U.S. Department
of Transportation
Federal Highway
Administration

CONFERENCE ON NEUROLOGICAL DISORDERS and COMMERCIAL DRIVERS

office of Motor Carriers
Washington, D.C. 20590

Pub. No. FHWA-MC-88442

July 1988

NOTICE

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the aata presented herein. The contents do not necessarily reflect the official policy of the Department of Transportation.

The United States Government does not endorse products or manufacturers. Trademarks or manufacturer's names appear herein only because they are considered essential to the objective of this document.

This report does not constitute a standard, specification, or regulation.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FHWA-MC-88-042		

4. Title and Subtitle

CONFERENCE ON NEUROLOGICAL DISORDERS AND COMMERCIAL DRIVERS

5. Report Date
July 1988

6. Performing Organization Code

8. Performing Organization Report No.

7. Author(s)
Harold E. Booker, M.D., et. al.

9. Performing Organization Name and Address
The Washington Consulting Group, Inc.
1625 Eye Street, N.W., Suite 214
Washington, D.C. 20006

10. Work Unit No. (TRAIS)

11. Contract or Grant No.
DTFH61-87-Z00011

13. Type of Report and Period Covered
Final Report
June 1987 - August 1988

12. Sponsoring Agency Name and Address
U.S. Department of Transportation
Federal-Highway Administration
Office of Motor Carriers
Washington, D.C. 20590

14. Sponsoring Agency Code

15. Supplementary Notes

Prepared in cooperation with Prospect Associates, Ltd.

This document represents the outcome of a conference sponsored by the Office of Motor Carriers to review the current medical standards covering neurological disease. The standard (FHWA regulations, 49 C.F.R. section 391.41(b)(7,8,9) as established in 1971 and revised in 1983) permits qualification of individuals to drive a commercial motor vehicle if that person has no established medical history or clinical diagnosis of epilepsy, or any condition which is likely to cause loss of consciousness or the loss of ability to control a commercial vehicle, or rheumatic, arthritic, orthopedic, muscular, neuromuscular, or vascular disease such that the condition interferes with his/her ability to safely control and operate a commercial vehicle.

During a two-day conference, neurology specialists, occupational health physicians, and motor carrier industry experts reviewed and proposed modifications to the neurological regulations and recommended test procedures and decision matrices designed to guide neurologic examinations. Since the U.S. Department of Transportation's neurological standards were adopted in the 1970's meeting participants considered over a decade of advances in the diagnosis, treatment, and rehabilitation of these conditions. Four task forces discussed and prepared reports on the following topics: Static Neurological Conditions, Progressive Neurological Conditions, Episodic Neurological Conditions I, and Episodic Neurological Conditions II. These task force reports will assist the Department in creating a systematic and scientific basis for updating the neurology standards.

17. Key Words
-Epilepsy
-Convulsion
Anticonvulsants
-Neuromuscular Disease
-Seizure
-Central Nervous System Disease
-Motor Vehicle
-Traffic Accident
-Driver

18. Distribution Statement

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of pages	22. Price
unclassified	unclassified	79	

TABLE OF CONTENTS

CONFERENCE ON NEUROLOGICAL DISORDERS AND COMMERCIAL DRIVERS

EXECUTIVE SUMMARY

The Office of Motor Carriers (OMC), Federal Highway Administration (FHWA), U.S. Department of Transportation (DOT), sponsored a conference on April 7 and 8, 1988 to review the current medical standards for commercial motor vehicle drivers with neurological disorders. Conference participants numbered twenty-eight and included physicians and scientists experienced in the care of people with neurological disorders, and representatives from the motor carrier industry. The current standard (FHWA regulations, 49 C.F.R. section 391.41(b)(7,8.9) as established in 1971 and revised in 1983), permits qualification Of individuals to drive a commercial vehicle if that person has no established medical history Or clinical diagnosis of epilepsy, or any condition which is likely to cause loss of consciousness or the loss of ability to control a commercial vehicle, or rheumatic, arthritic, orthopedic, muscular, neuromuscular, or vascular disease such that the condition interferes with his/her ability to safely control and operate a commercial vehicle.

The administrative rule applied to the commercial driver with neurological conditions was reviewed in light of the many advances in the diagnosis and care of neurological conditions that have accrued since 1971. Four major categories of neurological conditions were carefully reviewed by four task forces, discussed at a plenary session, and following integration of all information presented, further discussed in-depth by members of the Steering Committee. The following summaries were prepared:

Executive Summarv--Static Neurological Conditions

Recommendations are made for cerebrovascular disease, head and spinal cord injury and static neuromuscular disease and peripheral neuropathy.

Cerebrovascular Disease

Transient Ischemic Attacks (TIAs) are associated with a high rate of recurrence during the first year. Therefore, this automatically precludes commercial driving for one year. After one year certification would depend upon the interval history, general health, neurological examination, and compliance with the treatment program.

Transient Global Amnesia is generally benign. If a thorough neurological examination including electroencephalography and psychiatric tests are normal, the commercial driver should be permitted to drive.

Embolic or Thrombotic Infarction should, as a minimum have the same limitations as TIA. Seizure limitations as outlined by Task Force IV should be added. Anticoagulant therapy and medications that suppress the nervous system are disqualifying.

Intracerebral and Subarachoid Hemorrhage due to operated aneurysm or arteriovenous malformation (AVM) requires the in-depth examination described for infarction. In addition, a patient with an aneurysm or AVM that has ruptured and has not been surgically repaired should not be permitted to drive commercial vehicles.

Head Injury

Head injury requires the implementation of the seizure limitations recommended by the Task Force IV Report: Episodic Neurological Conditions. In addition, complete physical examination, neurological examination and neuropsychological testing must be normal before permission is given to operate the vehicle.

Spinal Cord Injury

Spinal cord injury resulting in paraplegia is disqualifying. Any weakness should be reevaluated to determine whether the deficit interferes with commercial drivers.

Static Neuromuscular Disease and Periopheral Neuropathy

These conditions are discussed in detail by Task Force **II:** Progressive Neurological Disorders. For those that produce static dysfunction, permission to operate a commercial vehicle should depend upon demonstrated ability as determined by examination.

Any driver with a deficit that requires special evaluation and screening by this method should have annual recertification.

Executive Summary--Progressive Neurological Conditions

The task force felt that the current medical examination for commercial driving certification was inadequate for assessing neurological conditions. The task force recommends tha! any applicant having neurologic signs or symptoms be referred to a neurologist for more detailed and qualified evaluation of neurologic status in relation to certification for driving commercial vehicles. This specialist would be provided guidelines for evaluating certification of applicants. For progressive neurologic disorders we recommend two categories for disqualification. The first category includes chronic diseases that would unequivocally indicate disqualification*:

* Dementia.
* Motor neuron disease.
* Malignant tumors of the central nervous system.
* Huntington's disease.
* Wilson's disease.

The second category includes diseases for which disqualification would be likely, however, appeal of this decision under specified conditions would be possible:

* Multiple sclerosis.
* Peripheral neuropathies.

*Appeal would be possible only for changes in and/or verification of diagnosis.

- Myopathies.
- Neuromuscular junction disorders.
- Benign brain tumors.
- Dyskinesias.
- Treatable dementias.
- Cerebellar ataxies.

Appeal would include evaluation by a board certified or eligible neurologist, neurosurgeon, or physiatrist Specific evaluation criteria developed by the task force include successful completion of neurologic history and examination, driving skills testing or equivalent functional testing. If an individual is certified after this process he/she would be required to have an on-the-road driving test. For individuals who have successfully appealed, an annual evaluation would be required.

Executive Summaw--Episodic Neurological Conditions I

The specific aim of the task force was to identify those types of headache, vertigo, and dizziness which will impair cognitive abilities and judgment, attention and concentration and sensory or motor function sufficient to render the driving of a commercial vehicle unsafe.

Headache

In diagnosing headache on the basis of history alone, the physician is faced with variation in the ability of the patient to accurately and truthfully describe the symptom, compounded by an occasional unwillingness. The headache types that are at issue in matters of safety include 'migraine, tension-type headache, cluster headache, post traumatic head injury syndrome, headache associated with substances or their withdrawal, cranial neuralgias, and atypical facial pain. These diagnoses include chronic or chronic recurring headache.

There are many unavoidable environmental factors associated with commercial driving which are well-known precipitators of headache syndromes. These include abrupt duty hour changes, sleep deprivation, irregular work/rest cycles, temperature and weather extremes, long trips without regular meals, tight delivery schedules, inroute delays, night driving, the stress of responsibility of passenger carriage, accumulative fatigue from long lay-overs without adequate rest, extra duty, and driving at peak hours.

Patients with headaches require a detailed historical evaluation before certification. Patients with episodic headache may require only temporary disqualification during periods when the headaches are likely to be frequent or require treatment. Other types of headache may require special evaluation and consideration and may warrant automatic disqualification, e.g., chronic cluster, migraine with neurological deficit, and cranial neuralgia. In determining the disposition of headache patients, close attention must be paid to the fact that head pain may be of the chronicity and severity to cause impaired attention and judgment. Certain headache disorders may be accompanied by agitation, disorientation, confusion, inattention, memory loss, receptive loss, and mood disorder. Episodic and

transient visual disturbance, nausea, vomiting, motor and sensory deficits may also accompany certain headache.

