of the Brevard County Public Safety Department in Florida, EMTs in most States have a responsibility by law to report the medical treatment that they provide to patients. This report is sent to the medical recordkeeping agency of the State, is not made public, and is not shared with law enforcement. The concept of doctor-patient confidentiality is extended to EMTs treating the patient because an EMT who responds to a medical emergency is considered a "borrowed servant of the physician under whose license they operate." [70] The National Association of Emergency Medical Technicians (NAEMT) believes that some States currently provide legal immunity to EMTs who report medically impaired drivers, but a list of these State does not exist.[71]

According to Mr. Wiederhold, no formal mechanism exists for EMTs to report medically impaired drivers to a physician or licensing authority for purposes of oversight. Nevertheless, Mr. Wiederhold stated that EMTs do occasionally steer law enforcement towards checking a driver when impairment is suspected, especially when alcohol is involved.

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[66] Testimony of Dr. Dana Clarke, Chairman of the Utah Medical Advisory Board and Director of the University of Utah Diabetes Center, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[67] Contrary to what is published in the *Summary of Medical Advisory Board Practice in the United States*, the Safety Board has learned that Connecticut and Nevada do provide immunity to reporting physicians.

[68] Lococo (2003).

[69] 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*, contract #DTNH22-02-P-05111, National Highway Traffic Safety Administration (2004).

[70] Testimony of Mr. Richard Wiederhold, District Chief of the Brevard County Public Safety Department, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18 and 19, 2003.

[71] NAEMT Board of Directors Government Affairs Liaison, telephone interview, November 20, 2003, and telephone interview with NAEMT President, April 8, 2004.

Law Enforcement

Law enforcement officers are among the principal individuals who report medically high-risk drivers to State licensing agencies. In Maryland and North Carolina, for example, about 35 percent of such reports are submitted by law enforcement officers.[72] In Wisconsin, law enforcement officers account for 70 percent of all such referrals; and in Iowa, for over 90 percent.[73] States generally require officers to submit a reexamination form to report a medically high-risk driver. Some States provide law enforcement with other referral methods. For example, officers in Florida may also refer an accident driver by entering an appropriate code in the "Physical Defects" field of the accident form.[74] The Florida DMV reviews the accident forms and contacts those drivers who are identified as possibly posing a medically related risk. Between 2000 and 2002, using this method, 17,642 accident drivers were referred to the Florida Medical Unit. In North Carolina, if during the accident report electronic coding process it is discovered that medical impairment may have contributed to a crash is discovered, the report is routed to the Driver Medical Review Branch for further scrutiny. If determined that a medical impairment probably played a role in the crash, the Medical Review Branch contacts the driver with a request for reexamination.[75] During the same timeframe, 43,340 accident drivers were referred to the North Carolina Medical Review Branch as potentially posing a medically related risk.[76]

Accident Reporting Forms. State accident reporting forms vary in the attributes provided to law enforcement officers to describe a driver's physical condition at the time of an accident. Florida's accident reporting form has seven possible driver medical conditions from which to choose, including "eyesight defect," "illness," "seizure/epilepsy/blackout," and "hearing defect." The Maryland accident reporting form contains such driver conditions as "ill," "physical defects," and "other handicaps." Using the Texas accident reporting form, law enforcement officers may select between "ill" and "taking medication," and the form directs officers to elaborate in the narrative. All State accident reporting forms include prompts for fatigue, alcohol, and illegal drugs.

In 1998, NHTSA introduced the Federal guideline Model Minimum Uniform Crash Criteria (MMUCC), which States can use to modify their accident reporting forms.[77] The goal of MMUCC was to encourage States to voluntarily adopt a uniform accident reporting form that could be used to generate accurate, reliable, and credible data

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[72] Testimony of Dr. Carl Soderstrom, Associate Director of the Medical Advisory Board for the Maryland Motor Vehicle Administration, and Susan M. Stewart, Manager of North Carolina's Driver License Medical Review Section, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18 and 19, 2003.

[73] See <http://www.nhtsa.dot.gov/people/injury/olddrive/FamilynFriends/state.htm>.

[74] Management Analyst III, Division of Driver Licenses, Florida Department of Highway Safety and Motor Vehicles (DHSMV), telephone interview, April 12, 2004.

[75] Testimony of Dr. Laurel Broadhurst, Weaverville Family Medicine, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18 and 19, 2003.

[76] Susan Steward, Manager, North Carolina Division of Motor Vehicles, Driver Medical Review Branch, telephone interview, May 2004.

[77] U.S. Department of Transportation, National Highway Traffic Safety Administration, *The Model Minimum Uniform Crash Criteria, Second Edition* (Washington DC: NHTSA, 2003).

for use at the State and national level. In terms of functional impairment, the MMUCC contains fields concerning suspected drug or alcohol use and a field that refers to a driver's condition at the time of the crash. According to the MMUCC, attributes to be considered under the driver's condition field include driver emotion (depressed, angry, or disturbed), signs of illness, signs of fatigue or sleepiness, and the influence of medications, drugs, or alcohol. NHTSA does not track the number of States that have adopted all or part of the MMUCC, but is currently working on having this information available by 2005.[78]

Training. In January 2004, NHTSA published the *Compendium of Law Enforcement Older Driver Programs*.[79] The primary intent of the *Compendium* is to document strategies used by law enforcement agencies throughout the nation to reduce collisions involving older drivers. These strategies include partnerships with senior citizen organizations, family help networks, social service agencies, public and private transportation, the media, and motor vehicle departments. The *Compendium* also includes training programs, aimed at older adults and caregivers, for identifying signs of dementia and other medical impairments associated with aging. Law enforcement agencies from 28 States provided NHTSA with information for the *Compendium.* Agencies from nine States noted that they have specific courses or educational material to train officers in identifying symptoms of Alzheimer's disease. Only Florida indicated that it had educational material available to law enforcement officers for identifying other high-risk medical conditions, such as Parkinson's disease, visual impairment, and arthritis. In many cases, the agencies that responded addressed training only for their district or region, so the availability of courses or training materials for officers statewide is unclear.

According to Sargeant Robert Ticer, an Arizona Department of Public Safety law enforcement officer and author of the *Compendium*, officer training in health matters consists mainly of first aid instruction at the police academy.[80] Some officers in rural areas are trained as EMTs as a matter of necessity. About 5,000 officers nationally have also been trained as drug recognition experts (DREs), their primary focus being the identification of individuals who are driving under the influence of alcohol or other commonly abused drugs.[81] Sargeant Ticer testified that, in general, law enforcement officers are not aware of the issues regarding medical impairment and driving and are not trained to recognize signs of medical impairment. Patrick Judge, the executive director of the International Association of Directors of Law Enforcement Standards and Training (IADLEST) supported Sargeant Ticer's testimony, stating that several emerging programs are aimed at increasing the awareness of officers to all aspects of driver impairment, but for the most part, such training is not currently offered at the police academies.[82]

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[78] NHTSA team leader, State Data and Quality Assurance Team, telephone interview, September 15, 2004.

[79] See <http://www.nhtsa.dot.gov/people/injury/olddrive/LawEnforcementOlderDriver03/index.htm>.

[80] Testimony of Sargeant Robert Ticer, Arizona Highway Patrol, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[81] Officers specially trained to detect possible signs of drug impairment through a person's appearance or behavior, or through psychophysical testing. A 12-step evaluation process allows the officer to rule in or out many medical conditions that may be contributing to the person's impairment.

[82] IADLEST Executive Director, telephone interview, November 12, 2003.

The Public

Support from family, friends, and other caregivers plays a significant role in a medically high-risk individual's decision to stop driving.[83] Nevertheless, driving cessation can be a difficult topic for caregivers to broach with a medically high-risk driver.[84] In many States, family members and private citizens have the option to report a medically high-risk individual to the State licensing authority. However, one hindrance to reporting is the lack of immunity from civil liability suits given to private citizens who report a medically high-risk driver in good faith: as few as 16 States offer immunity to individuals who report an unfit driver in good faith.[85] (See appendix F for a summary of State immunity laws.)

The New York State Office for the Aging notes that those who deal with a medically high-risk individual often need: (1) help in coping with a medically impaired individual, (2) options for treatment and rehabilitation, (3) information about referral procedures, and (4) information about alternative transportation. According to Dr. Dobbs of the University of Alberta, several good resources are available to friends and family members, including the New York State Office for the Aging's *When You Are Concerned*.[86] However, she stated that many families do not know that these resources exist or how to access them.

One easily accessible source of information is a State's motor vehicle Web site. The Safety Board visited 16 motor vehicle Web sites[87] and found that half contained no information on the State's medical oversight program. Four motor vehicle Web sites contained medical oversight information that was either sparse, difficult to locate, or contained legal jargon. Only the Virginia, New York, California, and Massachusetts Web sites provided easy-to-access links to senior services, reporting procedures, and other medical oversight information.

State Oversight

Licensing drivers is a State function, and each State has a unique system to manage the licensure of medically high-risk drivers. During the Safety Board's hearing, State representatives from Maryland, North Carolina, Wisconsin, and Utah discussed their licensing and oversight systems. Differences were evident in several important areas, including the identification, referral, and assessment of medically high-risk drivers;

[83] J.E. Johnson, "Older Rural Adults and the Decision to Stop Driving: The Influence of Family and Friends," *Journal of Community Health Nursing*, 15(4) (1998): 205-16.

[84] Cotrell (1999).

[85] Federal Highway Administration, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs,* DT FH61-95-P-01200 (Washington, DC: FHWA, 1997).

[86] *When You Are Concerned: A Guide for Families Concerned About the Safety of an Older Driver,* New York State Office for the Aging, Albany, New York (2000).

[87] Alabama, Alaska, Arkansas, Arizona, Connecticut, Maine, Maryland, Massachusetts, New York, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont, Virginia, and California.

license examiner training; the existence and responsibility of medical advisory boards; the appeals process; and the availability of information and counseling for drivers whose licenses have been restricted or denied.

No standards or guidelines currently exist on which States can model their medical oversight system. In June 2003, NHTSA published the results of a comprehensive survey of State medical oversight programs.[88] The purpose of this survey was to learn the following:

- The organizational structure of each State's medical program.
- The mechanisms States use to identify drivers with medical conditions and functional impairments.
- The procedures and medical guidelines used to evaluate drivers for fitness-to-drive.
- The evaluation outcomes, appeal of licensing action, and availability of counseling and public information and educational materials.
- Administrative issues, including employee training, driver tracking systems, and barriers to implementing more extensive screening, counseling, and referral activities.

According to the American Association of Motor Vehicle Administrators (AAMVA), which assisted in this project, the survey is a step toward compiling a list of best practices that States may adopt to improve their medical oversight programs.[89]

Consistent with testimony given at the Safety Board's public hearing, the NHTSA survey results revealed a wide variety of procedures regarding how States obtain, assess, and respond to information on drivers with medical impairments. For example, although virtually all States accept referrals from family members, some do not accept referrals from friends and other citizens. Fewer than half of the States investigate referrals before contacting the driver. A driver involved in multiple crashes within a certain time period would trigger an evaluation in about a fourth of the States, whereas a fatal crash would trigger an evaluation in about half of the States. States also differ in the training given to licensing agency staff on identifying impairing conditions, in the composition and responsibilities given to medical advisory boards, and in the information and counseling given to those found medically unfit to drive. (See table 3 for selected responses from the NHTSA survey.)

Table 4 summarizes the medical oversight system of four representative States, further illustrating the various methods that have been instituted to manage medically high-risk drivers. Appendix G describes these four medical oversight systems in more detail using information from the NHTSA survey, the Safety Board hearing, and correspondence with State officials.

[88] Lococo (2003).

[89] See <http://www.aamva.org>.

Table 3. Selected State survey responses from the 2003 Summary of Medical Advisory Board Practices in the United States, NHTSA.

	State Responses		
Identification	**Yes**	**No**	**Conditional**
Reports by physicians confidential.	6	2	43*
Reporting physician has legal immunity from legal actions by their patients.	32	19	
Licensing agency accepts referrals from friends and other citizens.	39	12	
Licensing agency accepts anonymous referrals.	6	45	
Referrals investigated before contacting driver.	24	27	
Multiple crashes trigger an evaluation.	15	36	
A fatal crash triggers an evaluation.	25	26	
In the six mandatory reporting States, a physician who fails to report can be held liable as a proximate cause of a subsequent crash caused by patient.	3	3	
In the six mandatory reporting States, failure of a physician to report can lead to summary offense.	1	5	
Evaluation			
Training given to DMV front desk staff to identify impairing conditions.	20	31	
Licensing agency has automated system to track medical records.	15	36	
Licensing agency allows those diagnosed with Alzheimer's to drive.	50	1	
Licensing agency has an active** medical advisory board.	35	16	
Licensing agency has internal medical review unit with designated staff.	24	27	
Response			
Licensing agency makes public information and education materials available regarding fitness to drive and impairing conditions.	13	38	
Licensing agency provides counseling to drivers with functional impairments.	10	41	

*The courts or the driver may request a copy of the report, depending on the State involved.
**California has a medical advisory board, which is currently inactive. Nevada has a medical advisory board on paper only.

Table 4. Summary of State oversight systems.

Reporting	Pennsylvania	Maryland	California	Wisconsin
Physicians	Required to report medically unsafe drivers. Immunity given.	Encouraged and not required to report medically unsafe drivers. Immunity given.	Required to report persons diagnosed with condition characterized by lapses of consciousness. Immunity given.	Encouraged and not required to report medically unsafe drivers. Immunity given.
Public	Immunity given. No anonymous referrals accepted.	Immunity given. Anonymous referrals accepted.	Immunity given. Anonymous referrals accepted from family.	Immunity given. Anonymous referrals accepted.
Law enforcement	Accident form includes fields that inquire about driver condition.	Refers drivers by submitting a "Request for Reexamination" to the MAB.	Can submit a "regular" or a "priority" reexamination to Medical Unit.	Refers drivers by submitting a "Driver Behavior or Condition" report.
Referrals				
Annually	N/A	13,700	N/A*	3,800
From physicians	16,000	17 percent	~20,000	10 percent
From law enforcement	2,500	35 percent	N/A	> 60 percent
From the public	500	11 percent	N/A	10 percent
Denials, suspensions, revocations	~7,200	~1,200	N/A	>1,900
Other sources (self-reports, DMV, court system)	N/A	35 percent from self reports.	N/A	20 percent from DMV staff evaluations.
Medical unit				
	Trained nonmedical staff who review all cases.	12 registered nurses who prepare case information for MAB.	249 nonmedical staff who review all cases.	8 nonmedical staff and one registered nurse who review all cases.
Medical advisory board				
Composition	13 physicians	16 physicians	Inactive	152 physicians
Primary duties	Administrative and advisory. Rarely reviews individuals cases.	Reviews cases; advises MVA.	Only activated to revise medical evaluation guidelines.	Evaluates appeals; advises Wisconsin DOT.
Outreach				
	PennDOT published and distributed *Physician Reporting Fact Sheet* in 2001.	None	None	Mails brochures on its reporting laws yearly to physicians.

* California DMV does not track referral volumes.

Recently, two organizations published reports that recommended strategies for improving aspects of State medical oversight programs. In July 2004, the Transportation Research Board (TRB) published a guide[90] for reducing collisions involving older drivers. The TRB's guide outlined a strategy to "identify older drivers at increased risk of crashing and intervene" and recommended that each State "create and support a strong and active" medical advisory board and post information concerning the board on its motor vehicle department and medical association Web sites to inform the general public and healthcare community about the advisory board's existence and role.

The guide further recommended that States update their guidelines for licensing individuals with medical conditions or functional impairments and encourage the reporting of impaired drivers by driver licensing staff, physicians, law enforcement, and the general public. The guide provides strategies and instruction to help States meet these goals. For example, to encourage the reporting of drivers with functional impairments, the guide suggests:

1. Having the necessary systems in place, including any needed reporting forms.
2. Publicizing the systems to physicians, at driver licensing offices, on department of motor vehicle Web sites.
3. Making reports confidential (but not necessarily anonymous).
4. Providing appropriate training and materials to law enforcement officers.
5. Working with the MAB and State medical association to help educate physicians and other health professionals.
6. Having a system in place to follow up on the resulting referrals.

In August 2004, the American Automobile Association (AAA) Foundation released a list of 10 Best Practices for Medical Advisory/Review Boards.[91] (See appendix H.) The list was based upon the surveys conducted by NHTSA and AAMVA. As with the TRB report, the AAA Foundation recommended that each State establish a medical advisory board with the authority to develop State medical licensing guidelines, review cases, and recommend customized/restricted licenses and periodic driver testing.