When, in determining an individual's fitness to drive. headache and accompaniments of headache are judged chronically or periodically incapacitating, disqualification may be warranted. The chronic or periodic use of certain headache medications may warrant disqualification. These include:

- Sedatives, e.g., Benzodiazaoine.
- Barbiturates, e.g., Phenobarbital.
- Antihistamines, e.g., Cyproheptadine
- Analgesics including:

  -- Codeine oreoarations.
  --Prooxvohene oreoarations.
  --Analgesic combinations containing sedatives or antihistamines.
  --Narcotics.
  --Phenothiazines.

Special consideration should be given to the possible Side effects of beta-blockers, antidepressants, and anticonvulsants. These side effects include depressed mood, cognitive deficits, decreased reflex responses, unsteadiness, and sedation.

Vertino and Dizziness

Multiple conditions may affect eqtiilibrium or balance resulting in acute incapacitation or varying degrees of chronic spatial disorientation in a commercial driver.

Common vertigo syndromes and their relationship to certification:

- Benign Positional Vertigo--This condition is disqualifying for driving a commercial vehicle. A driver can then be considered for recertification after being symptom-free for two months.
- Acute and Chronic Peripheral Vestibulooathy--These conditions are disqualifying for driving a commercial vehicle. A driver can then be considered for recertification after being symptom-free for two months.
- Meniere's Disease--The condition is of sufficient severity and unpredictability such that the diagnosis would render the individual unqualified for driving a commercial vehicle.
- Labvrinthine Fistula--The presence of an untreated fistula would render the individual unqualified for driving a commercial vehicle.
- Nonfunctioning Labyrinths--would produce a degree of potential disorientation Sufficient to render the individual unqualified for driving a commercial vehicle.

The most common medications used to treat vertigo are antihistamines (e.g., meclizine), benzodiazapines (e.g., diazepam) or phenothiarines (e.g., promethazine). The requirement for

either benzodiazapines or phenothiazines for the treatment of vertigo would render the individual unqualified for driving a commercial vehicle. Special consideration should be given to the possible sedative side effects of antihistamines; the physician must determine if these drugs are producing sedation in an individual driver.

Executive Summary--Episodic Neurological Conditions II

It would be easy to say that anyone who will ever experience an episode of loss of consciousness while driving should be excluded from driving. This in fact has been a stance taken for some occupations (as commercial driving) when the episode in question has been considered to have been related to the occurrence of a seizure or to a history of epilepsy. The end result of such regulation would be to limit driving privileges to three groups of people. The first group would be the 10 percent of the population who might be expected to experience an episode of loss of consciousness due to a seizure. The second group is the 30 percent of the population who will experience an episode of loss of consciousness for other reasons. The third group includes the large body of individuals who have some characteristic or "risk factor" which places them at increased risk to experience an alteration of consciousness. Some balance between individual rights and the general good must be attempted; unfortunately data to allow informed judgments regarding this balance are few.

Recommendations for Situations in Which Seizures or Epilepsy are Known to Have Occurred

History of Eoileosv

Diaenosed Eoileosv Taking Anticonvulsant Medication With Uncontrolled Seizures--In this situation, individuals are at high risk for further episodes and should not be considered for licensure.

Diaenosed Epilepsy Taking Anticonvulsant Medications With Seizures Controlled--The majority of individuals with a diagnosis of epilepsy (about 75 percent) will become totally controlled. Risk for further seizures may be very low in such individuals, possibly at or even below baseline rates for newly developing seizures. Nonetheless, these individuals are exposed to conditions previously discussed which in and of themselves increase the risk for seizures in seizure-prone individuals. In addition, the inconsistent access to medical care may cause difficulty in the evaluation of acute problems which may increase the risk for seizure occurrence, and the acquisition of replacement anticonvulsant medication if drugs are lost or forgotten, place such individuals at some increase in risk. These individuals should not be authorized to drive commercial vehicles.

Diagnosed Epilepsy Seizure-Free a d Off Medication--It would seem that individuals with a history of epilepsy off anticonvulsant medication and seizure-free for 10 years should not be restricted from obtaining a license to operate a commercial vehicle.

Special factors may allow future identification of individuals with acceptable risk for further seizures, permitting shorter seizure-free intervals. Information allowing specific recommendations is not presently available, and further data collection is needed on this condition.

Single Unorovoked Seizures

While individuals 'who experience a single unprovoked seizure do not have epilepsy per se, they are clearly at a higher risk to have further seizures. Individuals with a single unprovoked seizure, seizure-free for a S-year period off medications, should not be restricted from obtaining a license to operate a commercial vehicle.

Acute Symptomatic Seizures

Febrile Seizure%--The history of the occurrence of febrile seizures in childhood should not be a restriction to licensing to operate a commercial vehicle.

Acute Seizures in the Presence of Systemic Metabolic Illness--Seizures per se in the context of a systemic metabolic dysfunction should not be a primary reason for restriction from obtaining a license to operate a commercial vehicle. Any restrictions should be based upon the risk of recurrence of the primary condition.

Risk Factors for Unprovoked Seizures

There are several conditions following in which rhe risk for unprovoked seizures is sufficiently high, even in the absence of the occurrence of acute seizures, that licensure should be restricted for variable periods following the insults.

Head Injury

- Severe head injury--defined as injuries involving penetration of the dura such as military injuries due to missiles, and injuries associated with loss of consciousness of more than 24 hours. Based upon the risk for unprovoked seizures alone, it would seem that such individuals should not be considered qualified to obtain a license to operate a commercial vehicle at any time.

  NOTE: Surgical procedures involving dural penetration have a risk for subsequent epilepsy similar to that of severe head trauma. Individuals who have undergone such procedures, including those who have had surgery for epilepsy, should not be considered eligible for licensure.

- Moderate head injury--defined as an injury associated with loss of consciousness for greater than 30 minutes but less than 24 hours and without dural penetration. With head trauma of this severity and early seizures, a seizure-free period of 5 years off anriconvulsant medication should be required prior to an individual being considered qualified to obtain a license to operate a commercial vehicle. Without early seizures, a 2-year. seizure-free period off anticonvulsant medications should be required for such individuals, after which time they should be considered qualified to obtain a license to operate a commercial vehicle.

- Mild head injury--defined as injuries with no dural penetration and with loss of consciousness less than 30 minutes. In the absence of an early seizure there should, therefore, be no restrictions to obtain a license to. operate a commercial vehicle placed upon such individuals. For this group with mild head injury and early Seizures, the two year, seizure-free, off medication rule should apply.

Cerebrovascular Disease

0 Cerebrovascular disease--Unprovoked seizures will occur in 16 percent of these individuals within the next 5 years. Individuals with fixed deficit or examination following an occluding cerebrovascular event should not be considered qualified to obtain a license to operate a commercial vehicle for 5 years. There is no sound data regarding risks following intracerebral or subarachnoid hemorrhage but it must be assumed that risks will be similar, and similar recommendations would apply.

Infections of the Central Nervous System

0 Aseptic meningitis--is not associated with any increase in risk for subsequent unprovoked seizures. No restrictions should be considered for such individuals and they should be considered qualified to obtain a license to operate a commercial vehicle.

0 Bacterial meningitis--For those with bacterial meningitis without early seizures, individuals should be considered qualified to obtain a license to operate a commercial vehicle after a 1 year seizure-free period off anticonvulsant medication. For those with bacterial meningitis and early seizures, such individuals should be considered qualified to obtain a license to operate a commercial vehicle after a five year seizure-free interval off anticonvulsant medication.

0 Viral encephalitis--Without early seizures, such individuals should be considered qualified to obtain a license to operate a commercial vehicle after a one year seizure-free period off anticonvulsant medication.

In those with encephalitis and early seizures, individuals should not be considered qualified to obtain a license to operate a commercial vehicle for the first 10 years following such an infection.

Sleep Disorders and Interstate Driving

Regarding interstate commercial driving regulations, we are concerned mainly with those sleep disturbances which cause excessive daytime somnolence (EDS) These disorders may be classified broadly into two categories(l):

o Transient disorders causing EDS.

0 Persistent or chronic sleep disorders causing EDS. Persistent or chronic sleep disorders can be enumerated as follows:

--Sleep apnea syndrome.
--Narcolepsy syndrome.
--Primary alveolar hypoventilation syndrome (idiopathic).
--Central or secondary alveolar hypoventilation syndrome which is secondary to a variety of acute and progressive neurological diseases causing EDS.
--Idiopathic CNS hypersomnolence.
--Hypersomnolence (EDS) secondary to medical or non-neurological causes (metabolic, toxic, or systemic diseases).
--Restless legs syndrome (RLS) associated with EDS or RLS-DOES (disorder of excessive somnolence) syndrome associated usually with periodic movements of sleep.

--Disorders of sleep-wake cycles.
--Hypersomnolence (EDS) secondary to psychiatric disorders (major or minor depressive illness or schizophrenia).
--Periodic hypersomnolence.

The two most common causes of EDS are the sleep apnea syndrome and the narcolepsy; these two constitute about 70 percent of cases of EDS.