Alternative Transportation

A 2001 National Household Travel Survey produced by the Bureau of Transportation Statistics found that 9 percent of all Americans, and about 24 percent of those over 65, report having a medical condition that makes it difficult for them to travel

[90] I. Potts, J. Stutts, R. Pfefer, R.R. Neuman, K.L Slack, and K.K. Hardy, *A Guide For Reducing Collisions Involving Older Drivers*, National Cooperative Highway Research Program Report 500*,* Vol. 9 (Washington, DC: TRB, 2004).

[91] <http://www.aaanewsroom.net/Files/seniorbestpractices.doc>.

outside the home.[92] Studies consistently show that individuals associate driving with independence and perceptions of self-worth and that cessation from driving is often accompanied by increases in inactivity, loneliness, and depression.[93,94,95] At the Safety Board's hearing, physicians and advocacy groups generally agreed that an individual's license should be revoked only after other avenues of treatment, rehabilitation, and restrictions are exhausted. During the hearing, the American Association of Retired Persons (AARP), the Epilepsy Foundation, and WHEELS of Wellness[96] discussed the problems facing their constituents and the initiatives in place to solve them.

Ms. Mary Jane O'Gara, an AARP Board of Directors member, testified on the negative impact driving cessation can have on seniors, especially those living in rural areas that are not serviced by alternative transportation.[97] She described the AARP Driver Safety program, a driver safety course that has been taught for 30 years. This course makes senior drivers aware of the physiological changes that accompany aging and the adjustments that are necessary to continue driving safely. The AARP Driver Safety program also addresses the effect that medical conditions and medications can have on driving ability and skill. According to Ms. O'Gara, the AARP is working actively with other institutions to promote awareness among seniors, caregivers, and physicians regarding the impact that aging-related diseases can have on driving skills. The organization is also working with States and the Federal Government to improve roadway lighting, signage, and design with senior drivers in mind.

Ms. Alexandra Finucane, Vice President of Legal and Government Affairs for the Epilepsy Foundation, testified that the Hagerstown and Fredrick, Maryland, accidents showed that education aimed at physicians and the general public about epilepsy is still inadequate.[98] According to Ms. Finucane, the Epilepsy Foundation has tried to increase awareness among policymakers that epilepsy can be treated and that the risk of subsequent seizures can be predicted from previous seizures. The Foundation has worked closely with neurologists to make them aware of the importance of talking with their patients about their disease and the associated driving risks. Additionally, in 1992, the Epilepsy Foundation, along with the American Academy of Neurology and the American Epilepsy

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[92] U.S. Department of Transportation, Bureau of Transportation Statistics, Highlights, *2001 National Household Travel Survey.*

[93] Dobbs and Dobbs (2003).

[94] R.A. Marottoli, C.F.M. de Leon, T.A. Glass, C.S. Williams, L.M. Cooney, Jr., L.F. Berkman, and M.E. Tinetti, "Driving Cessation and Increased Depressive Symptoms: Prospective Evidence from the New Haven EPESE, Established Populations for Epidemiologic Studies of the Elderly," *Journal of the American Geriatric Society*, 45(2) (1997): 202-6.

[95] R.A. Marottoli, C.F.M. de Leon, T.A. Glass, C.S. Williams, L.M. Cooney, Jr., and L.F. Berkman, "Consequences of Driving Cessation: Decreased Out-of-Home Activity Levels," *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 55(6) (2000): S334-40.

[96] A charitable organization that provides alternative transportation services in the Philadelphia area.

[97] Testimony of Ms. Mary Jane O'Gara, Board of Directors member, AARP, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18 and 19, 2003.

[98] Testimony of Alexandra Finucane, Vice President of Legal and Government Affairs, Epilepsy Foundation of America, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18 and 19, 2003.

Society, drafted model regulations and sample statutory provisions on assessment and licensure for persons with epilepsy that could be adopted by State policymakers.[99]

Both witnesses voiced concern over the lack of alternative forms of transportation. Ms. O'Gara stated that about 20 percent of nondrivers 75 years or older use public transportation on a monthly basis, and suggested that improved sensitivity training for drivers, accessible and sheltered bus stops, and well-maintained sidewalks might increase ridership. Ms. Finucane recalled a survey that found that the most important issues for people with epilepsy and their families were transportation and employment, two issues that are closely related.[100] She added that because epilepsy is an episodic disorder that only occasionally manifests itself in the occurrence of a seizure, many with epilepsy are told that they do not qualify for paratransit[101] service due to the apparent absence of a functional limitation. Ms. Judith Ward, Government Relations Director of the Epilepsy Foundation, further added that some forms of paratransit are age-dependent for eligibility, thereby precluding their use by many with epilepsy.[102]

Mr. Reginald Knowlton, Executive Director of WHEELS of Wellness, acknowledged during the hearing that the accessibility of alternative transportation could depend on such issues as a person's residence, age, and travel purpose.[103] According to Mr. Knowlton, rural service is generally spotty although some programs, like the Capital Area Rural Transportation System[104] in Texas, offer good coverage. He added that many transportation options are available for healthy persons over the age of 65, but fewer are available for seniors with significant medical conditions. Transportation options are also available for those under 65 who are covered by Medicaid. However, Medicaid only covers medically related transportation costs and cannot be used for work and most activities of daily living. Mr. Knowlton added that nonprofit transportation programs are available for those not covered by Medicaid, but these can accommodate only a limited number of people.

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[99] American Academy of Neurology, American Epilepsy Society, and Epilepsy Foundation of America, "Consensus Statements, Sample Statutory Provisions, and Model Regulations Regarding Driver Licensing and Epilepsy," *Epilepsia*, 35(3) (1994): 696-705.

[100] The 2002 Epilepsy Foundation Annual Report states that the unemployment rate among those with epilepsy is at least 25 percent.

[101] According to the Community Transportation Association <www.ctaa.org/ntrc/glossary.asp>, "Paratransit includes types of passenger transportation that are more flexible than conventional fixed-route transit but more structured than the use of private automobiles. Paratransit includes demand-response transportation services, subscription bus services, shared-ride taxis, car pooling and vanpooling, jitney services, and so on. Most often refers to wheelchair-accessible, demand-response van service."

[102] Testimony of Ms. Judith Ward, Government Relations Senior Director, Epilepsy Foundation of America, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[103] Testimony of Reginald "Rex" Knowlton, Executive Director, WHEELS of Wellness, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[104] The Capital Area Rural Transportation System, or CARTS, delivers transportation tailored specifically for each of the 123 communities it serves. Service frequency in the various locales ranges from several times a day to once a month. Four intermodal transit facilities combine a variety of transportation options including fixed route, commuter vans, intercity, interstate motor coach passenger freight service, carpool, taxi and intracounty, intercity, and local paratransit services. See <http://www.ridecarts.com> for more information.

Dr. Broadhurst, physician and advisor to the North Carolina Driver Medical Evaluation Program, provided an example of paratransit options in rural North Carolina: Mountain Mobility, a Government-funded program for Medicare and Medicaid recipients. According to Dr. Broadhurst, individuals who qualify for the transportation program must make an appointment, sometimes a week in advance. The limited number of vans available limits the service's convenience, to the point where patients who use Mountain Mobility to visit a health clinic might have to wait all day before being picked up for the return trip home.

Mr. Knowlton noted that a primary reason for the discrepancies in alternative transportation service among different groups is that several different private, State, and Federal funding sources exist, but many do not communicate with each other. In addition, each funding source requires the transport provider to abide by a set of rules that is often incompatible often are incompatible with the rules of other funding sources. Mr. Knowlton noted further that communication is improving, especially at the Federal level, where the U.S. Department of Transportation (DOT) and the U.S. Department of Health and Human Services[105] (HHS) are trying to coordinate their efforts through the Coordinating Council on Access and Mobility (CCAM).[106]

Mr. Knowlton's testimony is supported by a June 2003 report[107] by the U.S. Government Accountability Office (GAO), which identified 62 Federal programs that fund transportation services for the transportation-disadvantaged.[108] Most of these programs are funded through four agencies. HHS operates the largest number of these programs (23), with the DOT (6), U.S. Department of Labor (DOL-15), and U.S. Department of Education (ED-8) operating a large share of the rest. The Federal Government spent over $2.4 billion in 2001 on these programs, with States and municipalities providing additional funding.

The GAO report recognized the combined efforts of the DOT and HHS, but noted the possibility of further coordination with the DOL and ED in the CCAM. The GAO acknowledged that several obstacles currently hinder coordination, including (1) a reluctance to share resources because of concern among the agencies that their own program recipients might be negatively affected, (2) different eligibility requirements, safety standards, and other programmatic requirements that limit the ability to share resources, and (3) a lack of leadership and commitment to coordinate and limited guidance and information on coordination. To mitigate these obstacles, the GAO report suggested

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[105] HHS funds transportation through such activities as Medicaid, Medicare, the Older Americans Act, Temporary Assistance to Needy Families, and Head Start.

[106] The CCAM is a joint project by the Departments of Transportation and Health and Human Services to assist in providing transportation for persons who are somehow disadvantaged in their ability to obtain their own transportation.

[107] U.S. General Accounting Office, *Transportation Disadvantaged Populations: Some Coordination Efforts Among Programs Providing Transportation Services, but Obstacles Persist,* Report GAO-03-697 (Washington, DC: GAO, 2003).

[108] The transportation-disadvantaged include seniors, the medically impaired, low-income adults and students, native Americans, and veterans.

making Federal standards more consistent, creating a clearinghouse to facilitate interagency communication and to provide better guidance on coordination, and providing financial incentives or instituting mandates to coordinate transportation services.

In February 2004, the GAO published a memo to Congress updating the information in its June 2003 report.[109] According to this memo, ED and DOL have since been invited to participate in the CCAM. Some of the agencies within DOL and ED have already linked their Web sites to the CCAM Web site or have plans to do so. In December 2003, the four Federal agencies launched a five-part coordination initiative called "United We Ride" (appendix I) to establish an interagency forum and to provide States and communities with incentives to coordinate. The GAO report also stated that although the DOT, HHS, DOL, and ED "have indicated that they plan to consider including information on coordinating transportation services for the transportation-disadvantaged in their next strategic and annual performance plans….only FTA [Federal Transit Administration] has demonstrated progress in this area at this time."

Public Policy

During the final session of the Safety Board's public hearing on the medical oversight of noncommercial drivers, witnesses from NHTSA, the AAMVA, and the National Conference of State Legislatures (NCSL) suggested systemic improvements that could reduce accidents caused by individuals who have high-risk medical conditions.

Mr. James Reed, NCSL Program Director of Transportation, voiced his support for unified State laws on mandatory physician reporting,[110] stating his belief that such a system would decrease the number of crashes related to medical impairments because information about an individual driver's condition would be reported and tracked through a prescribed procedure. Further research would be needed to determine the conditions and level of impairment that would require reporting. Mr. Reed acknowledged that mandatory reporting might discourage patients from seeking treatment or disclosing the extent of their illnesses to their physicians, but believed that the potential benefits to public safety outweighed these obstacles.

Mr. Reed also believed that all applicants renewing their licenses or obtaining licenses for the first time should be required to answer a questionnaire regarding their health and to sign an affidavit to the veracity of their answers. Although individuals might still falsify information, he stated that the imposition of liability might be enough to deter most individuals from providing false information. According to Mr. Reed, subsidized

[109] U.S. General Accounting Office, *Transportation-Disadvantage Populations: Federal Agencies Are Taking Steps to Assist States and Local Agencies in Coordinating Transportation Services*, Report GAO-04-420R (Washington, DC: GAO, 2004).

[110] Testimony of James Reed, Transportation Program Director, National Conference of State Legislatures, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

alternative transportation should be provided to those who admit or are found to have a debilitating condition that would preclude them from driving safely.

Dr. Richard Compton of NHTSA cautioned that the extent of medically related crashes is not known because national data on this topic do not exist.[111] He testified that although the licensing of noncommercial drivers is not a Federal function, NHTSA works closely with State associations and institutions to improve licensing practices throughout the nation. Dr. Compton stated that more research is needed on the effectiveness of driver restriction, and awareness and training programs are needed for all parties involved in the oversight process, including physicians and law enforcement. Finally, Dr. Compton suggested more programs be established to counsel drivers who should restrict or cease driving.

Mr. Mike Calvin, Senior Vice President of AAMVA, testified that research is still needed to determine how medical and cognitive factors affect driving and what can be done to address these issues effectively.[112] He noted that AAMVA has taken steps toward this goal, contributing to the publication of "Functional Aspects of Driver Impairment: A Guide for State Medical Advisory Boards"[113] and the *Physician's Guide to Assessing and Counseling Older Drivers*. Mr. Calvin added that AAMVA also contributed to the NHTSA report summarizing U.S. Medical Advisory Board Practices and is actively involved with evaluating medical review process. Mr. Calvin stated that the identification of best practices should encourage the development of model laws, which could be used to promote uniformity between jurisdictions.

Since the hearing, AAMVA and NHTSA have made progress toward identifying the best practices in a medical oversight program. In October 2003, NHTSA, AAMVA, and TransAnalytics[114] surveyed State licensing representatives to rank the importance of 64 medical oversight "best practice" elements that were identified from previous work on the *Summary of Medical Advisory Boards in the United States* (appendix J).[115] The survey results were compiled into a NHTSA interim report.[116] State licensing representatives rated physician reporting of high-risk drivers as the most important element. Other highly rated elements included the development of medical criteria and guidelines for licensing; the development of standards for blackouts, seizures, and losses of consciousness; and the provision of immunity to physicians who report a high-risk driver to the State licensing agency.

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[111] Testimony of Dr. Richard Compton, Director, Office of Research and Technology, National Highway Traffic Safety Administration, NTSB hearing, Medical Oversight on Noncommercial Drivers, March 18-19, 2003.

[112] Testimony of Mike Calvin, Senior Vice President, American Association of Motor Vehicle Administrators, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[113] "Functional Aspects of Driver Impairment: A Guide for State Medical Advisory Boards," *Guidelines for Motor Vehicle Administrators*, DOT HS 805 460 (Washington, DC: NHTSA and AAMVA, 1980).

[114] Consulting firm working on NHTSA-sponsored contract on medical oversight.

[115] Lococo (2003).

[116] Lococo and Staplin (2004).

State representatives, invited by NHTSA, AAMVA, and TransAnalytics to discuss the survey results, unanimously agreed that a national association of medical advisory boards should be formed to draft guidelines for licensing drivers with medical conditions and functional impairments.[117] The representatives also believed that physicians were a critical component to an effective medical oversight system and that steps should be taken to facilitate their participation in the medical oversight process, including providing physicians with immunity from liability, implementing mandatory reporting laws, providing physicians with CME credits for medical oversight training, and enabling physicians to get reimbursed for patient assessment and counseling.

[117] Lococo and Staplin (2004).

Previous Safety Board Actions

The Safety Board has encountered several types of impairing medical conditions in its accident investigations over the past two decades, including diabetes, cardiovascular disease, sleep disorders, visual disorders, and alcohol and drug dependency. The investigations cited in appendix B involved commercial drivers, who are required to meet a stricter level of fitness, as defined in the *Code of Federal Regulations* (CFR).[118] Commercial drivers are also required to undergo a medical examination every 2 years to certify their fitness to operate a commercial vehicle. These accidents are relevant to this discussion because (1) State licensing agencies learn about medically high-risk commercial and noncommercial drivers in much the same way; (2) State licensing agencies are responsible for evaluating and overseeing the licensure of both commercial and noncommercial drivers; (3) a commercial driver's license is valid for both commercial and noncommercial vehicle operations; and (4) Federal fitness regulations do not require State or Federal authorities to review or track the results of commercial driver medical examinations.[119]

Medical Oversight of Commercial Drivers

In 2001, the Safety Board called for a system-wide modification to the medical oversight of commercial drivers following a medical impairment-related motorcoach accident that occurred on May 9, 1999.[120] In that accident, a 1997 Motor Coach Industries 55-passenger motorcoach traveling eastbound on Interstate 610 in New Orleans, Louisiana, drifted from the roadway, vaulted over a golf cart path, and collided with a dirt embankment. A total of 22 passengers were killed, the busdriver and 15 passengers received serious injuries, and 6 passengers received minor injuries. The ensuing investigation established that the 46-year-old driver suffered from several life-threatening medical conditions of the kidneys and heart. The Safety Board established the probable cause of the accident as the "driver's incapacitation due to his severe medical conditions and the failure of the medical certification process to detect and remove the driver from service." The Board recommended that the Federal Motor Carrier Safety Administration (FMCSA) develop a comprehensive medical oversight program for interstate commercial drivers that would contain the following program elements:

[118] Title 49 CFR 391.43 specifies the health criteria that must be met by all *interstate* commercial drivers. Every State has also adopted regulations based on these Federal requirements for their *intrastate* commercial drivers.

[119] Some States do require proof of fitness before granting or renewing a commercial driver's license. For a more detailed description and analysis of the commercial driver medical oversight system, see National Transportation Safety Board, *Motorcoach Run-Off-The-Road, New Orleans, Louisiana, May 9, 1999*, Highway Accident Report NTSB/HAR-01/01 (Washington DC: NTSB, 2001).

[120] See appendix C for a summary of commercial driver medical oversight recommendations that were issued as a result of this accident.

H-01-17

Individuals performing medical examinations for drivers are qualified to do so and are educated about occupational issues for drivers.

H-01-18

A tracking mechanism is established that ensures that every prior application by an individual for medical certification is recorded and reviewed.

H-01-19

Medical certification regulations are updated periodically to permit trained examiners to clearly determine whether drivers with common medical conditions should be issued a medical certificate.

H-01-20

Individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations.

H-01-21

The review process prevents, or identifies and corrects, the inappropriate issuance of medical certification.

H-01-22

Enforcement authorities can identify invalid medical certification during safety inspections and routine stops.

H-01-23

Enforcement authorities can prevent an uncertified driver from driving until an appropriate medical examination takes place.

H-01-24

Mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, healthcare providers, and employers are aware of these mechanisms.

In addition, the Safety Board recommended that the AAMVA urge its member States to develop a comprehensive medical oversight program for intrastate commercial drivers containing the same eight elements (Safety Recommendation H-01-26).

The Safety Board also recommended the following to the NCSL:

H-01-27

Inform State legislatures about this accident and make them aware of the importance of establishing immunity laws for the good-faith reporting of potentially impaired commercial drivers by all individuals and of ensuring that the medical community and the commercial transportation industry are familiar with these laws.

Since the Safety Board made these recommendations, the FMCSA has created a Medical Division within the Administration and continues to work toward an effective commercial driver medical oversight system. The FMCSA plans to publish a notice of proposed rulemaking (NPRM) in early 2005 on the merger of the medical certificate with the commercial driver's license to reduce the number of inappropriate medical certificates that are issued.[121] Furthermore, the FMCSA has indicated that efforts are underway to create a medical advisory board to review the Federal regulations on commercial driver medical qualifications, to advise the FMCSA on any needed modifications, and to establish a medical examiner's registry model. The FMCSA has also requested funds to establish a national registry of qualified medical examiners and a certification process to better ensure that all medical examiners are qualified to perform commercial driver fitness examinations.[122]

In response to the Safety Board's recommendation to inform State legislatures about the New Orleans motorcoach accident and the importance of immunity laws, the NCSL published an article on its Internet publication, *Transportation Notes*, which highlighted the Board's recommendations. The formal responses of the FMCSA, AAMVA, and the NCSL, as well as the current status of each recommendation, are provided in appendix C.

Over-the-Counter and Prescription Medications

The Safety Board has investigated many accidents in all passenger transportation modes in which the use of licit medications by vehicle operators has been causal or contributory. As a result of these accident investigations, the Board issued recommendations to the DOT to create a list of over-the-counter and prescription drugs that have been found to be safe for use during vehicle operation and to prohibit commercial vehicle operators from using drugs that are not on this list (Safety Recommendations I-00-1 through -4). The Board also issued recommendations to the FMCSA to establish and implement an educational and information dissemination program to make commercial vehicle operators aware of the hazards of using specific medications when driving (Safety Recommendations H-00-13 and -14) and to establish

[121] FMCSA telephone correspondence, August 19, 2004.

[122] FMCSA has included these projects in its 2003-2004 funding request. This request, as is all surface transportation funding, is pending.

procedures or criteria for those vehicle operators who might require medication not on the DOT's list of approved medications (Safety Recommendation H-00-12). Additionally, the Safety Board recommended that the Food and Drug Administration (FDA) establish a clear, consistent, easily recognizable warning label for all prescription and over-the-counter medications that may interfere with an individual's ability to operate a vehicle and to require that the label be prominently displayed on all packaging of such medications (Safety Recommendation I-00-5).

On November 14 and 15, 2001, the Safety Board and the FDA held a public forum on transportation safety and potentially sedating and impairing medications. This forum included experts from the DOT and the Federal Railroad Administration. FDA and DOT representatives met again on July 31, 2002, and April 17, 2003, to further discuss the recommendations. The FDA indicated that it was willing to revise labeling and standards related to drug-induced vehicle operator impairment, but did not possess the technical expertise to evaluate vehicle operator impairment standards and measures and did not have sufficient funds to do the necessary research and analysis. The DOT concurred with the intent of the recommendations but voiced some concern about the work involved in reviewing all medications to determine and list those that do not impair vehicle operators and about the regulatory effort required to enforce such a list.

The DOT modal offices have taken several positive actions relating to the use of medications by vehicle operators. For example, the FTA has (1) begun to educate transit employees on the effects of prescription and over-the-counter medications, (2) incorporated this information into seminars on drug and alcohol issues, and (3) issued guidelines for the safe use of medications that have been included in the quarterly FTA Drug and Alcohol program newsletter. Additionally, NHTSA has indicated a willingness to collaborate with the FDA to develop standard protocols for evaluating vehicle operator impairment due to medications and has a proven record of successfully funding similar research and analysis.

The Safety Board recognizes that the collaboration between the FDA and NHTSA may form the basis for an acceptable alternative response by the DOT and modal agencies to these recommendations and may advance the goal of reducing the use of performance-impairing over-the-counter and prescription medications by vehicle operators. Pending completion of a collaborative effort between NHTSA and the FDA to develop drug-induced impairment standards for vehicle operators and pending appropriate subsequent action by the DOT, Safety Recommendations H-00-12 through -14 are classified "Open—Acceptable Alternate Response."

Alcohol Addiction

In June 2000, the Safety Board examined the progress made in reducing fatalities, injuries, and crashes involving hard-core drinking drivers.[123] A hard-core drinking driver

[123] 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).

is defined as an individual with multiple driving while intoxicated (DWI) convictions in the past 10 years or who registered a blood alcohol content (BAC) of .15 percent or more during the first arrest. This alcohol-dependent group was responsible for 70,239 traffic fatalities from 1993 to 2002, and for 6,610 highway fatalities in 2003 alone, at an estimated cost in 2003 of around $6.5 billion.[124]

In conducting its research, the Safety Board reviewed the literature on countermeasures that have been found effective in reducing recidivism, crashes, fatalities, and injuries. The Board found that in the 15 years since its last examination of the hard-core drinking driver issue, every State had made strides toward addressing this major safety problem. Despite this progress, the measures taken and the degree of implementation have not been uniform, and 17,013 people still died in 2003 from alcohol-related crashes. As a result of its most recent examination into the hard-core drinking driver issue, the Board made the following recommendation to the Governors and legislatures of the 50 States and the mayor and council of the District of Columbia:

> H-00-26
>
> Establish a comprehensive program that is designed to reduce the incidence of alcohol-related crashes, injuries, and fatalities caused by hard-core core drinking drivers and that includes elements such as those suggested in the National Transportation Safety Board's Model Program.[125]

Since the Safety Board's recommendation was issued, all States have considered legislation related to the Board's recommendation, and 31 States have adopted one or more elements of the model program. No State has all of the elements recommended in the Board's model program; however, sufficient progress has been made to classify this recommendation "Closed–Acceptable Action" in three States (New Hampshire, Ohio, and Utah).[126] The Safety Board also recommended the following to the DOT:

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[124] Based upon an economic cost of $977,000 per traffic fatality. See Blincoe, *The Economic Impact of Motor Vehicle Crashes 2000*.

[125] The Board believes that a model program to reduce hard-core drinking driving would incorporate the following elements: (1) statewide sobriety checkpoints; (2) vehicle sanctions to restrict or separate hard-core drinking drivers from their vehicles; (3) State and community cooperative programs to enforce DWI driver's license suspension and revocation; (4) legislation to require that DWI offenders maintain a zero BAC while operating a motor vehicle; (5) legislation that defines a high BAC (0.15 percent or greater) as an *"*aggravated*"* DWI offense; (6) alternatives to confinement, such as home detention with electronic monitoring; (7) legislation that restricts the plea bargaining of a DWI offense to a lesser, non-alcohol-related offense; (8) elimination of diversion programs that permit erasing, deferring, or otherwise purging the DWI offense record or that allow the offender to avoid license suspension; (9) administrative license revocation for BAC test failure and refusal; (10) a DWI record retention and DWI offense enhancement look-back period of at least 10 years; and (11) individualized sanction programs for hard core DWI offenders.

[126] See <http://www.ntsb.gov/recs/mostwanted/hard_core_drinking.htm> for a comprehensive list of elements incorporated by each State.

H-00-27

> Evaluate modifications to the provisions of the Transportation Equity Act for the 21st Century so that it can be more effective in assisting the States to reduce the hard-core drinking driver problem. Recommend changes to Congress as appropriate. Considerations should include (a) a revised definition of "repeat offender" to include administrative actions on driving-while-impaired offenses; (b) mandatory treatment for hard-core offenders; (c) a minimum period of 10 years for records retention and driving-while-impaired offense enhancement; (d) administratively imposed vehicle sanctions for hard-core drinking drivers; (e) elimination of community service as an alternative to incarceration; and (f) inclusion of home detention with electronic monitoring as an alternative to incarceration.

In response to this recommendation, the DOT asked for funding to make impaired-driving grants available to States that either have a high number of impaired-driving fatalities or a high impaired-driving fatality rate.[127] These grants will be used to help the States develop and implement programs to significantly reduce alcohol-related fatalities. In combination with NHTSA's focus on the 13 States with high numbers of alcohol-related fatalities, the grants emphasizing impaired driving will include repeat offenders. As a result of the DOT's efforts, the Safety Board classified this recommendation "Closed—Acceptable Alternate Action."

[127] Funding was requested by the Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2003 (SAFETEA), which would authorize the Federal surface transportation programs for highways, highway safety, and transit from 2004 to 2009. As of this report's publication date, Congress had not passed SAFETEA.

Analysis

This analysis examines the current state of oversight for medically high-risk drivers in light of the six accidents described in this report and summarizes relevant expert testimony provided at the Safety Board's public hearing. This analysis also discusses the limitations and barriers to a more effective medical oversight system and provides recommendations to further improve highway safety.

The six accidents described earlier in this report occurred as a result of the driver's medical incapacitation. All drivers possessed a valid driver's license. All had a high-risk medical condition that had been identified, diagnosed, and treated by a physician. None of the four accident drivers for whom the Safety Board obtained license information (Hagerstown, Frederick, Lady Lake, and Washington County) were under any type of driving restriction. Despite their impairments, apparently only the Hagerstown driver had *not* received clearance to drive by a physician at the time of the accident.

Five of the six accidents involved a driver who experienced a seizure, and one involved a driver who might have experienced a blackout due to her diabetes. The Safety Board has encountered other types of high-risk medical conditions in previous accident investigations, including cardiovascular disease, renal disease, sleep disorders, visual disorders, and alcohol and drug dependency. Although most of these investigations involved commercial drivers, the license issued to commercial drivers is valid for both private and commercial vehicle operation, and significant overlap exists in State medical oversight responsibilities for commercial and noncommercial drivers.

The conditions and events that culminated in these accidents point to several aspects of State medical oversight that need further scrutiny. Expert witnesses attending the Safety Board's public hearing cited additional issues that were not necessarily factors in the accident investigations, but are equally relevant to improving State medical oversight. The Safety Board investigations and the hearing identified the following safety issues:

- The need for more data on the extent to which medical conditions contribute to the cause of accident.
- The need for improved awareness and training for healthcare professionals, law enforcement, and the public regarding State medical oversight laws and practices.
- The existence of barriers to the reporting of medically impaired drivers.
- The lack of uniform medical assessment and oversight standards throughout the States.
- Deficiencies in alternative transportation options for those who should not drive.

The following sections will address each of safety issues. In each section, the issues will be outlined, current initiatives identified, and additional solutions recommended for reducing crashes related to medical impairment.

Data

Tens of millions of Americans have medical conditions that place them at risk of becoming incapacitated while driving. However, apart from alcohol addiction, the extent to which medical impairment contributes to the number of traffic accidents is not well defined. Safety Board investigations have shown that medical incapacitation can lead to traffic accidents. Research studies have found a correlation between certain medical conditions and an increased risk of accident involvement, although no agreement has been reached on the degree of risk associated with each type of condition. Nonetheless, research[128] shows that the accident risk associated with some medical conditions approaches, or even exceeds, that for alcohol and drug use (table 2). Based on the available research and the Safety Board's accident investigations, the Board concludes that many medical conditions are associated with increased accident risk and incompatible with the unrestricted operation of motor vehicles.

Witnesses at the public hearing agreed that certain medical conditions present an increased accident risk, but some believed that not enough is known about the number of medically high-risk drivers and the direct risks that medical conditions present to justify setting policy based on this information. The Safety Board recognizes that more data would be useful on the number of licensed drivers with high-risk medical conditions and on accidents that can be directly linked to these medical conditions. As demonstrated by the Hagerstown accident investigation, licensing agencies cannot simply rely on drivers to disclose their medical status during licensing and renewals.

Finding a direct link between medical conditions and accidents would be useful for determining the risks posed by certain medical conditions. Establishing such a link would require improved awareness and training for law enforcement and other parties who witness driver behavior in traffic accidents and would require a system to transfer this information to the appropriate licensing authorities. The Safety Board learned that North Carolina and Florida have systems that inform the motor vehicle medical unit when a driver's medical condition is suspected to have caused an accident. This mechanism resulted in 17,642 driver referrals in Florida and 43,340 referrals in North Carolina, from 2000 through 2002. The public hearing revealed that not all States have such a system in place. And, as will be discussed later, only a few States provide the training that could help law enforcement officers identify a medically impaired driver.

Accident reporting forms provide a potentially rich source of data on medical impairment, assuming that law enforcement can be properly trained to identify and describe signs of impairment. The MMUCC, the Federal guideline on accident reporting

[128] Diller (1999).

form content, recommends that State accident forms include a field for a driver's condition at the time of the crash. This field functions as an umbrella for various attributes, including fatigue/sleepiness, alcohol/illegal substances/medication, acute emotional states (for instance, angry or disturbed), and illness. Although most States have included a variation of the driver condition field in their accident reporting forms, each interprets the field's purpose somewhat differently, as indicated by the different attributes listed for the field. In addition, the medical attributes listed on the MMUCC and most State accident forms are often too general to collect much useful information regarding the driver's medical condition at the time of the crash. As a result, the value of the driver condition field in yielding valid, reliable data on medical impairment nationwide is limited. A field in the MMUCC dedicated to impairing medical conditions would be a useful source of data for gauging the correlation between driver medical impairment and accidents. The Safety Board concludes that a system is needed for the collection of accident data on a national basis to comprehensively evaluate the extent to which medical conditions play a role in accident causation. The Board believes that NHTSA, in cooperation with the AMA and the AAMVA, should develop a procedure to periodically collect, evaluate, and report data, on a State and national basis, regarding the extent to which medical conditions contribute to the cause of accidents.

Information and Training

Physicians and the Public

During the Safety Board's hearing on medical oversight, the medical advisor to the AMA's Older Drivers Project stated that most of the 670,000 physicians involved with patient care are not knowledgeable about their State's reporting policies and procedures or about the evaluation of patients for their fitness to drive. This assessment is supported by the research literature, which suggests that many physicians are unfamiliar with medical oversight laws pertaining to them, and that a physician's specialty and practice location can influence his or her knowledge of these laws.[129, 130] Of the three medically related accidents for which the Safety Board obtained medical records (Hagerstown, Frederick, and Lady Lake), it was evident that the neurologists involved in the treatment of the accident drivers were aware of their States' reporting laws. By contrast, the Hagerstown driver's family physician's recommendation that the driver not drive "this week" suggests that he was not aware of Maryland's 3-month restriction on driving following a seizure.[131]

The AMA's *Physician's Guide to Assessing and Counseling Older Drivers* includes information to educate healthcare professionals about State reporting laws,

[129] Selmo (1997).

[130] Cable (2000).