Guidelines for Patients with Narcolepsy Syndrome--Narcolepsy is generally a life-long condition although the sleep attacks can be shortened or reduced in number by pharmacologic treatment in some patients. But these drugs also have other side effects which generally do not control the sleep attacks completely. Patients with narcolepsy syndrome should not, therefore, be allowed to participate in interstate driving.

Guidelines for Patients with Sleep Apnea Syndrome--The patients with sleep apnea syndrome having symptoms of excessive daytime somnolence cannot take part in interstate driving, because they likely will be involved in hazardous driving and accidents resulting from sleepiness. Even if these patients do not have the sleep attacks, they suffer from daytime fatigue and tiredness. These symptoms will be compounded by the natural fatigue and monotony associated with the long hours of driving, thus causing increased vulnerability to accidents. Therefore, those patients who are not on any treatment and are suffering from symptoms related to EDS should not be allowed to participate in interstate driving.

Those patients with sleep apnea syndrome whose symptoms (e.g., EDS, fatigue etc.) can be controlled by surgical treatment, e.g., permanent tracheostomy, may be permitted to drive after 3 month period free of symptoms, provided there is constant medical supervision. Laboratory studies (e.g., polysomnographic and multiple sleep latency tests) must be performed to document absence of EDS and sleep apnea.

Guidelines for Idiopathic CNS Hvoersomnolence and Primary (Idippathic) Alveolar Hvooventilation Syndrome--These patients should not be allowed to drive a commercial vehicle.

Guidelines for the Patients With RLS-DOES Syndrome--These patients also should not participate in commercial driving.

Guidelines for Patients with Hypersomnolence Due to Acute and Progressive Neurological or Systematic Medical Conditions and Psychiatric Disturbances--Recommendations for these individuals should be determined by the underlying primary conditions causing EDS. In general these patients should not be allowed to paricipate in interstate driving.

General Recommeodationf

In developing specific recommendations relating to neurologic disease, the conferees had to deal with several general problems that, although beyond our specific charge, nevertheless will effect the implementation of our specific recommendations. The same issues would appear to relate to implementation of the recommendations of all other conferences. Consequently, we have made several general recommendations as discussed in the preface to our main report. Here we would call attention to one general recommendation:

Given the rapid and accelerating pace of change in the art and science of medicine. it is imperative that the FHWA have a mechanism for timely, even ongoing review and revision of its regulations relating to medical criteria for qualification and disqualification. We recommend the establishment of a standing, multidisciplinary Medical Advisory Group to assist the FHWA in this task. The group should consist of representatives of each of the major medical disciplines as well as representatives from the industry and experts on traffic safety. The group would also function to insure standardization of the regulations arising from recommendations. The initial function of the group would be to integrate and standardize any regulations arising from recommendations of the general independent conferences.

Finally, in order to effectively implement many of our specific recommendations - as well as those from other conferences . it would be necessary to revise the instructions and examination forms provided to the certifying physicians.

PREFACE

This document is prepared to specifically address qualifying criteria for the safer driving of commercial motor vehicles by drivers with neurological disorders. Safe and effective operation of a commercial vehicle requires high levels of physical strength, skill, and coordination. Equally important is the ability to sustain a high level of vigilance and attention and to react quickly. Further, the driver must maintain high levels of performance over long periods, under adverse physiologic, psychologic, and environmental conditions. Because neurologic diseases can impair performance in any and all of the critical areas, they can pose real and potential hazards for driving. The tasks for the Conference was to make recommendations to the FHWA to assist in promulgating regulations pertaining to medical certification of commercial drivers who might have a neurologic disease.

In approaching this task, three general categories of risk were identified. They are:

- The risk of the disease itself--These are symptoms and/or disturbances in performance that are an integral part of the disease. The disturbances can be physical, mental, or behavioral.

- The risk of recurrence and/or complications--Many diseases initially present as short-lived, reversible episodes (e.g., TIA, Meniere's Disease, MS, etc.) but carry a very high risk for recurrence. In other cases, although the primary disease itself has remitted (or been controlled) there is a high risk for complications, particularly seizures. Either recurrences or complications can occur suddenly without warning. The risk is generally highest in the first one or two years but can persist for many years.

- The risk of therapy--Many therapeutic interventions, particularly medications, can impair performance to the degree that driving would be hazardous.

Four task forces addressed the risks associated with static, progressive, and episodic disorders. Wherever possible, the degree of risk was based upon existing nosologic and epidemiologic data. Where valid data were not available, a consensus was sought based upon the participants' experience, expertise, and judgment.

The overriding concern in developing the specific recommendations was safety for both the general public and the driver, using primarily a "worst case scenario." The second concern was fairness or equity, recognizing that a "worst case" approach could occasionally penalize a driver unfairly. Consequently, appeal mechanisms have been recommended where appropriate.

Guidelines for Examining Physicians

Recognizing the complexity of the task facing the non-neurologist physician in evaluating applicants who may have neurologic disease, we also developed a set of guidelines for the initial evaluation.

The physician examining applicants for certification as commercial drivers faces a formidable task. First he/she must establish a diagnosis for any neurologic disease (or any other type of disease) that may exist. Because certain disorders categorically disqualify applicants, the diagnosis must be made with reasonable clinical certainty. The medical and economic consequences of decertification can be catastrophic for the driver and would be

tragic if the decertification was based upon an erroneous diagnosis. Because the diagnosis of some neurologic diseases can be difficult, even for the neurologist, we recommend that any decertification can be challenged on the basis of the possibility of an incorrect diagnosis. The burden should be upon the driver and must include an evaluation by the appropriate specialist. In most cases this will be a neurologist, but may, in some cases, be a neurosurgeon.

Patients with the same nosologic diagnosis, however, do not necessarily have the same functional impairment. Thus, when the diagnosis itself is not categorically disqualifying, the physician must evaluate the type and degree of impairment or disability that is present. Mental and behavioral deficits are just as important in this regard as are purely physical ones and must be evaluated. Finally, the risk for recurrence/complication and the risk of treatment must be evaluated. Because this can be difficult in many cases, even for the specialist, we offer the following guidelines for the initial evaluation.

Screening Mental and Behavioral Impairments

Neurologic diseases may result in chronic impairments of mental function that affect arousal, reaction time, memory, language, and visual perception. These conditions are important to characterize because they disturb the ability to drive safely. The presence of any of the following conditions should alert the interviewing physician to the possibility of accompanying mental impairment which might reduce driving abilities. These conditions include: structural damage caused by cerebrovascular disease; intracranial tumors; "hydrocephalus"; head injuries and previous brain surgery; chronic CNS infections; demyelinating and degenerative disorders during "plateau" phases; extrapyramidal disorders including Parkinsonian syndromes and Huntington's disease; long-standing and poorly controlled seizure disorders; chronic substance abuse including alcohol; metabolic abnormalities and nutritional deficiencies; personality and major psychiatric disorders of thought or mood; and even uncorrected hearing loss. This list of diagnoses is not meant to be exhaustive.

Serious cognitive impairments should be screened by a medical interview and examination. The following important factors of mental performance should be addressed as an index of adequate mental function: 1) orientation to time, place, and personal information; 2) verbal and non-verbal intellect; 3) visual and verbal memory; 4) visuoperceptive abilities including visual resolution, fields, and visuospatial performance; 5) language ability including ability to understand, repeat, and read.

During a screening encounter the practitioner should: 1) note the comportment and level of alertness, comprehension of questions, and insightfulness of responses; 2) have the applicant read a standard paragraph or sentence aloud and state what it means; 3) have the applicant spontaneously write a sentence; 4) have the applicant copy a standard complex geometric figure; 5) administer a standard "mini-mental status" examination; 6) test visual acuity with the Snellen chart; 7) assess visual fields separately in each ocular quadrant by finger counting to confrontation; 8) look for evidence of hemineglect or sensory stimuli by double simultaneous stimulation in the visual hemifields and in the tactile modality. Before this examination is begun it should be determined that the driver is not fatigued.

Screening for Physical Impairment

The initial step in evaluating physical impairments (a standard neurologic exam) will have been done as part of the effort necessary to establish diagnosis. For driving

evaluation, particular importance is attached to:

- Cranial nerves--visual fields, presence of a hemianopsia or central scotopia, denial of any field, diplopia or osciolopsia; significant hearing deficits.

- Sensory--pain, paraesthesias or dysaesthesias as these can distract the drivers attention; any hypesthesia or anaesthesia likely to impair fine skilled use of the hands, arms, or legs; disturbances in proprioreception (position sense, vibration).

- Motor--strength, range of motion, reflexes, skill, dexterity and reaction time; involuntary movements or alterations in tone (spasticity, rigidity); gait (normal and tandem).

The procedures of a standard neurologic examination, however, have been developed and are designed more toward assisting in making a diagnosis than toward evaluation of the degree of functional impairment. They have never been validated or standardized for this purpose. The standard exam should be supplemented by a few more operationally oriented observations.

The ability to maintain strength/performance is as important as simple strength--evaluation should include testing of repeated and/or sustained performance.