[131] At the time of the accident, Maryland could not legally suspend or revoke the license of a seizure sufferer for more than 90 days. This statute was changed in October 2003 to allow Maryland to suspend or revoke an individual's driver's license, or refuse or renew a license, for longer than 90 days if that individual's driving may be adversely affected by seizure.

identifying and assessing the driving fitness of patients, and proper counseling techniques. The *Physician's Guide* is an invaluable resource for those physicians who are aware of it. The AMA has also developed a training-of-trainers program, based on the *Physician's Guide,* to reach as many physicians and healthcare professionals as possible. As of September 2004, 24 healthcare professionals have completed all five modules of the training-of-trainers program and have taught about 40 seminars nationwide based on the *Physician's Guide*. Nevertheless, witnesses at the hearing acknowledged that further efforts were needed to reach all physicians, including those that practice in rural areas. This testimony suggested that medical schools could do more to train students to be aware of how medical conditions can affect driver safety. Other testimony at the hearing indicated that this training should include proper assessment techniques because medical conditions can affect the safety of each driver differently.

One North Carolina physician, who serves as advisor for the North Carolina Driver Medical Evaluation Program, suggested that State reporting laws and procedures be taught as part of a physician's CME; however, nine States and the District of Columbia currently do not have a CME requirement for their physicians. The training associated with the AMA's *Physician's Guide* would satisfactorily fill this need, and CME credits have been offered at these training sessions.[132] Three CME credits are also offered to those physicians who complete the self-administered test on the back of the *Physician's Guide.* Since most States require their physicians to compile CME credits to stay licensed, associating the *Physician's Guide* training with CME credits provides a good incentive for this training.

It is particularly important that physicians be knowledgeable of their States' medical oversight program, of driver assessment procedures, and of driver counseling because they are often the primary source of this information for caregivers, family, and friends who have noticed deterioration in a driver's skills. These individuals are generally not well informed about the reporting laws in their States or of the rehabilitation or transportation options available to medically high-risk drivers. Unfortunately, this information is not always readily available. For example, in a review of 16 State licensing agency Web sites, only 4 contained easily accessible and simple-to-understand information on medical oversight or on the resources available for those with high-risk medical conditions. Of the remaining 12 Web sites surveyed, 4 contained information on older drivers or medical impairment that was either too sparse, too difficult to find, or too difficult to understand to be useful, and 8 contained no pertinent information at all. The Safety Board concludes that healthcare providers and concerned citizens may not have adequate information on resource availability or on the medical oversight laws and procedures for their States to assist medically high-risk drivers, which impedes their ability to aid in the safety and well-being of medically high-risk drivers. The Safety Board will advise the driver licensing agencies in the 50 States and the District of Columbia of the importance of making guidance information and medical oversight referral procedures easy to access and easy to understand.

[132] Dr. Claire Wang, telephone interview, March 16, 2004.

Hearing testimony indicated that many practicing physicians are unaware of their States' medical oversight laws because they lack information and training. Although the AMA's *Physician's Guide* and accompanying training program will help, the concern is that this program might not reach all physicians, especially those who practice in rural areas or are not affiliated with a hospital. It is imperative that the medical community be aware of the thousands of fatalities and millions of injuries that occur annually on U.S. roadways, and of their responsibility in preventing medically high-risk drivers from further contributing to these numbers. Therefore, the Safety Board believes that the Liaison Committee on Medical Education[133] (LCME), the American Osteopathic Association[134] (AOA), and the Association of American Medical Colleges[135] (AAMC) should require medical schools to teach students about the driving risks associated with certain medical conditions and medications, the existence and function of State reporting laws regarding medically high-risk drivers, and the methods and resources for counseling such drivers. In addition, the Safety Board believes that the Federation of State Medical Boards[136] (FSMB) should work with its member organizations to ensure that CME requirements in all States include a course addressing the driving risks associated with certain medical conditions and medications, as well as the existence and function of State reporting laws and procedures regarding medically impaired drivers.

Law Enforcement

Law enforcement officers often witness unsafe driving behaviors and incapacitated drivers. However, most are not trained to consider or identify medical impairment during traffic stops or accident investigations. Testimony at the hearing indicated that although some officers receive supplemental training helpful in identifying alcohol- or drug-impaired drivers, medical impairments are rarely even considered in this training.

The executive director of the IADLEST stated that several emerging programs are aimed at increasing officer awareness of all driver impairment aspects, but for the most part, such training is not currently offered at police academies. NHTSA's *Compendium of Law Enforcement Older Driver Programs* generally supports these statements. The *Compendium* lists several programs in which law enforcement agencies have supported the efforts of senior citizen organizations, family help networks, social service agencies, public and private transportation, the media, and motor vehicle departments in educating seniors about medical conditions associated with aging. However, the *Compendium* lists

[133] The nationally recognized accrediting authority for medical education programs leading to the M.D. degree in U.S. and Canadian medical schools. The LCME is sponsored by the AAMC and the AMA.

[134] The primary certifying body for osteopathic physicians and the accrediting agency for all osteopathic medical colleges and healthcare facilities.

[135] An association of medical schools, teaching hospitals, and academic societies with the goal of improving the nation's health through the advancement of medical schools and teaching hospitals.

[136] A national organization comprising the 70 medical boards of the United States, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands, with the goal of improving the quality, safety and integrity of healthcare in the United States by promoting high standards for physician licensure and practice. The FSMB is also the parent organization of the Accreditation Council for Continuing Medical Education.

only a few programs that are aimed at educating the officers about medical impairment, and most of these are not offered nationwide.

Increasing law enforcement officer awareness of medically impairing conditions is paramount in fostering the ability of law enforcement officers to report medically unfit drivers to the licensing agency. The absence of nationwide medical awareness training for officers suggests a lack of awareness of the risks that impairing medical conditions can pose. The Safety Board concludes that a lack of specific training may hinder many law enforcement officers in the ability to identify signs of driver medical impairment. The Safety Board therefore believes that the Commission on Accreditation for Law Enforcement Agencies (CALEA)[137] should work with NHTSA, IADLEST, and the AMA to develop a training program to help police officers identify common medical conditions that can impair a driver's ability to operate a motor vehicle and then promote this training to all new and veteran officers.

Reporting

Physicians

In addition to the lack of easily accessible information regarding State oversight laws, concerns about doctor-patient confidentiality and civil suits have been cited as further barriers to physician reporting. Six States currently require physicians to report medically high-risk drivers to the licensing authority. Several physicians at the public hearing voiced concern over mandatory reporting, stating that it infringes on patient privacy, compromises their ability to counsel patients on treatment options, and negatively affects the physician-patient relationship. As discussed previously, research suggests that mandatory reporting might also discourage patients from seeking treatment or disclosing the extent of their illness to physicians to continue driving. This reluctance on the part of patients could result in untreated or misdiagnosed drivers who then potentially present an even greater threat to all road users.

Other physicians and State license administrators at the public hearing favored mandatory reporting and argued that physicians are generally reluctant to report patients when no requirement exists to do so, even though patients clearly should not be driving. This is exemplified by the actions of the Frederick accident driver's neurologist, who stated to the Maryland MVA MAB that the driver's epilepsy was well controlled and that the driver was "reliable in taking medications," despite medical record entries to the contrary. Research indicates that physicians practicing in States that have mandatory reporting laws are more aware of those laws and are more apt to report high-risk drivers to the licensing authority.[138] Mandatory reporting laws relieve physicians of the burden of

[137] CALEA develops law enforcement standards and establishes and administers an accreditation process through which law enforcement agencies demonstrate voluntarily that they meet professionally recognized management and service criteria (<http://www.calea.org>).

[138] Cable (2000).

assessing driving fitness and deliberating the ethical, legal, financial, and social merits of reporting high-risk patients, making the State licensing agency solely responsible for determining an individual's fitness to drive.

Most States encourage, but do not require, physicians to report medically high-risk drivers to the licensing authority. Research is inconclusive regarding which physician reporting procedure most effectively identifies and removes medically unsafe drivers. Although the few studies that have been conducted indicate that physicians file more reports when a mandatory reporting law is in place, it is unclear whether this is due to the law itself or to a combination of factors, such as the accessibility of reporting information, the presence of immunity laws, or more effective reporting procedures. Moreover, it has not yet been determined whether, in States with mandatory reporting, a significant number of medically high-risk drivers are dissuaded from disclosing their condition and symptoms to their physicians.

During the public hearing, witnesses testified that another hindrance to effective medical oversight in some States was the absence of immunity laws to protect physicians who report medically impaired drivers to the licensing authority. The chairman of the Utah Medical Advisory Board, called it a barrier that "encourages non-reporting." According to the *Physician's Guide* and research by the Safety Board, 18 States and the District of Columbia still do not offer immunity to physicians or to other healthcare providers. Moreover, as few as 16 States offer immunity to individuals outside the healthcare field who report an unfit driver in good faith (appendix F).[139] In a recent survey sponsored by NHTSA, State licensing representatives ranked physician immunity from liability among the top five medical oversight components in terms of importance.

The Safety Board addressed this issue in its report on the 1999 New Orleans motorcoach crash,[140] and recommended that the NCSL make its members aware of the importance of establishing immunity laws for the good-faith reporting of potentially impaired commercial drivers by all individuals and of ensuring that the medical community and the commercial transportation industry are familiar with these laws (Safety Recommendation H-01-27). The NCSL complied with the Board's recommendation and published an article on its Internet publication, *Transportation Notes,* highlighting the Board's recommendations.

The Safety Board appreciates the NCSL's efforts but believes that if model legislation were available to protect those who report medically unsafe drivers to the licensing authority, it would encourage and assist the States in enacting such laws. The Safety Board concludes that the absence of laws that allow for the good-faith reporting of medically impaired drivers could hinder the effectiveness of State oversight systems. The Safety Board believes that the National Committee on Uniform Traffic Laws and Ordinances should work with the National Association of Attorneys General to develop a model law that provides immunity from liability for any person (such as a healthcare

[139] *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs,* DT FH61-95-P-01200, Federal Highway Administration (Washington, DC: FHWA, 1997).

[140] NTSB/HAR-01/01.

worker, an emergency medical technician, a family member, or a concerned citizen) who, in good faith, reports a driver with a potentially impairing medical condition, and also encourage the States to include this law in their statutes.

Emergency Medical Technicians

EMTs, among the first to respond to an accident, are trained in lifesaving procedures and the identification of certain medical conditions. They are required in most States to submit a report on the medical treatment they administer for each accident, which is sent to the medical record-keeping agency of the State and kept confidential. Licensing agencies do not have access to these reports. Because EMTs are witnesses to crash scenes, have the background to identify some impairing medical conditions, and have a close working relationship with law enforcement officers and emergency room physicians, EMTs can be an invaluable source for the reporting of medically impaired drivers. However, according to the NAEMT and the testimony provided by Mr. Wiederhold, District Chief of the Florida's Brevard County Public Safety Department, no formal mechanism is currently in place for EMTs to report medically impaired drivers. The Safety Board therefore concludes that EMTs are a trained and potentially valuable, but underutilized, resource in the reporting of medically impaired drivers. The Safety Board appreciates that many of the same arguments made against physician reporting, such as impingement upon patient confidentiality and the possible refusal of treatment, can be made regarding EMTs. However, because EMTs are in a position that allows them to make a causal determination regarding medical impairment in an accident, their participation is essential in ensuring an effective State medical oversight program and in reducing the 42,000 annual traffic-related fatalities. Because EMTs work closely with law enforcement and physicians, States might be able to employ reporting procedures established for those groups to route EMT driver impairment information to the proper licensing authorities. The Safety Board, therefore, believes that the National Committee of Uniform Traffic Laws and Ordinances should develop model legislation, in conjunction with the National Association of Emergency Medical Technicians and the National Association of State EMS Directors, that allows information gathered by EMTs concerning the potential medical impairment of accident-involved drivers to be conveyed to the State licensing authority.

Reporting Accidents

During the 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.[141] Research has shown additional links between accident history and the risk for future accidents.[142, 143, 144, 145] One limitation in using crash history effectively as a predictor is that many accidents go unreported. In fact, NHTSA estimates that approximately half of property damage-only crashes, and a fifth of all injury crashes, are not reported to the police.[146]

In the Frederick, Maryland, accident, which resulted in the death of one adult and three children, Safety Board investigators found that 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 an epileptic seizures. 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 MAB after the accident, and the MAB 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, and two States listed citations associated with an accident without recording accident information.[147]

The Safety Board recognizes 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.

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[141] NTSB/SR-00/01.

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

[143] 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.

[144] 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).

[145] 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.

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

[147] 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.

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 concludes 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 6 accidents that resulted in property damage, injury, or death. However, crashes that result in injury or fatalities are infrequent events.[148] In its 2001 report on hardcore drinking drivers, the Safety Board encouraged States to adopt a 10-year "look back" period for drivers with previous DWI offenses due to the low likelihood of arrest and the need for long-term measures to change the behavior of hardcore 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, there is no guarantee 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 NDR[149] to determine whether the individual's license to drive is currently revoked, suspended, canceled, or denied. However, the NDR only reports violations and current license suspensions; it does not alert 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 PennDOT. The Safety Board concludes 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.

The AAMVA is currently working to integrate the NDR and other commercial and noncommercial driver information repositories into a system called the Driver Record Information Verification System (DRIVerS).[150] This system is being designed to

[148] According to NHTSA, roughly 110 injuries occur per 100 million miles traveled (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]).

[149] The NDR 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.

[150] See <http://www.aamva.org/drivers/drv_AutomatedSystemsDRIVerS.asp>.

accommodate more than 200 million records, which could potentially include all licensed drivers in the United States. The Safety Board believes that the AAMVA should modify DRIVerS 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.

State Oversight

Had the physicians treating the Lady Lake or Hagerstown accident drivers been practicing in Pennsylvania, they would have been required by law to report the driver to PennDOT. Had the Frederick driver been licensed in Georgia, his 2001 license suspension could have lasted 6 months instead of 3. Licensing is a State function, and as illustrated in the Medical Oversight section of this report, 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 medically high-risk drivers for assessment, conduct assessments, deliberate the licensure of medically high-risk drivers, provide due process, track medically high-risk drivers, 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 between 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. It is important that each State 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 concludes 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 report 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. The report, according to AAMVA, was 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, AAMVA and NHTSA have conducted another survey asking State medical review representatives to rank the important procedural elements in a medical review 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, AAMVA and NHTSA hope to generate a best practices report by fall 2004.

The Safety Board is encouraged by the progress that has been made by 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. It is also foreseeable that advances in medical research, driving assessment tools, and rehabilitation and counseling programs will necessitate a continual evaluation of the guidelines. The Safety Board therefore believes that NHTSA, in cooperation with the AAMVA, should:

1. Determine the most effective methods for the comprehensive reporting to State licensing authorities of drivers who may be medically impaired.
2. Determine the most effective licensing countermeasures to reduce the risks posed by medically impaired drivers.
3. Once the most effective reporting methods and licensing countermeasures have been determined, develop a model comprehensive medical oversight program for States to use to oversee medically impaired drivers. Such a program should include, at a minimum:

    a. Methods to provide information to the public on resource availability and on the medical oversight laws and procedures to assist medically high-risk drivers.

    b. Plans and strategies to simplify and maximize reporting of potential driver medical impairment to medical evaluation units of State driver licensing organizations by law enforcement officers, healthcare providers, emergency services providers, and the public.

c. Methods to capture all cases of motor vehicle incidents or accidents potentially related to driver medical impairment.

d. Standardized methods of driver evaluation for potentially medically impaired drivers incorporating medical records review, systematic testing, and on-road appraisals, as needed.

e. Methods for timely and appropriate restriction of driving privileges for drivers found to have medical conditions or treatments that impair their ability to safely operate a motor vehicle.

The Safety Board also believes that the AAMVA should establish a standing medical evaluation unit working group to facilitate communication, standardization, and cooperation among medical evaluation units of member States.

Alternative Transportation

The Hagerstown driver's medical records indicated that in the 2 years before the accident, her physician and neurologist had advised her on several occasions that she should discontinue driving for a certain period of time. In June 2002, her neurologist documented having told her that she should not drive for the next 6 months. The accident in Hagerstown occurred within that 6-month time period. On three occasions, her physicians documented having told the driver to contact the licensing authorities about her condition. However, there is no evidence that the accident driver ever did so. The driver refused to speak to Safety Board investigators following the accident, so the Board was unable to determine why the driver chose not to follow her physicians' advice and disclose her medical condition to PennDOT.

The Hagerstown accident driver lived in a rural area of south-central Pennsylvania, near the northern border of Maryland. It is possible that a suspension or revocation of her driver's license would have restricted her ability to find and maintain employment, visit her physicians, run errands necessary to maintain a household, and conduct social activities. During the Safety Board hearing on the medical oversight of noncommercial drivers, participants generally agreed that all options should be exhausted before revoking a driver's license. Research cited earlier described the symbolic and practical importance associated with the privilege to drive. Driving cessation is often accompanied by feelings of depression, loneliness, and isolation. It can limit the ability of individuals to perform life functions such as shopping, visiting friends, and going to the doctor. For the working professional, the absence of a license can severely restrict employment options. Hearing participants agreed that the primary goal of physicians should be to keep their patients on the road safely as long as possible, through medical interventions, medical treatments, and driver rehabilitation programs.

Alternative transportation options exist for many whose impairments preclude licensure, but hearing testimony and GAO research indicate that some populations are

inadequately served by these accommodations. The GAO found 62 separately funded Federal programs that provided transportation services for the transportation-disadvantaged, many targeting the same populations. However, hearing witnesses testified that the coverage and eligibility for these services vary greatly depending on an individual's place of residence, age, disability, and travel purpose. Testimony also indicated that alternative transportation services in rural areas are generally "spotty" and that services for those under 65 not covered by a Government assistance program can be limited. The focus on seniors is understandable given their increasing numbers and the relatively high correlation between aging and impairing diseases, but statistics from the Epilepsy Foundation[151] and Census Bureau[152] suggest that medically impaired individuals of working age are equally in need of alternative transportation services. GAO recommendations regarding the need for (1) more coordination among Federal agencies, (2) uniform Federal standards across departments, (3) an information clearinghouse to facilitate communication and coordination, and (4) financial incentive provisions to States and localities could eventually result in less duplication of services, the adoption of more streamlined requirements, and the expansion of services to all demographics. The Safety Board concludes that current alternative transportation services are insufficient to meet the needs of all groups of unlicensed, medically impaired individuals. The Safety Board believes that the DOT should work with HHS, DOL, and ED to develop alternative transportation programs for medically impaired people of all ages who can no longer drive.

[151] Epilepsy Foundation 2002 Annual Report.

[152] See <http://www.census.gov/Press-Release/www/1999/cb99-fff13.html>.

Conclusions

1. Many medical conditions are associated with increased accident risk and incompatible with the unrestricted operation of motor vehicles.

2. A system is needed for the collection of accident data on a national basis to comprehensively evaluate the extent to which medical conditions play a role in accident causation.

3. Healthcare providers and concerned citizens may not have adequate information on resource availability or on the medical oversight laws and procedures for their States to assist medically high-risk drivers, which impedes their ability to aid in the safety and well-being of medically high-risk drivers.

4. A lack of specific training may hinder many law enforcement officers in their ability to identify signs of driver medical impairment.

5. The absence of laws that allow for the good-faith reporting of medically impaired drivers could hinder the effectiveness of State oversight systems.

6. Emergency medical technicians are a trained and potentially valuable, but underutilized, resource in the reporting of medically impaired drivers.

7. 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.

8. 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.

9. 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.

10. Current alternative transportation services are insufficient to meet the needs of all groups of unlicensed, medically impaired individuals.

Recommendations

New Recommendations

To the U.S. Department of Transportation:

Work with the U.S. Department of Health and Human Services, the U.S. Department of Labor, and the U.S. Department of Education to develop alternative transportation programs for medically impaired people of all ages who can no longer drive. (H-04-37)

To the National Highway Traffic Safety Administration:

In cooperation with the American Medical Association and the American Association of Motor Vehicle Administrators, develop a procedure to periodically collect, evaluate, and report data, on a State and national basis, regarding the extent to which medical conditions contribute to the cause of accidents. (H-04-38)

To the National Highway Traffic Safety Administration, in cooperation with the American Association of Motor Vehicle Administrators:

Determine the most effective methods for the comprehensive reporting to State licensing authorities of drivers who may be medically impaired. (H-04-39)

Determine the most effective licensing countermeasures to reduce the risks posed by medically impaired drivers. (H-04-40)

Once the most effective reporting methods and licensing countermeasures have been determined, develop a model comprehensive medical oversight program for States to use to oversee medically impaired drivers. Such a program should include, as a minimum:

a. Methods to provide information to the public on resource availability and on the medical oversight laws and procedures to assist medically high-risk drivers.

b. Plans and strategies to simplify and maximize reporting of potential driver medical impairment to medical evaluation units of State driver licensing organizations by law enforcement officers, healthcare providers, emergency services providers, and the public.

c. Methods to capture all cases of motor vehicle incidents or accidents potentially related to driver medical impairment.

d. Standardized methods of driver evaluation for potentially medically impaired drivers incorporating medical records review, systematic testing, and on-road appraisals, as needed.

e. Methods for timely and appropriate restriction of driving privileges for drivers found to have medical conditions or treatments that impair their ability to safely operate a motor vehicle. (H-04-41)

To National Committee on Uniform Traffic Laws and Ordinances:

Work with the National Association of Attorneys General to develop a model law that provides immunity from liability for any person (such as a healthcare worker, an emergency medical technician, a family member, or a concerned citizen) who, in good faith, reports a driver with a potentially impairing medical condition, and also encourage the States to include this law in their statutes. (H-04-42)

Develop model legislation, in conjunction with the National Association of Emergency Medical Technicians and the National Association of State EMS Directors, that allows information gathered by emergency medical technicians concerning the potential medical impairment of accident-involved drivers to be conveyed to the State licensing authority. (H-04-43)

To 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)

To the Commission on Accreditation for Law Enforcement Agencies:

Work with the National Highway Traffic Safety Administration, the International Association of Directors of Law Enforcement Standards and Training, and the American Medical Association to develop a training program to help police officers identify common medical conditions that can impair a driver's ability to operate a motor vehicle and then promote this training to all new and veteran officers. (H-04-46)

To the Liaison Committee on Medical Education, the American Osteopathic Association, and the Association of American Medical Colleges:

Require medical schools to teach students about the driving risks associated with certain medical conditions and medications, the existence and function of State reporting laws regarding medically high-risk drivers, and the methods and resources for counseling such drivers. (H-04-47)

To the Federation of State Medical Boards:

Work with your member organizations to ensure that continuing medical education requirements in all States include a course addressing the driving risks associated with certain medical conditions and medications, as well as the existence and function of State reporting laws and procedures regarding medically impaired drivers. (H-04-48)

Previously Issued Recommendations Classified in This Report

Safety Recommendations H-00-12 through -14 (previously classified "Open—Await Response") are classified "Open—Acceptable Alternate Response" in the "Previous Safety Board Actions" section of this report.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

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Vice Chairman

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Member

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Member

DEBORAH A. P. HERSMAN
Member

Adopted: November 9, 2004

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Appendix A

Investigation and Public Hearing

The National Transportation Safety Board was notified of the Hagerstown, Maryland, accident on November 4, 2000. Investigators were dispatched from the Atlanta and Washington offices. Groups were established to investigate highway factors, human performance, and vehicle factors. The Maryland State Police participated in the on-scene investigation.

Based on the findings of the Hagerstown accident and other accidents involving medically impaired drivers, the Safety Board conducted a public hearing regarding driver medical oversight issues on March 18 and 19, 2003, in Washington, D.C. Parties to the hearing were the American College of Emergency Physicians, the American Medical Association, the Association for the Advancement of Automotive Medicine, the Association for Driver Rehabilitation Specialists, the American Association of Retired Persons, the American Sleep Apnea Association, the Alzheimer's Association, the Epilepsy Foundation of America, the Parkinson's Disease Foundation, the Advocates for Highway and Auto Safety, the American Insurance Association, Mothers Against Drunk Driving, the American Association of Motor Vehicle Administrators, the Governors Highway Safety Association, the National Committee on Uniform Traffic Laws and Ordinances, the National Conference of State Legislatures, the Centers for Disease Control and Prevention, the Federal Transit Administration, and the National Highway Traffic Safety Administration.

Appendix B

Medically Related Safety Board Highway Investigations

Accidents in which the driver's medical condition may have been a factor				
Report number	**Date**	**Description**	**Location**	**Medical condition(s)**
HAR-83/05	February 1983	Head-on collision of dump truck and school bus	Willow Creek, California	Diabetes
HAR-86/02	May 1985	Multivehicle collision	Snow Hill, North Carolina	Posttraumatic epilepsy; did not take medication as prescribed
HAR-87/01	August 1985	Intercity bus loss of control and collision with bridge rail	Frederick, Maryland	Diabetes, high blood pressure, recent kidney transplant
HAR-87/04	May 1986	Intercity bus loss of control and rollover	Walker, California	Diabetes
HAR-88/03	September 1987	Intercity bus run off the road and overturn	Middletown, New Jersey	Diabetes
HAR-89/03	November 1988	Motorcoach loss of control and overturn	Nashville, Tennessee	Cardiovascular disease
CRH-92-FH004	December 1991	Two trucks	Arlington, Texas	Sleep apnea
CRH-93-TH015	January 1993	Propane truck overturn	Arlington, Texas	Sleep apnea
HWY-98-FH004	October 1997	School bus struck by load from a tractor-semitrailer	Franklin, North Carolina	Alcohol addiction
HWY-98-F-H019	October 1997	Motorcoach loss of control	New York, New York	Seizure-like episode in 1992 attributed to alcohol detoxification
HWY-98-MH022	March 1998	School bus struck by a train	Buffalo, Montana	Poor vision
HWY-98-F-H045	September 1998	School bus collision with dump truck	Holmdel, New Jersey	Migraines
HAR-01/01	May 1999	Motorcoach run off the road	New Orleans, Louisiana	Diagnosed cardiovascular and kidney disease, drug addiction
HAR-02/01	July 2000	Police cruiser struck by a tractor-semitrailer	Jackson, Tennessee	Diagnosed sleep apnea

Appendix C

Commercial Driver Medical Oversight Recommendations

Each of the following recommendations, which were issued as a result of the Safety Board's investigation of a bus crash that occurred in New Orleans, Louisiana, on May 9, 1999, specifies a component to be developed as part of a comprehensive medical oversight program for interstate commercial drivers. The Safety Board believes that the medical oversight of commercial drivers is so critical an issue that these recommendations are included in its "Most Wanted" list. The latest classification of these recommendations occurred in September 2004.

Federal Motor Carrier Safety Administration (FMCSA)

The Safety Board recommended that the FMCSA develop a comprehensive medical oversight program for interstate commercial drivers that contains the elements noted in Safety Recommendations H-01-17 through -24 discussed below.

H-01-17

Individuals performing medical examinations for drivers are qualified to do so and are educated about occupational issues for drivers.

In an August 31, 2004, letter to the Safety Board, the FMCSA stated that it is establishing a national registry of qualified medical examiners and a certification process. According to the FMCSA, the registry will enable specific training and continuous national monitoring of medical examiners on the registry and can be used to disseminate information to practitioners regarding new medical discoveries, policies, or requirements relevant to the examinations. Furthermore, a certification program will ensure that medical examiners are qualified and educated about the occupational issues for drivers and have specific guidance and a readily identifiable source of information for questions concerning the physical examinations. The FMCSA has requested funding for the registry and certification process, developed a statement of work, and issued a request for proposals. Pending the establishment of the registry and certification process, Safety Recommendation H-01-17 has been classified "Open–Acceptable Response."

H-01-18

A tracking mechanism is established that ensures that every prior application by an individual for medical certification is recorded and reviewed.

In its April 11, 2002, response to the Safety Board on this recommendation, the FMCSA stated that Section 215 of the Motor Carrier Safety Improvement Act of 1999 (Public Law 106-159, 113 Stat. 1748 [December 9, 1999]) requires that medical certification be part of the commercial driver's license. Consequently, the FMCSA was researching various approaches for such a tracking and reviewing mechanism. The FMCSA also stated that it would work with the States and with industry to explore alternatives that would simplify both compliance and enforcement of the regulations. Pending the establishment of a tracking system, on September 26, 2002, the Safety Board classified Safety Recommendation H-01-18 "Open—Acceptable Response."

H-01-19

Medical certification regulations are updated periodically to permit trained examiners to clearly determine whether drivers with common medical conditions should be issued a medical certificate.

In an August 31, 2004, letter to the Safety Board, the FMCSA stated that it was establishing a nationally recognized expert medical review board to make recommendations concerning commercial vehicle drivers and for revising medical standards. Among the medical review board's other duties are to review and to interpret medical research to support regulatory and policy development and to provide the FMCSA with an authoritative resource of medical expertise for making decisions on commercial driver medical and physical qualifications. Although the FMCSA has yet to receive funding from Congress to establish a medical review board, it has already developed a statement of work and has issued a request for proposals. Pending the establishment of the medical review board, Safety Recommendation H-01-19 has been classified "Open—Acceptable Response."

H-01-20

Individuals performing examinations have specific guidance and a readily identifiable source of information for questions on such examinations.

In its August 31, 2004, letter to the Safety Board, the FMCSA stated that it is establishing a national registry of qualified medical examiners and a certification process. According to the FMCSA, this will enable specific training and continuous national monitoring of the medical examiners on the registry and can be used to disseminate information to practitioners regarding new medical discoveries, policies, or requirements relevant to the examinations. Furthermore, a certification program will ensure that medical examiners are qualified and educated about the occupational issues for commercial drivers and have specific guidance and a readily identifiable information resource for questions concerning the physical examinations. The FMCSA has requested funding for the registry and certification process, developed a statement of work, and issued a request for proposals. Pending the establishment of the registry and certification process, Safety Recommendation H-01-17 has been classified "Open–Acceptable Response."

H-01-21

The review process prevents, or identifies and corrects, the inappropriate issuance of medical certification.

In its April 11, 2002, letter to the Safety Board, the FMCSA responded to this recommendation by stating that Section 215 of the Motor Carrier Safety Improvement Act of 1999 (Public Law 106-l59, 113 Stat. 1748 [December 9, 1999]) requires that medical certification be part of the commercial driver's license. FMCSA said that it believed that the upcoming notice of proposed rulemaking (NPRM) to implement this provision, which is expected to be published in the Federal Register by the early 2005, would address the Safety Board's concerns about the inappropriate issuance of a medical certificate. Pending the publication of the NPRM addressing this issue, Safety Recommendation H-01-21 has been classified "Open—Acceptable Response."

H-01-22

Enforcement authorities can identify invalid medical certification during safety inspections and routine stops.

H-01-23

Enforcement authorities can prevent an uncertified driver from driving until an appropriate medical examination takes place.

In its April 11, 2002, letter to the Safety Board, the FMCSA responded that Section 215 of the Motor Carrier Safety Improvement Act of 1999 (Public Law 106-159, 113 Stat. 1748 [December 9, 1999]) requires that medical certification be part of the commercial driver's license. The FMCSA further stated its belief that the upcoming NPRM to implement this provision, at that time an internal draft document, would address the Safety Board's concerns about identifying invalid medical certificates with regard to commercial driver's license (CDL) holders. By making the medical certification part of the CDL, enforcement of the medical certification requirement at the roadside would no longer be necessary for drivers who were required to have a CDL. On September 26, 2002, the Safety Board responded that, pending the publication of the NPRM addressing these issues, Safety Recommendations H-01-22 and -23 have been classified "Open—Acceptable Response."

H-01-24

Mechanisms for reporting medical conditions to the medical certification and reviewing authority and for evaluating these conditions between medical certification exams are in place; individuals, healthcare providers, and employers are aware of these mechanisms.

In the April 11, 2002, letter to the Safety Board, the FMCSA responded that the June 1997 report, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs*, published by the Association for the Advancement of Automotive Medicine, noted that all but nine States had the authority to

suspend or revoke a commercial driver's license if they became aware between license renewals that the driver is unable to meet the medical requirement. In addition, Section 215 of the Motor Carrier Safety Improvement Act of 1999 (Public Law 106-159, 113 Stat. 1748 [December 9,1999]) requires that medical certification be part of the commercial driver's license. FMCSA believed that the upcoming NPRM to implement this provision, at that time an internal draft document, would address the Safety Board's concerns regarding the need for a mechanism for reporting medical conditions to a reviewing authority.

On September 26, 2002, the Safety Board responded that it was aware that many States have the authority to suspend or revoke a license if a driver cannot meet medical standards. The Board noted further that, although the FMCSA's efforts are admirable, the recommendation's intent is to ensure that information is provided to appropriate authorities so that a decision can be made regarding continued licensure. The Safety Board further stated that it is unclear what effect, if any, merging the medical certificate and CDL would have on improving awareness among individuals, healthcare providers, and employers of mechanisms of reporting conditions between medical certification examinations that may impair drivers' ability to safely operate a commercial motor vehicle. Pending action by the FMCSA to improve the reporting and evaluation of medical conditions between medical certification examinations, Safety Recommendation H-01-24 has been classified "Open—Unacceptable Response."