A sphygmomanometer can be used as a screening dynamonatar for grip by having the applicant repeatedly squeeze the inflated cuff while recording the maximum deflection on the gauge. However, the fatigue present in many neuromuscular disorders is often seen primarily in more proximal or limb/girdle muscles. A simple test for the lower extremities would have the applicant step up on and down off a chair three times rapidly with each leg. The arm can be evaluated by repeated testing of elbow flexion//extension and shoulder abduction against strong resistance.

The applicant should simulate movements involved in driving, e.g., rotation of the outstretched arms against resistance as if turning a large steering wheel, movement of the legs in braking and clutching, etc. Postural stability can be assessed by manually displacing the applicants arms and trunk while seated and standing. The applicant should be able to resist and/or rapidly correct any displacement.

As a final measure, when the results are equivocal, the applicant can be required to pass a behind the wheel driving test. Such testing is more likely to be predictive of one's actual ability to drive than are the results of the "medical" tests.

Disqualifying

The presence or even a history of any of the following would disqualify an applicant: documentation of a legal declaration of incompetence; any major psychiatric disorder; any aphasia including alexia; dementia; a hemianopsia or hemineglect of vision; diplopia or oscillopsia; any topographic disorientation including hemineglect, right-left disorientation or constriction apraxia (inability to draw or copy complex geometric figures); any amnestic syndrome; any frontal lobe disorder; chronic cluster headache; migraine with neurological deficit; cranial neuralgia; Meniere's disease; labyrinthine fistula; and non-functioning labyrinth.

Whenever there is doubt over any of the above, the applicant should be referred for

examination by a neurologist* to include evaluation by standardized neuropsychological procedures, The same procedure would be required should an applicant appeal disqualification for any of the above reasons.

General Recommendations

We recognize that not all of the specific recommendations presented can be immediately implemented within the existing regulatory framework. Nevertheless, we believe they are as valid as can be achieved by a consensus process, and ultimately will be necessary if the goals of insuring safety, providing for equity, and maintaining the well being of the industry are to be attained. Consequently, we have made several general recommendations for consideration by the Office of Motor Carriers in addition to our specific recommendations concerning neurological disease.

The conferees were seriously concerned that several general issues, while beyond our specific charge to address neurological illness, nevertheless operate to limit the effectiveness of our specific recommendations and impede their application. These same issues would apply (in varying degrees) to the recommendations of most if not all other medical conferences. We, therefore, make the following general recommendations.

1. Timeliness of Review

Biomedical knowledge is increasing at an exponential rate, so much so that at least half of what is known today will be obsolete within 2 to 4 years. Review and revision of the medical regulations every decade or less clearly does not reflect this reality.

Recommendation 1

The FHWA should develop a mechanism for more timely review. A multidisciplinary standing Medical Advisory Group, including representations from the industry and its drivers, would seem an appropriate mechanism.

2. Validitv

a. The regulations should be based upon reliable and valid empirical data, not a consensus of opinion, no matter how expert or well intentioned. The current system does not permit the collection of the needed data as neither the examining physician, the employer, or the driver is required to file the results of the medical exam with the FHWA.

Recommendation 2(a)

The FHWA should design and implement studies to establish objective, quantitative definitions of the strength, skills, and abilities required for the various tasks Of commercial drivers. At the same time it should design and implement prospective studies to determine the impact of specific illnesses upon performance. The Medical Advisory Group could advise/assist in this activity. Requiring that the qualification examination results be filed with the FHWA would go a long way toward collecting much of the needed data.

*Board certified or eligible neurologist or neurosurgeon.

b. The methodology for decision making in clinical medicine has been developed and is primarily designed to diagnose disease and guide its treatment. While this nethodology may prove satisfactory for the identification of many diseases and/or disabilities that categorically preclude operation of a commercial vehicle, it does not lend itself well to other situations that are less obvious. Without valid objective methods to determine actual fitness, the medical opinion in such situations can at best only be arbitrary. We found this a frequent problem in our deliberations and strongly suspect it to be true for other medical panels. We do not believe this is appropriate or equitable. In our opinion, the actual ability of many applicants to safely and effectively drive is not determined by medical tests or an arbitrary decision by a physician but by actual performance behind the wheel.

Recommendation 2(b)

The FHWA should develop a mechanism to provide for behind-the-wheel testing of applicants who have disabilities and/or diseases that do not categorically preclude driving but that nevertheless raise concern or questions. This would include applicants initially denied under our specific recommendations but who appeal and successfully pass the medical portion of the appeal process. This process would also provide for systematic collection of data that would be important for future revision of the regulations.

c. The current regulations permit any licensed M.D. or D.O. to examine and qualify applicants. Few of these physicians will have had the opportunity to have become knowledgeable as to physical and mental demands placed upon commercial vehicle operation or the importance of the physicians' role in the regulatory process. Further, there is no readily available way for them to acquire this knowledge and no necessary motivation to do so. These factors, coupled with the fact that no valid objective standards exist, mean that the physicians' decisions will be arbitrary and unstandardized at best and may, at worst, be capricious or discriminatory..

Recommendation 2(c,1)

The FHWA should develop a mechanism to facilitate education of' the certifying physicians. A concise, simplified, education pamphlet along with a set of guidelines (algorithm) for evaluating various categories of illness is one possible solution. At the same time, requiring physicians to report their examination results and qualifications decisions to the FHWA would go a long way toward motivating physicians to take advantage of the educational opportunity provided by the pamphlet.

Recommendation 2(c,2)

Examining physicians should be required to file the results of their examinations and qualifying decision with the FHWA.

d. Standardization

We strongly endorse the recent efforts of the FHWA and others to standardize enforcement of its regulations and certification standards across. all jurisdictions. Until this can be achieved, regulatory policy and its enforcement will not achieve the desired ends nor could it be expected to.

We are concerned here, however, with standardization of the regulations across disease categories as they relate to the acceptable degree of risk. We recognize that the acceptable degree'of risk on the public highway is a matter of public policy. Since the FHWA was not in a position to define the acceptable degree of risk as a matter of firm public policy, we were forced to use our own judgment. It was apparent that we were unwilling to accept the same degree of risk that other medical conferences have recommended. If all the medical conferences' recommendations were accepted and implemented as recommended the result would be arbitrary and clearly discriminatory against some applicants. Until such time as a firm public policy has been established, the acceptable degree of risk should at least be standardized for all applicants regardless of the disease or disability.

Recommendation 2(d)

The FHWA should standardize the regulations as to the acceptable degree of risk regardless of the disease or disability involved. The Medical Advisory Board recommended above, could assist/advise the FHWA in this effort.

3. Enforcement

Enactment of our specific recommendations, or those of any other medical conference, will not insure safety, provide for equity, or promote the well being of the industry unless they are enforced. In our opinion, the FHWA's current ability to enforce the regulations is limited in several ways. We have already addressed our concern over the role of the individual physician. Here we are concerned over the issues of illness developing in the interval between the required biennial examinations and the need for reexamination of driven involved in accidents.

Drivers will develop illnesses during the interval between the required biennial examinations. Even if the driver did not drive during the illness until "recovered," there are many illnesses (e.g., stroke, angina) that, even after recovery, present a major risk for recurrence or serious complications in the future. The risks are generally greatest in the first year after the initial event, and remain high during the second year.

In other cases, the illness, although ostensibly recovered, may leave the individual with an impairment that though undetectable to the individual or considered insignificant, may nevertheless limit the ability to drive safely.

One indication of the potential for such impairments would be the occurrence of accidents on the job. Under the current program drivers who develop such illnesses can continue to drive until the next scheduled biennial examination unless they report themselves. Given the often severe economic consequences of decertification a significant disincentive for such an action exists. Continuing to drive, however, places the public and the driver at considerable risk.

Recommendation 3

The FHWA should develop a mechanism for identification of drivers who develop diseases (as discussed above) between biennial examinations. The drivers should be decertified until they have successfully passed either the next biennial exam or an "ad hoc" exam between regulating scheduled exams. The Medical Advisory Group should

assist the FHWA in developing a list of appropriate index diseases that would trigger this action. The burden of reporting should be placed upon the driver and/or the driver's employer. The same requirements should be enacted for drivers involved in accidents (except for those clearly not due to any action or fault of the driver).

TASK FORCE I REPORT: STATIC NEUROLOGICAL CONDITIONS

Mark L. Dyken, M.D. (Chairman)
Harold P. Adams, Jr., M.D.
Michael H. Brooke, M.D.
Matthew Rizzo, M.D.
Harold F. Young, M.D.

CEREBROVASCULAR DISEASE

Cerebrovascular events may cause cognitive, judgment, attention. concentration, and/or motor and sensory impairments that can interfere with normal operation of a commercial vehicle. Patients with several types of cerebrovascular disease are also at risk for recurrent events that can occur without warnings. Patients with ischemic cerebrovascular disease are also at a high risk for acute cardiac events including myocardial infarction or sudden cardiac death. Recurrent cerebrovascular symptoms or cardiac events can occur with frequent sufficiency to cause concern about the safe operation of a commercial vehicle.

The common types of cerebrovascular disease are:

* Transient Ischemic Attack/Minor Stroke with minimal or no residual impairment.