In an August 31, 2004, letter to the Safety Board, the FMCSA stated that it plans to establish a certification process and national registry for qualified medical practitioners. According to the FMCSA, a certification program would ensure that medical practitioners are qualified and educated about commercial driver occupational issues and have specific guidance and a readily identifiable source of information for questions concerning the physical examinations. The registry would allow the FMCSA and State licensing agencies to better monitor practitioners on the registry, and it would provide a means to disseminate information to practitioners regarding new medical discoveries, policies, or requirements relevant to the examinations.

The FMCSA also informed the Safety Board that it was establishing a nationally recognized expert medical review board to make recommendations for revising medical standards and recommendations for commercial motor vehicle drivers. The medical review board's duties will include researching requirements to enable the timely development of future medical standards, interpreting medical research to support regulatory and policy development, and providing the FMCSA with an authoritative resource of medical expertise for making decisions on commercial driver medical and physical qualifications. Although the FMCSA has yet to receive funding from Congress to establish a certification process, a medical practitioner registry, and a medical review board, it has already developed statements of work and has issued requests for proposals.

The Safety Board is evaluating the classifications for Safety Recommendations H-01-17 through -24 in light of the FMCSA's latest response.

American Association of Motor Vehicle Administrators (AAMVA)

The Safety Board issued Safety Recommendation H-01-26 to the AAMVA to urge its member States to develop a comprehensive medical oversight program for intrastate commercial drivers containing the same eight elements listed in Safety Recommendations H-01-17 through H-01-24 to the FMSCA (see above). The AAMVA responded on September 7, 2004, that it had worked closely with the FMCSA on rulemaking and that once it is published, the AAMVA would use it as a basis for an intrastate medical oversight program. Safety Board Recommendation H-01-26 is awaiting reclassification that would reflect the latest correspondence from AAMVA.

National Conference of State Legislatures (NCSL)

H-01-27

Inform State legislatures about this accident and make them aware of the importance of establishing immunity laws for the good-faith reporting of potentially impaired commercial drivers by all individuals and of ensuring that the medical community and the commercial transportation industry are familiar with these laws.

On September 7, 2001, the NCSL published an article on its Internet publication, *Transportation Notes*, highlighting the Safety Board's recommendations. Accordingly, Safety Recommendation H-01-27 has been classified "Closed—Acceptable Action."

Appendix D

Safety Board Public Hearing Agenda

NATIONAL TRANSPORTATION SAFETY BOARD
PUBLIC HEARING ON THE MEDICAL OVERSIGHT OF NONCOMMERCIAL DRIVERS

L'Enfant Plaza
WASHINGTON, D.C. 20594

March 18-19, 2003

PURPOSE: *To investigate the current state of noncommercial driver medical oversight, in support of a Safety Board investigation into a fatal multiple vehicle crash that occurred in Hagerstown, Maryland, on November 3, 2002.*

Tuesday, March 18, 2003

8:00–8:30 **OPENING REMARKS**

Member John Goglia ***Chairman, Board of Inquiry***

8:30–8:45 **INTRODUCTIONS AND TOPIC OVERVIEW**

Rafael Marshall *Hearing Officer*
Mr. Ken Suydam *Investigator-In-Charge*

8:45–10:45 **BACKGROUND AND RESEARCH**
Background and research into potentially impairing or debilitating medical conditions that might affect an individual's ability to drive.

Dr. Richard Marotolli *Connecticut Veterans Administration*
Dr. Bonnie Dobbs *University of Alberta*
Dr. Dana Clarke *Utah Diabetes Center*
Dr. Allan Krumholz *Maryland Epilepsy Center*

10:45–11:00 *BREAK*

11:00–1:00 **REPORTING MEDICAL CONDITIONS**
The role of various parties in collecting and routing information on medically high-risk drivers to licensing authorities and the medical review board.

Dr. Laurel Broadhurst	*Weaverville Family Medicine*
Mr. Rich Wiederhold	*Brevard County Public Safety Department*
Sgt. Robert Ticer	*Arizona Highway Patrol*

1:00–2:15 *LUNCH*

2:15–3:30 **STATE OVERSIGHT**
The effectiveness of State oversight of licensed drivers who suffer from potentially impairing or debilitating medical conditions.

Dr. Robert Raleigh	*Maryland Medical Advisory Board*
Mr. Kurt Stromberg	*Utah Medical Advisory Board*
Ms. Susan Stewart	*North Carolina Medical Advisory Board*

3:30–3:45 *BREAK*

3:45–5:00 **STATE OVERSIGHT** *(continued)*

Wednesday, March 19, 2003

8:00–9:45 **AWARENESS AND TRAINING**
Programs that aid doctors, law enforcement, licensing authorities, and others report, manage, or counsel medically high-risk drivers.

Dr. Claire Wang	*American Medical Association*
Sgt. Robert Ticer	*Arizona Highway Patrol*
Ms. Jill Reeve	*Wisconsin Department of Motor Vehicles*

9:45–10:00 *BREAK*

10:00–12:00 **NON-REGULATORY EFFORTS**
Programs that attempt to reduce incidences of medically related accidents through education and other proactive measures.

Ms. Mary Jane O'Gara	*AARP*
Ms. Alexandra Finucane	*Epilepsy Foundation of America*
Mr. Rex Knowlton	*Wheels of Wellness*
Mr. Timothy Hoyt	*Nationwide Insurance*

12:00–1:30 *LUNCH*

1:30–3:00 **PUBLIC POLICY**
Considerations in the design and implementation of a driver medical oversight program.

Dr. Richard Compton	*National Highway Traffic Safety Administration*
Mr. Mike Calvin	*American Association of Motor Vehicle Administrators*
Mr. James Reed	*National Conference of State Legislatures*

3:00–3:15 *BREAK*

3:15–4:45 **PUBLIC POLICY** *(continued)*

4:45–5:00 **CLOSING REMARKS**

5:00 **END OF HEARING**

Appendix E

Laws of States With Mandatory Physician Reporting

Six States currently require physicians to report certain types of impairments to the State licensing agency. The table below provides a summary of the medical impairments specified in the laws of each of these six States and is followed by the reporting laws for each State.

Summary of State Mandatory Reporting Laws	
States	**Medical Impairments Under Mandatory Physician Reporting**
California	Lapses of consciousness and Alzheimer's Disease severe enough to be likely to impair a person's ability to operate a motor vehicle
Delaware	Loss of consciousness due to diseases of the central nervous system
Nevada	Epilepsy
New Jersey	Recurrent convulsive seizures, recurrent periods of unconsciousness, or recurrent impairment or loss of motor coordination due to conditions such as epilepsy
Oregon	Loss of consciousness or control. Cognitive and functional impairments that are severe and/or uncontrollable to a degree that may preclude safe operation of a motor vehicle and are not correctable by medication, therapy, surgery, driving device, or technique
Pennsylvania	Lapses of consciousness or other mental or physical disabilities affecting the ability of a person to drive safely

California

Health and Safety Code

103900. Reporting Disorders Characterized by Lapses of Consciousness

(a) Every physician and surgeon shall report immediately to the local health officer in writing, the name, date of birth, and address of every patient at least 14 years of age or older whom the physician and surgeon has diagnosed as having a case of a disorder characterized by lapses of consciousness. However, if a physician and surgeon reasonably and in good faith believe that the reporting of a patient will serve the public interest, he or she may report a patient's condition even if it may not be required under the department's definition of disorders characterized by lapses of consciousness pursuant to subdivision (d).

(b) The local health officer shall report in writing to the Department of Motor Vehicles the name, age, and address, of every person reported to it as a case of a disorder characterized by lapses of consciousness.

(c) These reports shall be for the information of the Department of Motor Vehicles in enforcing the Vehicle Code, and shall be kept confidential and used solely for the purpose of determining the eligibility of any person to operate a motor vehicle on the highways of this state.

(d) The department, in cooperation with the Department of Motor Vehicles, shall define disorders characterized by lapses of consciousness based upon existing clinical standards for that definition for purposes of this section and shall include Alzheimer's disease and those related disorders that are severe enough to be likely to impair a person's ability to operate a motor vehicle in the definition. The department, in cooperation with the Department of Motor Vehicles, shall list those circumstances that shall not require reporting pursuant to subdivision (a) because the patient is unable to ever operate a motor vehicle or is otherwise unlikely to represent a danger that requires reporting. The department shall consult with professional medical organizations whose members have specific expertise in the diagnosis and treatment of those disorders in the development of the definition of what constitutes a disorder characterized by lapses of consciousness as well as definitions of functional severity to guide reporting so that diagnosed cases reported pursuant to this section are only those where there is reason to believe that the patients' conditions are likely to impair their ability to operate a motor vehicle. The department shall complete the definition on or before January 1, 1992.

(e) The Department of Motor Vehicles shall, in consultation with the professional medical organizations specified in subdivision (d), develop guidelines designed to enhance the monitoring of patients affected with disorders specified in this section in order to assist with the patients' compliance with restrictions imposed by the Department of Motor Vehicles on the patients' licenses to operate a motor vehicle. The guidelines shall be completed on or before January 1, 1992.

(f) A physician and surgeon who reports a patient diagnosed as a case of a disorder characterized by lapses of consciousness pursuant to this section shall not be civilly or criminally liable to any patient for making any report required or authorized by this section.

Delaware

TITLE 24
Professions and Occupations
CHAPTER 17. MEDICAL PRACTICES ACT
Subchapter VI. General Provisions

§ 1763. Reports of persons who are subject to losses of consciousness; limitation on use; failure; penalty.

Every physician attending or treating persons who are subject to losses of consciousness due to disease of the central nervous system shall report within 1 week to the Division of Motor Vehicles the names, ages and addresses of all such persons unless such person's infirmity is under sufficient control to permit the person to operate a motor vehicle with safety to person and property.

The reports shall be for the information of the Division of Motor Vehicles in enforcing the Motor Vehicle Law. Said reports shall be kept confidential and used solely for the purpose of determining the eligibility of any person to operate a motor vehicle on the highways of this State.

A physician failing to make such a report shall be fined not less than $5 nor more than $50 and costs for each such report the physician fails to make. (24 Del. C. 1953, § 1763; 50 Del. Laws, c. 369, § 1; 70 Del. Laws, c. 186, § 1; 71 Del. Laws, c. 451, §§ 1, 2.)

Nevada

Nevada Revised Statutes
CHAPTER 439
Administration of Public Health and General Provisions

NRS 439.270 Persons diagnosed with epilepsy:
State Board of Health to define "epilepsy" for purposes of section; reports required to be submitted to Health Division and to Department of Motor Vehicles; confidentiality of reports; criminal penalty.

1. The State Board of Health shall define epilepsy for the purposes of the reports hereinafter referred to in this section.
2. All physicians shall report immediately to the Health Division, in writing, the name, age and address of every person diagnosed as a case of epilepsy.
3. The Health Division shall report, in writing, to the Department of Motor Vehicles the name, age and address of every person reported to it as a case of epilepsy.
4. The reports are for the information of the Department of Motor Vehicles and must be kept confidential and used solely to determine the eligibility of any person to operate a vehicle on the streets and highways of this state.
5. A violation of this section is a misdemeanor.

New Jersey

TITLE 39
MOTOR VEHICLES AND TRAFFIC REGULATION

39:3-10.4. Report to director by physicians of persons subject to epileptiform seizures

Each physician treating any person 16 years of age or older for recurrent convulsive seizures or for recurrent periods of unconsciousness or for impairment or loss of motor coordination due to conditions such as, but not limited to, epilepsy in any of its forms, when such conditions persist or recur despite medical treatments, shall, within 24 hours after his determination of such fact, report the same to the Director of the Division of Motor Vehicles. The director, in consultation with the State Commissioner of Health, shall prescribe and furnish the forms on which such reports shall be made.

L.1970, c. 195, s. 1, eff. Sept. 4, 1970.

Oregon

Oregon Revised Statutes - 2003 Edition
Chapter 807 — Driving Privileges, Licenses and Permits

807.710 Reports of persons with cognitive or functional impairment; rules; forms.
(1) For the purposes of this section:
(a) "Physician" means a doctor of medicine or osteopathy licensed to practice medicine by the Board of Medical Examiners for the State of Oregon.
(b) "Healthcare provider" means a person licensed, certified or otherwise authorized or permitted by the laws of this state to administer healthcare .
(2) In consultation with medical experts and experts on cognitive or functional impairments, the Department of Transportation shall adopt rules requiring reporting and:
(a) Designating physicians and healthcare providers required to report to the department a person whose cognitive or functional impairment affects that person's ability to safely operate a motor vehicle. If a designated physician or healthcare provider makes a report to the department in good faith, that person shall be immune from civil liability that might otherwise result from making the report. If a designated physician or healthcare provider does not make a report, that person shall be immune from civil liability that might otherwise result from not making the report.
(b) Designating the cognitive or functional impairments that are likely to affect a person's ability to safely operate a motor vehicle.
(3) Determinations regarding a person's ability to safely operate a motor vehicle may not be based solely on the diagnosis of a medical condition or cognitive or functional impairment, but must be based on the actual effect of that condition or impairment on the person's ability to safely operate a motor vehicle.
(4) Reports required by the department under this section shall be upon forms prescribed or provided by the department. Each report shall include the person's name, address, date of birth, sex and a description of how the person's current medical status affects the person's ability to safely operate a motor vehicle. The State Health Officer shall consider this information in determining whether to issue a certificate of eligibility under ORS 807.090.
(5) Except as provided in ORS 802.240, the reports required by the department under this section are confidential and shall be used by the department only to determine the qualifications of persons to operate motor vehicles upon the highways. [1983 c.338 §872; 1999 c.770 §2; 2001 c.736 §1; 2003 c.462 §1]

Note: Section 3, chapter 462, Oregon Laws 2003, provides:
Sec. 3. The amendments to ORS 807.710 and 802.240 by sections 1 and 2 of this 2003 Act apply only to causes of action that accrue on or after the effective date of this 2003 Act [June 24, 2003]. [2003 c.462 §3]

Pennsylvania

Pennsylvania Consolidated Statutes
THE VEHICLE CODE (Title 75)
Part II. Title, Registration and Licensing

CHAPTER 15. LICENSING OF DRIVERS

§ 1518. Reports On Mental Or Physical Disabilities Or Disorders.

(a) Definition of disorders and disabilities. The Medical Advisory Board shall define disorders characterized by lapses of consciousness or other mental or physical disabilities affecting the ability of a person to drive safely for the purpose of the reports required by this section.

(b) Reports by medical personnel. All physicians and other persons authorized to diagnose or treat disorders and disabilities defined by the Medical Advisory Board shall report to the department, in writing, the full name, date of birth and address of every person over 15 years of age diagnosed as having any specified disorder or disability within ten days.

(c) Responsibility of institution heads. The person in charge of every mental hospital, institution or clinic, or any alcohol or drug treatment facility, shall be responsible to assure that reports are filed in accordance with subsection (b).

(d) Confidentiality of reports. The reports required by this section shall be confidential and shall be used solely for the purpose of determining the qualifications of any person to drive a motor vehicle on the highways of this Commonwealth.

(e) Use of report as evidence. No report forwarded under the provisions of this section shall be used as evidence in any civil or criminal trial except in any proceeding under section 1519(c) (relating to determination of incompetence).

(f) Immunity from civil and criminal liability. No civil or criminal action may be brought against any person or agency for providing the information required under this system.

Appendix F

State Immunity Laws

Ability of States to Offer Immunity to Individuals Reporting Concerns About Driver Fitness.[1]

State	Immunity to persons who in good faith report an unfit driver	Immunity to physicians who report an unfit driver
Alabama	Yes	Yes
Alaska	Yes	No
Arizona	No	Yes
Arkansas	No	No
California	No	Yes
Colorado	Yes	Yes
Connecticut	Yes	Yes
Delaware	No	Yes
District of Columbia	No	No
Florida[a]	Yes	Yes
Georgia	Yes	Yes
Hawaii	No	No
Idaho	No	No
Illinois	Yes	Yes

[1] Data from Federal Highway Administration, *Update of Medical Review Practices and Procedures in U.S. and Canadian Commercial Driver Licensing Programs, Report PB97-194393INZ,* (Washington, DC: FHWA, 1997); K.H. Lococo, *Summary of Medical Advisory Board Practices in the United States,* prepared for the National Highway Traffic Safety Administration by Transanalytics, contract #DTNH22-02-P-0511 (2003).