* Embolic or Thrombotic Cerebral Infarction with moderate to major residual impairment:

* lntracerebral or Subarachnoid Hemorrhage.

Transient Ischemic Attack/Minor Stroke

A Transient Ischemic Attack (TIA) is an episode of focal neurological dysfunction reflecting inadequate blood supply to one portion of the brain. The attack usually lasts more than a few seconds but less than 20 minutes. In exceptional cases, the symptoms can persist up to 24 hours, Resolution of symptoms is complete. At the time of physical examination, the patient is usually normal. A minor stroke is a cerebrovascular episode in which the patient completely recovers over a period greater than 24 hours or in which minor neurological residuals remain. A TIA or minor stroke is an important warning of a potentially severe stroke. The risk is high whether the patient has had one or several attacks. The risk of recurrent events is particularly great during the first few weeks and months after the TIA or minor stroke. By one year after the minor stroke or TIA, the risk of recurrent cerebrovascular symptoms has declined to under 5 percent per year. All patients with a TIA or minor stroke should have an evaluation that includes a neurological examination. Medical or surgical options for treatment of these patients include aspirin, oral anticoagulants or carotid endarterectomy. The risk of recurrent strokes may be lowered by medical or surgical interventions.

Because the recurrence rate of ischemic neurological symptoms is highest during the first year after TIA or minor stroke, no commercial driver should be permitted to return to driving until he/she has had a careful evaluation of the event and a treatment plan has been outlined by a physician. The drivers should not return to commercial driving within one year of the stroke. A decision for clearance after one year will depend upon the interval history, general health, neurological examination and compliance with the treatment regimen. This clearance should be done by a neurologist. Any driver with a deficit that requires special evaluation and screening should be recertified annually. In the event that the driver is receiving drugs that have potentially high rates of complications, such as bleeding tendencies with oral anticoagulants, he/she should not return to driving. In the event, the driver is taking medications that have a potentially depressing effect on the nervous system, he/she should not be qualified to drive.

Transient global amnesia is an episode of amnesia and confusion that usually recovers completely with no permanent behavioral or cognitive sequelae. While transient global amnesia is a syndrome, it is generally considered to be a variety of cerebral ischemia It is

unusual for transient global amnesia to be a warning for a major, disabling stroke. Recurrence of amnestic spells is also rare. Patients with transient global amnesia should have a thorough neurological examination including electroencephalography and psychometric tests. If the results are normal, the commercial driver can return to duty. In the event of recurrences, the above evaluation should be repeated and a decision on driving status should be made.

Embolic or Thrombotic Cerebral Infarction

Embolic or thrombotic cerebral infarctions are the most common forms of cerebrovascular disease. Patients have a rapid to sudden onset of focal neurological signs in the anatomic distribution of one or more blood vessels of the brain. Permanent residuals, of more than a minor nature, remain. These events can result from atherosclerosis or other vasculopathies of the cerebral arteries or from migration of blood clots to these vessels from another site such as the heart. Drivers with a recent cerebral infarction warrant an evaluation to determine the source of the stroke and to establish the appropriate medical, surgical, and/or rehabilitation regimen, As in patients with a TIA or minor stroke, these persons are at increased risk of recurrent attacks. Restrictions on commercial driving should, at a minimum, be the same as those for patients with a TIA.

Patients with embolic or thrombotic cerebral infarction also will have residual intellectual or physical impairments severe enough to prevent a return to commercial driving. Fatigue, prolonged work and stress may exaggerate the neurological residuals from a stroke. Most recovery from a stroke will occur within one year of the event. Commercial drivers who wish to return to full work status should undergo a careful neurological examination at one year after the stroke that includes assessment of his/her cognitive abilities, judgment, attention, concentration, vision, physical strength, agility, and reaction time. If the neurological residuals from the cerebral infarction are sufficiently severe to interfere with any of the above, then the driver should not be allowed to return to commercial driving. Any driver with a deficit that requires special evaluation and screening should be recertified annually.

A number of ‘patients with an embolic or thrombotic cerebral infarction will have complicating seizures. The likelihood of seizure recurrence is associated with the location of the associated lesions. The risk is increased primarily in individuals with lesions associated with cortical or subcortical deficits. Individuals with strokes resulting in vascular lesions involving the cerebellum and brainstem are not at increased risk for seizure, thus, based on the probability of seizure recurrence, individuals with occlusive cerebral vascular disease with fixed deficits involving areas other than the cerebellum and brain stem should not be considered qualified to obtain a license to operate a commercial vehicle for a 5 year period following the episode. Evaluation by an appropriate specialist to confirm area of involvement may be required for waiver of this restriction.

Intracerebral or Subarachnoid Hemorrhage

Intracerebral hemorrhage results from bleeding into the substance of the brain and. subarachnoid hemorrhage reflects bleeding primarily into the spaces around the brain. Bleeding occurs as a result of a number of conditions including hypertension, hemorrhagic disorders, trauma, cerebral aneurysms, neoplasm. arteriovenous malformations, or degenerative or inflammatory vasculopathies. In approximately 20 percent of patients with subarachnoid hemorrhage, a cause will not be established. Patients with a history suggestive of either an intracerebral or subarachnoid hemorrhage should undergo an extensive evelua-

tion for the cause of bleeding. Subsequent treatment, including medications or surgery, will depend upon the etiology.

Patients with subarachnoid or intracerebral hemorrhage can have serious residual neurological deficits in cognitive abilities, judgment, attention, or physical skills. All these persons should have a neurological examination including psychometric testing at one year after the cerebrovascular event before being cleared for commercial driving. In particular, patients with aneurysmal subarachnoid hemorrhage should be carefully assessed for subtle residual impairments in cognitive skills. The return to commercial driving status in a person with a recent intracranial hemorrhage should be based on the same criteria as outlined for patients with cerebral infarctions. Further, a small number of patients with intracranial or subarachnoid hemorrhage, similar to conditions of embolic or thrombotic cerebral infarction, will have complicating seizures. Because there is no sound data regarding risk of seizure following intracranial or subarachnoid hemorrhage, it must be assumed that risks will be similar to those following embolic or thrombotic cerebral infarction. Thus, recommendations similar to those for infarction patients with complicating seizures also apply to hemorrhage patients with complicating seizures.

Drivers with an aneurysm or an arteriovenous malformation that has ruptured and that has not been surgically treated should not be cleared for commercial driving. Drivers whose aneurysm or arteriovenous malformation has been surgically treated can return to driving after one year as long as they have met all other standards set forth. Any driver with a deficit that requires special evaluation and screening should be recertified annually.

HEAD AND SPINAL CORD INJURY

Brain Injury

Traumatic Brain Injury (TBI) is an insult to the brain caused by an external physical force, that may produce a diminished or altered state of consciousness, including coma, resulting in long term impairment of cognitive or physical function. Disturbances of behavioral or emotional functioning may result in total or partial disability and/or psychological maladjustment. Many people with TBI suffer loss of memory and reasoning ability, speech and/or language problems, and exhibit emotional and behavioral problems that should prohibit a person with TBI from operating a commercial vehicle. The definition of mild and moderate head injury in the management of epilepsy in these conditions is as described in Task Force IV Report: Episodic Neurological Conditions II.

Therefore, a person who sustains a moderate or severe TBI should have the following evaluation performed by a specialist in neurological diseases following the injury and prior to returning to employment as a commercial driver:

* Complete physical examination.

* Complete neurological examination including neuro-ophthamology evaluation.

* Neuropsychological testing.

A TBI individual should not return to work unless each of the above examinations are normal. Any driver with a deficit that requires special evaluation and screening should be recertified annually.

Spinal Cord Injury

Patients with spinal cord injury resulting in paraplegia will not be qualified to work as a commercial driver. Any spinal cord injury resulting in weakness should be reevaluated to determine if the deficit interferes with the safe operation of a commercial vehicle. Any driver with a deficit that requires special evaluation and screening should be recertified annually.

NEUROMUSCULAR DISEASE AND PERIPHERAL NEUROPATHY

There are various acquired and traumatic causes of neuropathy. This includes such entities as brachial plexopathies, peroneal palsies, diabetic amyotrophies, poliomyelitis, Guillian-Barre syndrome. All produce localized weakness and all would require that the patient demonstrate the physical ability to perform the tasks associated with driving. Specific recommendations concerning eligibility of commercial driving among individuals with various neuromuscular disorders is discussed on pages 29-31 in the Task Force II Report: Progressive Neurological Conditions. Any driver with a deficit that requires special evaluation and screening should be recertified annually.

TASK FORCE II REPORT: PROGRESSIVE NEUROLOGICAL CONDITIONS

Stuart D. Cook, M.D. (Chairman)
Michael P. Alexander, M.D.
Joel A. DeLisa, M.D.
Roger Duvoisin, M.D.
Jerry Mendell, M.D..
William R. Shapiro, M.D.
Raymond Troiano, M.D.

Any individual with one of the progressive neurological disorders as defined here should be disqualified from driving a commercial vehicle, unless specifically granted a waiver by a medical or surgical neurologist or physiatrist upon determination that any neurological impairment will not interfere with his/her ability to control and safely operate such a vehicle.

DEMENTIA

Dementia is a progressive decline in mental functions usually, but not invariably, including memory. Impairments occur in various combinations from among several cognitive domains including memory, language, spatial functions, higher order perceptual functions, problem solving, judgment, behavior, and emotional function. Until the late stages there should be no disturbance in wakefulness or alertness; that is, dementia is not considered in the presence of lethargy, obtundation, or delirium.

Degenerative Diseases Typically Presenting as Dementia

- Alzheimer's disease: Presentation commonly includes memory loss, language disturbance (trouble finding words), spatial impairment, and personality change. Symptoms typically have been present for months to years before the diagnosis is made. There is no specific diagnostic test and the course of the disorder is highly variable.

- Pick's disease: Presentation is commonly dominated by personality or behavioral change, however, patients also may have major deficits in language or problem solving and judgment. Symptoms typically have been present for years before the diagnosis is made. Some experts believe that there is no clinical pattern that allows for specific diagnosis in life. There is no specific diagnostic test although computerized axial tomography (CT) may have a characteristic appearance. The course of this disorder is highly variable.

Other Degenerative Diseases That May Present as Dementia

- Parkinson's disease: Diagnosis is almost always already known when dementia becomes an issue.

- Huntington's disease: Diagnosis is usually known when dementia becomes apparent, but occasionally presents as dementia. Presentation includes memory loss and behavioral/emotional change. Diagnosis depends upon family history, characteristic movement disorder, and CT and Magnetic Resonance Imaging (MRI) pattern of atrophy.

- Progressive supranuclear palsy: Diagnosis is almost always already known when dementia appears.

Miscellaneous Diseases That May Present as Dementia

- Structural lesions of the brain: tumors, strokes (single or multiple), subdural hematomas, hydrocephalus, multiple sclerosis.

- Infectious diseases of the brain, not including the acute meningitis or encephalitis categories: Creutzfeldt-Jacob disease, AIDS, encephalitis, syphilis, the granulomatous

meningitis

* Metabolic or T affecting the brain, not including acute intoxications: chronic hepatic encephalopathy hypothyroidism and vitamin B12 deficiency; alcoholism, including chronic Korsakoffs syndrome, presence of organic solvents or heavy metals; medications such as sedatives, tranquilizers, antihypertensives, and over-the-counter preparations.

0 Depression: Particularly in older patients, depression may present as mental deterioration, especially of memory, without recognized mood disorder.

Disposition

A history of decline in any of the mental domains, or a diagnosis of any of the illnesses listed above in which dementia is invariable or even only common, should be regarded as initially disqualifying. This disqualification applies even if the diagnosis is only being entertained and has not been confirmed. Further specialized evaluation must be obtained.

Appeal

A clear diagnosis of any of the progressive disorders above is unequivocal grounds for disqualification. Should further evaluation be necessary or requested, the proper referral would be to a neurologist or psychiatrist, preferably one with experience in mental evaluations. Evaluation should include detailed neurologic and mental state examinations.

CT or MRI are mandatory. Depending upon clinical circumstances, a variety of other interventions may be required. If the presence of dementia is still in doubt after the neurologic evaluation, referral to a neuropsychologist is required. More precise documentation of mental abilities from this evaluation will clarify the presence or absence of dementia, and if present establish the severity of the condition and perhaps indicate a specific diagnosis.

If a clear diagnosis of one of the treatable. but not necessarily curable, disorders, such as syphilis or certain tumors or of one of the static disorders, such as multi-infarction state is made, disqualification could be appealed to a neurologist or physiatrist who could recommend a simulated driving skills test or equivalent functional test (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification.

MULTIPLE SCLEROSIS

Patients with acute, chronic, or relapsing progressive multiple sclerosis (MS) often accumulate incremental neurologic dysfunction involving multiple functional subsystems Of the central nervous system at multiple levels. The multiplicity of neurological dysfunction causes complex disorders of integrated sensory-motor and, in some cases, cognitive function which exceeds the simple sum of individual neurological deficits. In addition, there is a potential for unpredictable relapses at any time and patients with progressive MS characteristically suffer from excessive fatiguability and daily fluctuations in motor performance. Prolonged physical activity, emotional stress, warm ambient climate and minor viral infections are common conditions which are known to transiently worsen neurological function in these patients.

Disposition

The complex disorder of integrated sensory-motor function Seen in acute, chronic, or relapsing progressive MS is not compatible with the level of motor skill required for operation of commercial vehicles, and these patients should not be approved for licensure.

Appeal

Some patients with clinically definite MS may have a benign course with minimal neurologic dysfunction being present even 10 to 15 years after the onset of the disease. Patients with clinically benign MS for a duration of at least 5 years after diagnosis, and patients with possible or probable MS, may be considered candidates for licensure to operate a commercial vehicle if the following conditions apply:

* There are no signs of relapse or progression.

* There are no or only functionally insignificant neurologic signs and symptoms as determined by a neurologist.

0 An MRI and triple evoked potential studies are normal or do not reveal new lesions compared to prior evaluations made at least one year apart.

* There is no history of excessive fatiguability or periodic fluctuations of motor performance especially in relation to heat, physical and emotional stress and infections.

The disqualification may be appealed to a neurologist or physiatrist who may recommend a simulated driving skills test or equivalent functional test (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. In order. to detect subsequent signs of progression, the candidate will be reevaluated annually by a neurologist*, who may again recommend functional testing (see Appendix A), and will require a repeat on-the-road driving test.

NEUROMUSCULAR DISEASES

The problems of commercial drivers with progressive neuromuscular disorders differ considerably from those of individuals with cognitive or perceptual difficulties. In neuromuscular conditions the physical abilities to initiate and maintain safe driving including steering, braking, clutching, getting in and out of vehicles, and reaction times must all be considered. Most pertinent to the performance are the following considerations:

* Strength--In neuromuscular diseases, strength may be severely affected and the distribution of weakness will vary according to the specific condition. In some conditions, the proximal muscles are preferentially affected and in others, the distal muscles. In addition, certain conditions selectively affect eye muscle movement and ability to keep the eye lids open. In some conditions, repetitive activities cause significant fatigue not present at initiation. All of these points must be considered. in the evaluation.

‘Board certified or eligible neurologist or neurosurgeon,

* Sensory loss--In disorders affecting the sensory nerves a spectrum of changes may ensue. For driving, loss of proprioception severely affecting coordination is the most impairing. However, loss of touch, temperature and pain sensations also can cause significant disability. In certain types of peripheral nerve damage painful paresthesias can be elicited by touch.

0 Range of motion--It is not unusual for conditions producing loss of strength to be accompanied by loss of range of motion. This may affect either large or small joints in both upper and lower extremities.

Types of Neuromuscular Disease

As a group, neuromuscular diseases are usually insidious in Onset and slowly progressive. The rate of progression will vary but would generally be measured in months to years. Rare neuromuscular diseases may be episodic producing weakness over minutes to hours and these are specifically noted below.

Disposition

- Motor neuron diseases--This group of disorders consists of hereditary (spinal muscular atrophy, juvenile and adult forms) and acquired (amyotrophic lateral sclerosis) conditions producing degeneration of the motor nerve cells in the spinal cord. As a group, these are debilitating, insidiously progressive conditions, and a diagnosis disqualifies an individual for commercial driving.

- Peripheral neuropathies--This group of disorders consists of hereditary and acquired conditions where the nerves, including the axon and myelin or the myelin selectively outside the spinal cord are affected, These conditions may selectively affect the sensory or motor nerves, or both may be affected. A diagnosis of peripheral neuropathy disqualifies an individual for commercial driving. Since the severity may vary with the individual and in certain instances the condition may be treatable or nonprogressive, the disqualification may be appealed* to a neurologist** or physiatrist who may recommend a simulated driving skills test or equivalent functional test (See Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. In order to detect subsequent signs of progression, the candidate will be reevaluated annually by a neurologist or physiatrist and receive functional testing (see Appendix A) and a repeat on-the-road driving test.

0 Neuromuscular junction disorders--This relatively less common group of disorders includes myasthenia gravis and the myasthenic syndrome. In addition to limb nuscle weakness, vision is Often affected and easy fatiguability is a common manifestation. A diagnosis of myasthenia gravis or myasthenic syndrome disqualifies an individual for commercial driving. Since these conditions can remit with treatment, a disqualification may be appealed to a neurologist or physiatrist who may recommend a simulated driving skills test or equivalent functional testing (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. In order to detect subsequent signs of progression, the candidate will be reevaluated annually by a neurologist or physiatrist and receive functional testing (see Appendix A) and a repeat on-the-road driving test.

*Appeal would be possible only for changes in and/or verification of diagnosis.
**Board certified or eligible neurologist or neurosurgeon.

* Nuscle diseases--This represents a heterogeneous group of disorders, including the following:

--Muscular dystrophies are hereditary progressive degenerative diseases of the muscle.

--Inflammatory mvooathies (dermatomyositis, polymyositis and inclusion body myositis) are acquired muscle diseases which may be treated.

--Metabolic muscle diseases are a group of disorders comprised of conditions affecting the energy metabolism of muscle or an imbalance in the chemical composition either within or surrounding the muscle. Conditions may affect glycogen and glycolytic metabolism, lipid metabolism, mitochondriat metabolism or potassium balance of the muscle. As opposed to most other neuromuscular disorders, these conditions may either be insidiously progressive or episodic.