State	Immunity to persons who in good faith report an unfit driver	Immunity to physicians who report an unfit driver
Indiana	No	No
Iowa	No	Yes
Kansas	Yes	Yes
Kentucky	Yes	Yes
Louisiana	No	Yes
Maine	Yes	Yes
Maryland	Yes	Yes
Massachusetts	No	No
Michigan	No	No
Minnesota	No	Yes
Mississippi	N/A	No
Missouri	No	Yes
Montana[b]	Yes	Yes
Nebraska	No	No
Nevada	N/A	Yes
New Hampshire	N/A	No
New Jersey	No	Yes
New Mexico	No	Yes
New York	Yes	No
North Carolina	No	Yes
North Dakota	No	Yes
Ohio	No	No
Oklahoma	Yes	Yes
Oregon	No	Yes

State	Immunity to persons who in good faith report an unfit driver	Immunity to physicians who report an unfit driver
Pennsylvania	Yes	Yes
Rhode Island	No	Yes
South Carolina	N/A	No
South Dakota	No	No
Tennessee	No	No
Texas	No	Yes
Utah	Yes	Yes
Vermont	No	No
Virginia	N/A	Yes
Washington	No	No
West Virginia	No	No
Wisconsin	No	Yes
Wyoming	Yes	Yes

a.<http://www.hsmv.state.fl.us/forms/72190.html>.

b.<http://data.opi.state.mt.us/bills/mca/37/2/37-2-312.htm>.

Appendix G

State Oversight Procedures of Four Representative States

Pennsylvania

In Pennsylvania, all learner's permit applicants must undergo a physical exam by a medical provider and must have the provider complete a section on the back of the learner's permit application relating to medical conditions. The Pennsylvania Department of Transportation (PennDOT) may require further medical examinations if a physician indicates that the applicant has any of the following disorders: neurological, cardiac or circulatory, neuropsychiatric, conditions causing repeated lapses of consciousness, alcoholism, narcotic addiction, uncontrolled diabetes, uncontrolled epilepsy, immobility or amputation of an appendage, or any other condition that might adversely affect the operation of a motor vehicle.[1]

New residents applying for a driver's license in Pennsylvania are also required to complete a section in their applications regarding their medical history. Among other conditions, the application asks whether the applicant suffers from neurological disorders, cardiac or circulatory disorders, or neuropsychiatric disorders that might prevent the reasonable control of a motor vehicle. It also asks whether the applicant has a condition that may result in repeated lapses of consciousness, such as epilepsy, narcolepsy, or hysteria.

Individuals renewing their licenses may do so in person, by mail, or by Internet, and are not required to provide medical history information during that time. According to the Manager of the Driver Qualification Section of PennDOT, the State has no laws that require driver's license holders to inform PennDOT if they develop a potentially impairing medical condition.[2]

In addition to self-reports, PennDOT accepts reports on medically high-risk drivers from law enforcement officials, physicians, family members, friends, and other citizens. It does not accept anonymous reports. Physicians, and other persons authorized to diagnose or treat disorders, are required by Pennsylvania law to report individuals, age 15 or older, having one of the disorders listed in the first paragraph of this section. Immunity from civil and criminal liability is given to any person or agency providing information on a driver with a potentially impairing or debilitating medical condition.

PennDOT receives approximately 16,000 initial reports a year from the medical community on licensed Pennsylvania drivers who may be too medically impaired to drive

[1] Title 75, Part II, Chapter 15, Section 1518 of the Pennsylvania Consolidated Statutes.

[2] Telephone interview, November 7, 2003.

safely.[3] Approximately 20 percent of reported drivers are found to have a condition serious enough to warrant a license suspension or revocation. About half of those whose licenses are suspended or revoked for medical reasons are drivers with seizure disorders, with another 16 percent suffering from neurological disorders. Another 25 percent of the 16,000 initial reports result in license suspensions because those drivers do not comply with PennDOT's requests for further medical information.

To assist healthcare providers, PennDOT makes available a "Physician Reporting Fact Sheet" and provides an initial reporting form. PennDOT last mailed the fact sheet in 2001 to all physicians licensed in Pennsylvania. PennDOT also periodically schedules presentations at hospitals for physicians and medical students on its reporting requirements.[4]

PennDOT also receives about 2,500 police and crash reports annually, which potentially involve medically high-risk drivers. Pennsylvania accident reporting forms used by law enforcement include a field that inquires about a driver's condition at the time of the crash, including whether the driver has a preexisting physical defect, some other handicap, or was ill, intoxicated, or fatigued. PennDOT receives another 500 referrals from driver acquaintances annually.

In regard to the Hagerstown accident, which involved a driver with a Pennsylvania license, PennDOT[5] stated that no laws or formal agreements exist between States to share information about medically related traffic stops or incidents that involve an out-of-State driver. However, PennDOT occasionally receives such information from other States regarding drivers licensed in Pennsylvania.

The PennDOT Medical Unit reviews the medical reports that are sent to the agency. Because Medical Unit staff are not healthcare professionals (nurses or physicians), they receive 9 to 12 months of training on medical terms, Pennsylvania law, department regulations, and the computer system used to evaluate and track drivers and applicants before being allowed to review the medical reports submitted to PennDOT.

When the Medical Unit receives a report on a driver from a physician, staff members compare the report information to PennDOT's statutes and standards.[6] The Medical Unit may recall or restrict a driver's license based solely on a physician's report or it may require the driver to undergo further vision or medical exams. If more medical information is required, the Medical Unit will send a condition-specific medical form (eye report, neurological form, or cardiovascular form) to the driver, who must then undergo the specific medical exam by a physician of his or her choice, have the physician complete the form, and then submit it to PennDOT within 30 days. If the driver does not submit the

[3] The PennDOT states that it receives over 40,000 reports each year from the medical community regarding drivers with medical conditions. However, according to the manager of PennDOT's Driver Qualification Section, this number reflects both initial and followup reports on high-risk drivers.

[4] Telephone interview, Manager, Driver Qualification Section, PennDOT, November 7, 2003.

[5] Telephone interview, Manager, Driver Qualification Section, PennDOT, July 9, 2003.

[6] K.H. Lococo, *Summary of Medical Advisory Board Practices in the United States*, prepared for the National Highway Traffic Safety Administration by Transanalytics, contract DTNH22-02-P-0511 (2003).

completed form within the required timeframe, the license may be put on pending suspension status for 30 additional days before it is fully suspended due to noncompliance. Based on the information on the completed form, the Medical Unit may decide to clear the driver, recall the license, or require the driver to take a road test.[7]

When reports are received from nonmedical sources, a general medical form is sent to the driver, requiring a physical examination. PennDOT will not automatically recall a license based on information from a nonmedical source. The Medical Unit frequently contacts the source of the report by telephone, especially for reports from family members, to ask for more information or to discuss the case to determine validity. When the report is from an acquaintance, additional precautions are taken. The Medical Unit recognizes that while some reports that come from these individuals are made out of legitimate concern, others could be the result of malice.

PennDOT is assisted in the medical evaluation of drivers by a 13-member Medical Advisory Board. The Medical Advisory Board consists of eight physicians with backgrounds in one or more of the following specialties: optometry, ophthalmology, cardiology, family practice, internal medicine, neurology, orthopedics, and psychiatry. The five other members include the Director of the Bureau of Driver Licensing, the PennDOT chief counsel, and representatives from the Department of Health, the Advisory Council on Drug and Alcohol Abuse, and the Pennsylvania State Police. The duties of the Medical Advisory Board are to keep PennDOT informed of new fitness-to-drive research; advise PennDOT on new driving regulations, procedures, and guidelines; assist in the development of medical reporting forms; and, on rare occasions, provide guidance on individual licensing cases.[8] Of the 16,000 initial reports submitted to the Medical Unit each year, only about five cases are referred to the Medical Review Board for evaluation.[9]

Pennsylvania's standards regarding epilepsy are described in Title 67, Article IV, Chapter 83, Section 83.4, of the Pennsylvania Code. It states that "a person who has a seizure disorder shall not be qualified to drive unless the person has been free from seizure for a period of at least 6 months from the date of the last seizure, with or without medication." Individuals between the ages of 16 and 18 who are applying for a license for the first time must have been free of seizures for at least 2 years. Waivers are considered under various circumstances—if seizures occur only at night or immediately after waking, for example, or if a specific prolonged aura always occurs prior to a seizure.

PennDOT provides booklets to the public describing the physiological changes associated with aging, as well as a guide to help families cope with older drivers. PennDOT does not provide counseling to individuals with a medical impairment that hampers or precludes their ability to drive. It also does not refer individuals to outside sources of counseling or rehabilitation.

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[7] Title 75, Part II, Chapter 15, Section 1519, Pennsylvania Consolidated Statutes.

[8] Title 75, Part II, Chapter 15, Section 1517(b), Pennsylvania Consolidated Statutes.

[9] Lococo (2003).

Maryland

Physicians in Maryland are not legally required to report individuals 15 years of age and older who have potentially impairing or incapacitating medical conditions, although they may do so voluntarily. Drivers who are renewing[10] or obtaining licenses for the first time in Maryland are required to inform the Motor Vehicle Administration (MVA) if they have one of 17 high-risk medical conditions[11] listed on the license application form. Drivers who indicate that they have one or more of these medical conditions or drivers suspected by MVA license examiners of having a high-risk condition[12] are referred to the Driver Wellness and Safety Division, which houses the State's Medical Advisory Board (MAB). Approximately 35 percent of all referrals in Maryland are through self-reporting or license examiner referrals. Other referral sources include law enforcement (35 percent), healthcare professionals (17 percent), private citizens (11 percent), and the court system. Law enforcement officers refer drivers to the MAB by filling out a request for reexamination. Physicians refer drivers via a letter to the MAB. The legitimacy of referrals from friends, family, or from an anonymous source is validated by an MVA field investigator before contacting a driver about a potential impairment.[13] All reports are confidential and may only be disclosed by court order. Physicians, and those who refer a driver in good faith, are granted immunity from civil and criminal action.

Drivers referred to the MVA are mailed a Driver License Medical Assessment Packet, which contains the Health Questionnaire, medical record release forms, and physician reporting forms. The assessment packet may also contain a notification to undergo a Functional Capacity Screening with a trained MVA Driver License Examiner.[14] Drivers are asked to authorize the release of medical information to the MVA and forward the physician report forms to their physicians for completion.[15] The screening consists of a battery of written and physical tests that are correlated to driving ability.

Six Driver Wellness and Safety case managers are tasked with assembling the medical information on each referred driver and forwarding that information to the MAB. Six other case managers conduct a similar task exclusively for alcohol-related referrals. All case managers are registered nurses.

The MAB consists of 16 physicians whose specialties include preventive medicine, ophthalmology, cardiology, family practice, internal medicine, neurology,

[10] Driver's licenses are valid for 5 years and can be renewed only in person.

[11] A list of these conditions is available at <http://mva.state.md.us/DriverServ/APPLY/apply.htm>.

[12] Licensing Agency personnel are not formally trained to observe applicants for conditions that could impair their ability to operate a motor vehicle safely.

[13] Testimony of Dr. Carl Soderstrom, Associate Director of the Medical Advisory Board for the Maryland Motor Vehicle Administration, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

[14] Driver License Examiners in a number of branches have been trained to do functional capacity testing (in conjunction with the Maryland Pilot Study).

[15] If drivers do not return the packet or do not authorize the release of medical information, their licenses are suspended until they comply.

psychiatry, and general surgery. The MVA Administrator appoints physicians on the MAB for a 3-year term. Each physician performs about 12 hours of casework a week. The MAB does not meet as a group. An individual MAB member makes a decision on each referral. If more information is required on a particular driver, a member may conduct a videoconference or in-person interview with the driver and may ask for further medical examination or a driving test. After completing its review, the MAB may recommend to the MVA that a driver's license be denied, suspended, or restricted, or that no action be taken.

During 2002, the Driver Wellness and Safety Division handled approximately 13,700 cases. The Driver Wellness and Safety Division routinely maintains a 5-year active caseload of approximately 42,000 cases. Once a case remains unchanged for 5 years, the case is archived and considered closed. Each year, the MVA denies licenses for more than 1,200 drivers because of existing medical conditions.

The MVA offers counseling and information on alternative transportation, safe driving tips, and support groups to drivers whose licenses are denied, suspended, or restricted. Drivers may appeal a decision to deny or restrict their licenses by requesting a hearing before an administrative law judge.

Regarding epilepsy, it should be noted that until October 1, 2003, Maryland statute restricted the MAB from suspending the license of a driver with epilepsy for more than 90 days. For other medical impairments, the Board could recommend suspensions of varying lengths. The new Maryland State law[16] removes this restriction and allows the MAB to adopt the more flexible approach on suspensions employed for other medical impairments, based on a medical assessment of the client's condition and his or her capacity to drive.

California

In California, the Department of Motor Vehicles (DMV) administers driver licensure. Applicants who are renewing[17] or obtaining licenses for the first time must complete a section of the licensing application that contains questions about medical conditions. Applicants are asked whether in the past 5 years, they have experienced (1) a loss of consciousness, (2) an episode of marked confusion caused by any condition that may bring about recurring lapses, (3) a disease, disorder, or disability (such as epilepsy, diabetes, stroke, cataracts, or Parkinson's disease), (4) a decrease or change in vision due to cataracts, macular degeneration, or other progressive condition, or (5) health problems due to alcohol or drug abuse. Applicants who self-report may be required to have a physician complete a Driver Medical Evaluation form, which is used by the DMV to assist in arriving at a licensing decision on the driver.

[16] House Bill 685, Chapter 171 (<http://mlis.state.md.us/2003rs/billfile/HB0685.htm>).

[17] Driver's licenses are valid for 5 years. Licenses can be renewed in person or by mail for no more than 2 license terms in sequence.

License examiners at the DMV are trained to observe applicants for signs of physical and cognitive impairment. Examiners assess applicants on their ability to use their arms and legs, and for obvious and excessive shaking or stiffness in their upper and lower limbs. Depending on the degree of impairment, a person who exhibits physical or cognitive problems in any of these areas might be required to take a driving test, might have the driver's license immediately suspended, or might be referred to the Driver Safety Branch for reexamination.[18]

In addition to self-reports and license examiner referrals, California also accepts referrals from healthcare workers, law enforcement, the courts, family, friends, and other citizens. California has a mandatory physician reporting law. Physicians must report immediately to the health officer every patient age 14 and older who has been newly diagnosed with a disorder characterized by lapses of consciousness, such as dementia, seizure disorders, brain tumors, narcolepsy, sleep apnea, and abnormal metabolic states, including hypo- and hyperglycemia associated with diabetes. Physicians who report patients with disorders marked by lapses of consciousness are not civilly or criminally liable to any patient for making such a report. Other possibly high-risk conditions may be reported to the DMV, but there is no statutory immunity for voluntary reporting. If a physician fails to report a patient with a condition that may cause lapses of consciousness, and that patient is involved in a crash, the physician may be held liable.

Law enforcement officers who believe that a driver might have a high-risk medical condition may refer a driver to the DMV for a "regular reexamination" or a "priority reexamination." Drivers who are referred for a regular reexamination may have their driver's license immediately suspended or they may be asked to present medical information and may be required to take a vision, knowledge, or driving test if appropriate. If an officer observes a driver who has violated a traffic law and is clearly suffering from an incapacitating medical condition, the officer can refer the driver for a "priority reexamination." Drivers who are referred for a priority reexamination must contact the DMV within 5 days to schedule a reexamination or face a license suspension. These drivers are instructed to bring another licensed driver to the reexamination, must provide medical information, and must take the knowledge, vision, and driving tests. The DMV may immediately suspend or revoke the driving privilege upon receipt and investigation of a notice of priority reexamination. The California DMV conducts approximately 3,000 priority reexaminations and 36,220 regular reexaminations each year.[19]

Anonymous referrals are accepted from immediate family only. All others must provide a signature. Individuals may report drivers by writing a letter or by using the Request for Reexamination form, which provides check boxes to describe the driver's condition and the driver's specific behaviors, in addition to space to write a narrative to further describe conditions or actions. The Licensing Agency may contact a reporting source before proceeding with a reevaluation of the driver.

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[18] Lococo, *Summary of Medical Advisory Board Practices in the United States* (2003).

[19] Susan Bradley, Manager III, Licensing and Operations Division, California Department of Motor Vehicles, e-mail correspondence, November 11, 2003.