-- Congenital mvooathies are a group of disorders which may be distinguished from others because of specific, well-defined structural alterations of the muscle fiber. They may be progressive or nonprogressive. These disorders include central core disease, rod (nemaline) myopathy, centronuclear myopathy, and congenital muscular dystrophy.

-- Conditions associated with abnormal muscle activity are a group of disorders characterized by abnormal muscle excitability caused by abnormalities either in the nerve or in the muscle membrane. The specific conditions are called myotonia (myotonic disorders), Isaac's syndrome (syndrome of continuous muscle fiber activity), and stiff-man syndrome.

A diagnosis of any of these muscle diseases disqualifies an individual for commercial driving.

Appeal

The neuromuscular disorders represent a complex group of conditions. Recognition requires experience. Thus, individuals appealing the disqualification should be examined by a neurologist* or physiatrist. Examination should include the individual's medical history as well as considerations of family history. A complete physical and neurological examination must be included. Access to reports including those of electrodiagnostic studies and nerve and muscle biopsies are essential. The disqualification may be appealed to a neurologist or physiatrist who may recommend a simulated driving skills test or equivalent functional test (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. If a waiver is given, the candidate will be reevaluated annually by a neurologist or physiatrist who may again recommend functional testing (see Appendix A) and will require a repeat on-the-road driving test.

NERVOUS SYSTEM TUMORS

Nervous system tumors may be benign or malignant, primary or secondary. About 20 percent of all cancers affect the brain and central nervous system. but only a relatively

*Board certified or eligible neurologist or neurosurgeon.

small number, about 14,000 cases a year actually arise in these vital areas. The majority of brain tumors are the result of metastases of other cancers, particularly from the lung and breast. The cause of primary brain cancer is unknown, but hereditary and cancer-associated genes, oncogenes, may play a part, especially in children. Tumors of the spinal cord my arise either as primary tumors within the cord itself, a relatively rare occurrence, or as a metastatic tumor from systemic cancer.

Central nervous system (CNS) tumors present difficult problems that set them apart from other cancers. The CNS is the seat of our intelligence and emotions, and an affliction of the CNS impacts on every-day functioning in a direct and visible manner. Brain tumors may alter cognitive abilities and judgment, and these symptoms may occur early in the patient's course. Sensory and motor abnormalities may be produced both by brain tumors and by spinal cord tumors depending on their location. The following signs and symptoms may be associated with nervous system tumors: Headache, papilledema, seizures, mental changes, fatigue, dizziness, lethargy, personality change. vision loss, hearing impairment, speech disturbance, ataxia, incoordination, weakness, tremor, pain, paresthesia, numbness and sensory loss, back pain, and bowel or bladder disturbance.

Disoosition

Patients with primary or metastatic malignant tumors of the nervous system should be disqualified from driving commercial vehicles.

Patients with benign nervous system tumors should also be excluded from driving commercial vehicles although individuals successfully treated for these tumors and with little or no functional impairment may appeal this ruling. Following the removal of benign supratentorial or spinal tumors, patients with no major residual neurological deficits, or those with minor residual deficit, should not return to driving status for a minimum Of two years. Reinstitution of licensure for commercial vehicle driving may then be accomplished if seizures have not recurred, if imaging (CT and/or MRI) shows no tumor and if neurologic deficits have not progressed. The clinical evaluation of such patients must be repeated yearly, thereafter, to retain driving status. Since meningiomas may occasionally be multiple, all such residual examinations must show no evidence of recurrent tumor or new tumor. For infratentorial meningiomas, acoustic neuromas, pituitary adenomas and spinal benign tumors or other benign extraaxial tumors, the same qualification may be applied, except that restoration of driving status may be considered one year postoperatively.

Appeal

Patients who have been successfully treated for benign nervous system tumors, i.e., meningiomas, acoustic neuromas, pituitary tumors, neurofibromas, epidermoid cysts etc., and have either no neurologic deficit, or a stable nonprogressive deficit, may appeal disqualification and be licensed to drive commercial vehicles provided:

- o The tumor has been completely removed.

- * There is little or no residual neurological deficit, as determined by a neurologist*, and whatever residual neurologic deficit remains does not impair in any way the functional ability of the individual to drive a commercial vehicle. Thus, a major hemiparesis,

*Board certified or eligible neurologist or neurosurgeon.

ataxia, vestibular dysfunction. or mental impairment, would all preclude return to driving status.

* A history of seizures requires evaluation according to the criteria established in the Task Force IV Report: Episodic Neurological Conditions II.

The' disqualification may be appealed to a neurologist* or physiatrist who may recommend a simulated driving skills test or equivalent functional test (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. In order to detect subsequent signs of progression, the candidate will be reevaluated annually by a neurologist or physiatrist who may again recommend functional testing and will require a repeat on-the-road driving test.

PARKINSONISM

Parkinsonism is a chronic progressive syndrome of insidious onset manifesting a triad of muscular rigidity, slowness of movement (bradykinesia) and tremor plus associated postural abnormalities including a stooped posture, interosseal hand and clawing of the toes. The most common form of parkinsonism is Parkinson's disease. Its prevalence is approximately | percent of the population over age 60. It is the second most common degenerative disease, following Alzheimer's disease. A variety of disorders recognized as separate morbid entities such as progressive supranuclear palsy, olivlpontocerebellar atrophy, Wilson's disease, and several different types of dominantly-inherited cerebellar ataxias may present as parkinsonism.

The major disabilities inflicted by Parkinson's disease with reference to the operation of commercial vehicles is the bradykinesia. This is a complex disorder of motor function involving prolonged motor and premotor reaction times, slowness of execution of movement, frequent interruptions of ongoing movement and a marked paucity of spontaneous automatic movements. Characteristically, patients are largely unaware of mild to moderate degrees of bradpkinesia which may significantly impair capability to operate a commercial vehicle. These difficulties may predate the development of symptoms sufficient to bring a patient to medical attention. Therefore, it is not a rare occurrence for accidents to be the initial manifestation of the disease. Corresponding impairment in mental function, bradyphrenia, slowness in changing motor sets, and difficulty in the perception of visual space, may also contribute to difficulties in the operation of a commercial vehicle. Significant dementia with impairment of recent memory occurs in as many as 20 to 40 percent of patients with Parkinson's disease though usually not until later in its course when the diagnosis is already established. A particular difficulty characteristic of parkinsonism is the difficulty of carrying on two or more tasks simultaneously. This is a defect which would particularly impair the ability to operate a commercial vehicle. Additionally, depression, fatiguability and panic attacks are frequent accompaniments of Parkinson's disease.

The following signs and symptoms may be associated with Parkinson's disease: weakness, lethargy, depression, headache, muscle cramps, unsteadiness in walking, shufflin, freezing, festinating gait, low back pain, impotence, and bowel and bladder disturbances.

*Board certified or eligible neurologist or neurosurgeon.

Disposition

Patients with parkinsonism of any etiologic type should be disqualified from driving commercial vehicles. Patients with iatrogenic parkinsonism induced by medication may recover from their Parkinson syndromes and regain qualification. However, the conditions for which the responsible medications were prescribed may themselves be causes for exclusion.

Appeal

Patients with Parkinson's disease who are receiving effective symptomatic treatment may appeal the ruling to a neurologist*/physiatrist who may recommend a simulated driving skills test or equivalent functional test (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. These individuals may be licensed to drive commercial vehicles provided:

- The medication is well tolerated and there are no side effects.
- There is no significant fluctuation or "on-off" effect.
- There is good compliance.
- There are no mental deficits.

In order to detect subsequent signs of progression, the candidate will be reevaluated annually by a neurologist* or physiatrist who may again recommend functional testing and will require a repeat on-the-road driving test.

EXTRAPYRAMIDAL DISORDERS WITH HYPERKINESIA

A broad range of movement disorders are characterized by excessive motor activity. Patterns of motor activity include chorea, athetosis, dystonia, myoclonus and tremor. Individually these. disorders are rare but collectively they are not infrequent. When mild, such involuntary movements may not significantly impair motor function but when severe, coordination may be significantly impaired. These involuntary movements are usually manifestations of diseases which in themselves may be disqualifying for commercial vehicle operation. Associated manifestations such as dementia in Huntington's disease may be the most disabling feature. A diagnosis of the specific disorder is essential for evaluation.

As a brief guide, the following specific disorders primarily manifesting hyperkinetic involuntary movements is offered.

- Torsion systonias--This group includes primary torsion dystonia (dystonia musculorum deformans) a genetic disorder usually characterized by onset in childhood with twisting movement in one lower extremity which gradually spread to involve all four limbs and the trunk producing tortipelvis, torticollis, and kyphosis. Spasmodic torticollis (wry neck) is the most common form of dystonia encountered in practice. The patient experiences involuntary rotation of the head and neck to one side often associated

*Board certified or eligible neurologist or neurosurgeon.

with elevation of the shoulder on that side. The process may extend to mild scoliosis. Mild degrees of torticollis are not disabling but painful muscle spasms and limitation of head movement would impair the ability to operate a commercial vehicle.