Finally, the DMV will investigate any person who has been involved in a crash causing death or who has been involved in three or more crashes within a 12-month period, regardless of whether the accidents were medically related. If the driver is reexamined, medical information may be requested, if appropriate, to determine whether a condition contributed to the crashes. The length of time required for a reexamination may vary, depending on whether medical information is needed to make a final decision. If the evidence warrants, an immediate suspension can be taken within days.[20]

California has an MAB, but it is currently inactive. The MAB is only reactivated when revisions to the DMV's medical evaluation guidelines are necessary. MAB members do not review individual cases. Nonmedical administrative personnel in the DMV's Driver Safety Branch evaluate all medically related referrals. The staff, who may review these medically related referrals, consists of 165 driver safety hearing officers, 62 driver safety managers (former hearing officers with extensive experience), and 22 motor vehicle technicians. Hearing safety officers undergo 3 weeks of training and are given a resource book of "Physical and Mental Contacts" to help them evaluate referrals. Motor vehicle technicians receive less training because they are not as involved in the driver evaluation process. Driver Safety Branch personnel are also provided with regulatory guidelines on which to base licensing decisions.

Drivers who are referred to the DMV may be sent a Driver Medical Questionnaire and a Driver Medical Evaluation form. The Driver Medical Questionnaire may be completed by the driver and the Driver Medical Evaluation by a physician; both forms must be returned to the DMV. The driver's case is assigned to a hearing officer, who reviews the driver's medical information, driving record, and reexamination results. The hearing officer then makes a final licensing decision. Driver safety managers and motor vehicle technicians also review medical forms as part of their duties.

Drivers who are found during reexamination to have a cognitive or physical impairment are given the Supplemental Driver Performance Evaluation (SDPE). The SDPE is also given to drivers who are referred for a "priority reexamination." The SDPE is an on-the-road test that is designed to evaluate a driver's cognitive and physical ability to drive a motor vehicle safely. The cognitive skills that are tested include working memory, spatial memory, and divided and selective attention. Drivers can also opt to take the Area Driving Performance Evaluation (ADPE) test if they wish only to drive in a restricted area, such as near home, the grocery store, or the doctor's office. The driver must demonstrate that he or she can safely drive on all location trips.

Drivers whose licenses have been suspended, restricted, or revoked for a medical or functional impairment may appeal the decision by requesting a hearing. They may be represented by an attorney, review and cross-examine DMV witnesses, present evidence and relevant witnesses, or testify on their own behalf. Individuals who disagree with the hearing officer's decision may request a departmental review of the decision and may appeal the decision in superior court. The DMV currently does not provide counseling or

[20] Susan Bradley, Manager III, Licensing and Operations Division, California Department of Motor Vehicles, e-mail correspondence, November 11, 2003.

information to drivers who have lost all or some of their driving privileges due to a medical condition. However, as part of a pilot study, an educational package is being mailed to a sample of older drivers who have had a traffic conviction or crash within the past 18 months. The educational package includes information on medication and driving, collision avoidance strategies, support groups, and California DMV requirements and procedures.

Wisconsin

In Wisconsin, the Division of Motor Vehicles is in charge of driver's licenses. Applicants renewing[21] or obtaining their licenses for the first time are required to state whether they have, in the past year, experienced a loss of consciousness or muscle control caused by any of the following conditions: a brain or head injury, diabetes, stroke, seizure disorder, mental disorder, muscle or nerve disorder, or heart or lung ailment. Applicants who self-report a medical impairment must have their physicians complete a medical examination report and return the report to the DMV within 30 days.

License examiners are formally trained to use information gathered from inquiries into an applicant's functional ability to drive, information from a completed license application form, information from a previous driving record, and observations of motor and cognitive ability.[22] Applicants who do not meet the standards detailed in the *Driver Licensing Manual* may be required to undergo a driving skills test or evaluation, file a medical report, or both.[23]

The Wisconsin DMV also accepts referrals from healthcare personnel, law enforcement officials, private citizens, and the courts. Over 60 percent of all referrals are from law enforcement officials, and about 10 percent are from physicians.[24] Wisconsin does not have a mandatory physician reporting law, but physicians are encouraged to report unsafe drivers. As mentioned previously, the Wisconsin DMV mails brochures on its reporting laws yearly to physicians in the State to keep them informed. Physicians who report drivers in good faith are immune from legal action by their patients. Law enforcement officials and private citizens can refer a potentially impaired driver to the DMV by filling out a "Driver Condition or Behavior Report." The DMV investigates all

[21] Driver's licenses are valid for 8 years. Licenses must be renewed in person, but can be renewed by mail if the applicant is temporarily out of the State.

[22] Examiners undergo 8 weeks of off-site classroom training for all licensing functions, in addition to on-the-job training, where they are on probation for the first year of service. The 8 hours of classroom training include medical conditions and physical functionality, based on Wisconsin's *Driver Licensing Manual*, Section 235, "Evaluating Medical Conditions or Disabilities." Specialized training is also provided to licensing personnel relating to older drivers.

[23] Section 235, "Evaluating Medical Conditions or Disabilities," of the *Driver Licensing Manual* details the functional standards that drivers must meet to obtain an unrestricted license in Wisconsin.

[24] Testimony of Ms. Jill Reeves, Program Supervisor for the Medical Review Unit of the Wisconsin Department of Transportation, NTSB hearing, *Medical Oversight of Noncommercial Drivers*, March 18-19, 2003.

reports received from private citizens to ensure that the referral was submitted in good cause and not with malicious intent.

When drivers are referred to the Wisconsin DMV via the Driver Condition or Behavior Report, they are sent a packet that contains the Medical Examination Report, to be completed by a physician. The Medical Examination Report inquires about a driver's condition, symptoms, treatment, medication, mental state, and psychomotor skills. It also asks whether the driver's skills should be retested or whether license privileges should be restricted or suspended/revoked.

Completed Driver Condition or Behavior Reports are sent to the Medical Review Section of the DMV, which usually acts upon the recommendations of the physician. The Medical Review Section, staffed by eight transportation customer service representatives[25] and one full-time registered nurse, processes over 38,000 reports a year.

If the Medical Review Section determines that a driver reexamination is needed, the driver is contacted to schedule a vision test, knowledge test, and a road test. The tests must be completed within 60 days, or the driver's license will be revoked. Road tests are examiner-directed and can be modified to evaluate a specific impairment. Particular attention is given to a driver's range of motion, reaction time, endurance, coordination, speed in operating/moving controls, strength inoperating controls, ability to cope with traffic, alertness, and ability to turn the head and body. Drivers who fail any part of the reexamination may take it again, but must surrender their licenses if they do not pass on the second attempt. Drivers may be given a limited-area driving test if a restricted license is requested.

Drivers whose driving privilege is curtailed or denied by the DMV may appeal the decision to the Wisconsin MRB. The MRB is comprised of 152 physicians who are volunteer consultants to the DMV. The medical specialties represented by MRB members include optometry, ophthalmology, cardiology, family practice, internal medicine, neurology, psychiatry, endocrinology, and psychiatry. All MRB members are volunteers who serve terms at their discretion. Members are immune from legal action, and their identities are anonymous. MRB records and deliberations are confidential although they may be admitted as evidence in judicial review proceedings of drivers who choose to appeal.

A portion of the Wisconsin MRB meets on a voluntary basis each month to discuss appeals. These meetings include three MRB members[26] and a DOT representative. The appealing driver may appear in person before the MRB or request a review by mail. The Medical Review Section takes into account recommendations of the MRB but is still responsible for the final licensing decision. In 2002, the Board reviewed 398 cases, of which 225 drivers were denied a license following review. Drivers who wish to appeal their cases further may ask for a judicial review.

[25] Transportation customer service representatives are nonmedical administrative staff, formally trained in driver medical standards and dedicated to medical review activities.

[26] Volunteers must be from one of the following disciplines: internal medicine, neurology, or psychiatry.

Wisconsin does provide counseling and information for drivers with functional impairments that limit or preclude driving privileges. A nurse consultant counsels drivers and caretakers on crises related to license denials or restrictions, explains the importance of health and driving, directs citizens to advocacy groups, and provides information about alternative transportation options.

Appendix H

American Automobile Association Basic Best Practices for Medical Advisory/Review Boards[1]

1. Every State should have a Medical Advisory Board/Medical Review Board.
2. The Medical Advisory Board should consist of physicians as well as other healthcare professionals. These professionals may include, *but are not limited to*: Occupational Therapists, Nurses, Gerontologists, and Physicians of diverse specialties.
3. The Medical Advisory Board should meet in person or by teleconference to advise on the State's medical review program.
4. The Medical Advisory Board should review cases to assist the Department of Motor Vehicles (DMV) in making an initial determination of fitness to drive for individuals who come to the attention of the medical review department as being potentially at risk (especially complex cases where administrative review is insufficient).
5. The Medical Advisory Board should have authority to recommend customized/restricted licenses to allow driving privileges under safe conditions (that is, daytime, speed restricted, or area restricted) when possible, instead of just revoking licenses altogether.
6. The Medical Advisory Board should have the authority to recommend periodic medical reexaminations and/or periodic road tests of drivers as needed, to ensure that a driver with a progressive medical condition has the capability to continue to drive safely.
7. Physicians and other professionals on the Medical Advisory Board should be financially compensated, rather than serving on a volunteer basis. (Ideally, physicians should be employed as DMV staff, but where this is not possible, Board members should be paid as consultants and compensated according to accepted hourly rates for the profession.)
8. Board members should be immune from liability from the individuals for whom they make licensing recommendations, and all healthcare professionals who report drivers in good faith should be immune from liability from their patients.

[1] These recommendations were developed in consultation with experts and following review of the *Summary of Medical Advisory Board Practices* based on the National Highway Traffic Safety Administration (NHTSA) and American Association of Motor Vehicle Administrators (AAMVA) survey of licensing agencies in the United States. NHTSA and AAMVA will publish the comprehensive report in fall 2004. Consult <http://www.aamva.org/drivers/drvProblemDriversMedicalAdvisoryBoardPractices.asp>.

9. Individual Board members should be able to review cases and make licensing recommendations (so that a Board member with the required expertise can make the decision) as opposed to requiring consensus by a panel of Board members (requiring a panel for all cases is less efficient and more costly). A panel of Board members can be utilized for more complex cases.
10. The Medical Advisory Board should develop medical guidelines for licensing in the State. (Ideally, States should work with health professionals to develop national medical guidelines using the American Medical Association (AMA) *Physician's Guide for Assessing and Counseling Older Drivers* as a starting point.)[2]

[2] AAMVA has a 3-year cooperative agreement project with NHTSA to develop recommended national medical guidelines. States and medical professionals will work together to produce guidelines that are medically sound, uniform and feasible for States to implement.

Appendix I

United We Ride Initiative

The table below describes the five components of the "United We Ride" initiative and their relation to the coordination options in U.S. Government Accountability Office (GAO) June 2003 report.

Component	Description	Related Coordination Options
Framework for Action	A tool States and communities can use to assess their coordination efforts and identify areas for improvement.	Provides additional coordination guidance to States and communities.
State Leadership Awards	Awards to recognize three to five States that have made significant progress in coordination; awards are to be presented at National Leadership Forum.	Recognizes successful State leadership efforts and encourages other States to coordinate.
National Leadership Forum on Human Services Transportation Coordination	Transportation and human service teams from each State were invited to participate in the February 2004 conference to highlight coordination successes, technical assistance programs, and peer advice.	Provides opportunities to demonstrate Federal and State leadership in coordination. Provides forum for interagency communication.
State Coordination Grants	Grants to address transportation coordination gaps and needs identified through the Framework for Action; States participating in the Forum are eligible to apply.	Provides financial incentives to encourage States to coordinate.
Help Along the Way	Technical assistance program; Federal departments and national organizations are working to coordinate existing technical assistance services and provide "hands-on" coordination assistance to States and communities (for example, the technical assistance "ambassadors").	Provides additional coordination guidance to States and communities.

Source: GAO analysis of information from the Department of Transportation, the Department of Health and Human Services, the Department of Labor, the Department of Education, the American Association of Retired Persons, the Community Transportation Association of America, and the National Council for Independent Living.

Appendix J

Sixteen Ranked Components From National Highway Traffic Safety Administration Survey[1]

The National Highway Traffic Safety Administration, American Association of Motor Vehicle Administrators, and TransAnalytics identified 64 medical oversight "best practice" elements in the *Summary of Medical Advisory Boards in the United States*.[2] Forty-five representatives from the 50 States and the District of Columbia assessed and ranked these "best practice" elements. Below are the rankings given to each element ("1" being most important), along with the rankings given to more general categories and components of medical oversight. The top 10 elements are shown in bold font.

Rank among 4 categories		Rank among 16 components		Rank among 64 elements	
1	Policies governing medical review activities	1	Comprehensiveness of criteria for licensure	**3**	**Standards for blackouts/seizures/losses of consciousness (includes mental disorders and dementia)**
				5	**Standards for vision**
				9	**Standards for medical conditions affecting multiple body systems**
				19	Standards for alcohol/substance abuse
		3	Nature/extent of DMV medical advisors mission	**2**	**Develop medical criteria/guidelines for licensing**
				13	Review individual cases
				39	Develop report forms
				45	Hear appeals
		4	Physician reporting responsibilities and protections	**4**	**Protection from tort action/immunity for reporting**
				12	Mandated by law for specified medical conditions
				24	Confidential

[1] 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,* contract DTNH22-02-P-05111, National Highway Traffic Safety Administration (2004).

[2] K.H. Lococo, *Summary of Medical Advisory Board Practices in the United States*, prepared for the National Highway Traffic Safety Administration by Transanalytics, contract DTNH22-02-P-0511 (2003).

Rank among 4 categories		Rank among 16 components		Rank among 64 elements	
				44	Sanctions for failure to report
		12	Due process for drivers referred for medical review	25	Road test
				41	No anonymous reports
				43	Follow up of reporting source to validate claim
				50	Appeal of departmental action
2	Process for identifying at-risk drivers	2	Use of external medical triggers for medical reviews	**1**	**Personal physician**
				6	**Vision care specialists**
				18	OT/driving evaluators
				31	Hospital discharges planners
		6	Extent of DMV testing for license renewal	11	Vision
				15	Road
				21	Functional screening
				30	Knowledge
		7	Use of external non-medical triggers for medical reviews	**8**	**Law enforcement/courts**
				17	Family
				22	Social services (includes geriatric evaluation)
				53	General public
		9	Use of internal triggers for medical reviews	26	Observations by counter staff
				27	Self-reports
				34	Driving history (points, crashes)
				54	Age
3	Case review procedures	5	Extent of DMV evaluation procedures	**7**	**Examination by personal physician**
				10	**Examination by medical specialist (such as a neurologist)**
				23	Driving evaluation (driver rehabilitation or driver training specialist (OT/CDRS, driving school)
				49	Clinical/laboratory testing
		8	Availability of options for preliminary disposition (determines path for evaluation)	14	DMV examination (may include vision, knowledge, and/or road)
				16	Request for and review of medical history

Rank among 4 categories		Rank among 16 components		Rank among 64 elements	
				28	Functional screening
				48	Interview (in-person or video)
		13	Availability of options for preliminary disposition (determines path for evaluation)	32	Assignment by nonmedical staff (administrative determination via procedure manual, checklist)
				35	Assignment by nonmedical staff (administrative determination via procedure manual, checklist)
				52	Hearing officer interview with driver
				58	Voluntary surrender
		14	Composition of medical advisory board	40	Paid consultants
				42	Voluntary consultants
				47	Part-time staff physicians
				51	Full-time DMV staff physicians
4	Options supporting continuing safe mobility	10	Availability of restrictions for license "customization"	20	Daylight/time of day
				36	Geographical (for example, radius of home, within city limits, not in city limits)
				37	Road class exclusion (for example, no freeways, no roads with speeds of 45 mph or greater)
				63	Specific routes of destinations
		11	Scope of DMV staff training	29	License examiner (to conduct specialized road tests)
				33	License examiners (to conduct functional screening)
				38	Counter staff (to recognize signs of functional impairment)
				56	Sensitivity training for issues relating to senior drivers and drivers with disabilities
		15	Breadth of outreach activities by DMV	46	Physician education
				57	Law enforcement training in signs of impairment
				61	Other agencies providing services to seniors
				62	Public awareness/injury prevention
		16	Type/extent of referrals for at-risk drivers	55	Retraining/"skills refresher"
				59	Remediation (to correct or ameliorate functional deficits)
				60	Alternative transportation
				64	Counseling (for adjustment to change in license or functional status)