Oromandibular dystonia with blepharospasm (Meige syndrome) is a syndrome more common in middle age and is associated with forced involuntary mouth opening, jaw deviation, and blepharospasm. Involuntary eye closure as part of the blepharospasm may be significantly disabling to a commercial driver.

- The choreas--Chorea is manifested by motor hyperactivity ranging from mild fidgeting to severe flinging and throwing movements of the limbs with frequent starts, stops, involuntary grimacing, gestures and abnormal postures. A great variety of causes exist. These include autoimmune disorders such as rheumatic fever, genetic disorders such as Huntington's disease, the rare benign familial chorea, drug toxicities such as the chorea induced by levodopa treatment of Parkinson's disease, and rarely, tumors and cerebrovascular accidents. Hemichorea of subacute onset is a rare manifestation of vascular lesions of the basal ganglia, usually the subthalamic nucleus. The patient experiences severe flinging movements of the arm and often the leg on the same side which develops following a stroke.

- Myoclonus--Rapid contractions of muscles producing abrupt jerking movements of the limbs occur as a symptom of various disorders such as myoclonus epilepsy but also may occur as a symptom in some of the dystonias, in Parkinson's disease, and in a rare disorder termed essential myoclonus. Impairments of coordination produced by the involuntary jerking movements would impair the ability to operate a commercial vehicle.

- Tics--A variety of involuntary movements, usually stereotyped and patterned, myoclonic-like jerks and twitches, compulsive verbalizations, shrugs, eye blinks, tongue protrusions and the compulsion to utter obscenities (coprolalia) characterize a heterogeneous group of disorders. In the full-blown syndrome of multiple tics, the syndrome of Gilles de la Tourette, the range of movements and compulsive behaviors may vary from mild to very severe. When severe, they may interfere with the ability to operate a commercial vehicle.

- Benign essential (familial) tremor--The most common of all movement disorders, a postural and/or action tremor of the upper extremities usually associated with vocal tremor and head-nodding tremor occurs primarily in adults and increases in prevalence among the aged. Characteristically it is not associated with any other neurological disturbance. Action tremor may interfere with the performance of fine motor tasks but essential tremor on the whole should not interfere with the capability to Operate a commercial vehicle.

Disoosition

Due to the broad range of manifestations, the marked variation in intensity of manifestations from one individual to another, and the large number of diseases of which these hyperkinesias may be symptomatic, it is not possible to make a simple rule regarding disposition. Each individual case must be evaluated on the ability Of the individual to perform adequately in appropriate neurological tests to assess strength, dexterity and coordination, A clear diagnosis of Huntington's disease or Wilson's disease is un e qu ivo ca l grounds for disqualification.

Appeal

Effective therapy for the hyperkinesias is limited and often only partially effective. The drugs commonly employed may alter alertness and attention. Nevertheless. it may be possible to improve essential tremor, myoclonus, and focal dystonias such as spasmodic torticollis sufficiently to permit a waiver of disqualification. Each case may be appealed individually to a neurologist* or physiatrist with regard to effectiveness of therapy, side effects of therapy, patient compliance, the progressive nature of the disorder and the presence or absence of associated features. If an applicant wins an appeal, then an on-the-road driving test is required before final certification. If a waiver is given, the candidate will be reevaluated annually by a neurologist or physiatrist who may recommend functional testing (see Appendix A) and will require a repeat on-the-road driving test.

CEREBELLAR DEGENERATIONS

The cerebellar degenerations are a group of diseases of diverse etiology characterized by ataxia of gait, incoordination, tremor, and dysarthria. These include, but are not limited to, hereditary degenerative disorders, alcoholism, hypothyroidism, multiple sclerosis, cerebrovascular disease, infections, and the direct and remote effect of neoplasms. Some of these disorders, such as cerebrovascular disease, may be static, whereas others such as the hereditodegenerative disorders are usually progressive in nature. The impaired coordination and tremors seen in patients with cerebellar ataxia may interfere with the performance of motor activities, and would be a contraindication to driving a commercial vehicle.

Disposition

Patients with cerebellar ataxia of any etiology should be disqualified from driving commercial vehicles.

Appeal

Patients with reversible cerebellar ataxia or minimal stable deficits may appeal the ruling to a neurologist* or psychiatrist who may recommend a simulated driving skills test or equivalent functional test (see Appendix A). If an applicant wins an appeal, then an on-the-road driving test is required before final certification. In order to detect subsequent signs of progression, the candidate will be reevaluated annually by a neurologist or psychiatrist who may again recommend functional testing and will require a repeat on-the-road driving test.

*Board certified or eligible neurologist or neurosurgeon.

TASK FORCE III REPORT: EPISODIC NEUROLOGICAL CONDITIONS

Robert B. Daroff, M.D. (Chairman)
B. Todd Troost, M.D.
Kenneth M. Welch, M.B.

The symptoms of headaches, vertigo, and dizziness are extremely common, and almost all humans have experienced one or more of these during their lifetimes. Whereas they are usually trivial, they may constitute a problem for the driver of a commercial vehicle. Moreover, the causes of these symptoms are myriad and must be resolved before it is determined that an individual is medically qualified to drive a commercial vehicle. Indeed, sometimes the treatment, in the form of drug therapy, constitutes a contraindication to driving a commercial vehicle. The problem of headaches will be discussed first Dizziness and vertigo will be discussed since dizziness and vertigo are overlapping symptoms that may share similar mechanisms with headaches.

Those types of headache, vertigo, and dizziness which will impair cognitive abilities and judgment, attention and concentration, and sensory or motor function, sufficient to render the driving of a commercial vehicle unsafe will be addressed.

HEADACHE

Headache as a Societal Problem

Headache is the most common human complaint and a major public health problem. In one population survey, 78 percent of women and 64 percent of men had at least one headache in the previous year (1). In a comparable United States study, 41 percent of men and 50 percent of women admitted to having had a disabling or severe headache at some time and only 4 percent of women and 9 percent of men under the age 35 denied ever having a headache (2). Because headache is accepted by most adults as a part of life and more often than not, a transient event, the complaint is infrequently brought to medical attention. The enormous market for over-the-counter analgesics is testament to the prevalence of headaches as well as the fact that most patients cope with the problem without medical help.

Headache as a Problem in the Work Place

Headache, particularly migraine, is among the most important causes of absence from work due to sickness. In one factory based survey, 66 percent of the work force needed to use medical facilities in a nine-month period because of a headache complaint; about one-third of the attacks began at work (3). The subjects in this survey lost an average of 4.3 work days per annum to headaches. In another workplace study, one-third of migraine sufferers employed in a tire factory had to stop work due to attacks of migraine (4). Indeed, it is likely that physical and mental impairment in those not formally reporting themselves as unwell during attacks of headache is far more common in the workplace than has been documented.

The Clinical Problem of Headache

Headache is a symptom; one that frequently defies succinct definition. Despite its ubiquity, we know less about the pathophysiological disturbances surrounding headache than almost any other comparable symptom. Symptoms most frequently outweigh the signs and abnormal investigations are more the exception than the rule. A minority of patients who present with headache complaints have an organic or structural cause for their pain which can be established on the basis of history, physical examination, and clinical investigation. There remain a large number of patients whose head pain is caused by poorly understood

functional or pathophysiological disturbances of the brain or cranial structures. In these instances, the physician has only historical facts with which to classify the type of headache.

In diagnosing headache on the basis of history alone, the physician is faced with two problems. The first relates to the ability of the patient to accurately describe the symptom, compounded by an occasional unwillingness, for whatever reason, to be truthful. The second relates to an undeveloped classification of the different types of headache and their diagnostic criteria. In any form of headache classification the symptom description in a particular patient must fit one set of criteria and only one. Bear in mind that patients may well have more than one form of headache. The chosen criteria for a particular diagnosis of headache frequently represent a compromise between sensitivity and specificity. With these reservations in mind, the headache types that are at issue in matters of safety include migraine, tension-type headache, cluster headache, post traumatic head injury syndrome, headache associated with substances or their withdrawal, cranial neuralgias, and atypical facial pain. These diagnoses include chronic or chronic recurring headache.

Other headache types are associated with neurological or head and neck disorders dealt with in separate sections of this report or by other FHWA conferences. These include headache associated with vascular disorder, nonvascular intracranial disorder, headache associated with systemic or focal infection, and head or facial pain from organic disease Of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or facial structures.

Chronic or chronic-recurring headache syndromes can potentially interact with other neurological diagnostic categories in two ways, through their complications, e.g., stroke in relation to migraine, or as a result of associated features of a particular syndrome, e.g., the visual distortion or disequilibrium associated with a migraine attack. The treatment Of headache may involve medication for the symptoms of an acute episode or prevention Of episodes by daily medications. The use of certain headache medications may adversely influence judgment and driving safety.

Review of Current Standards and Examination Criteria

Review of the current FHWA certification form (C0730) reveals that there are limited items that address the problem of headache. Under the section on health history, notation of headache might be made in the categories of "any other nervous disorder," "suffering from any other disease," "head or spinal injuries," or "psychiatric disorder." In no category is there specific mention of headache or headache syndromes.

Under the section on physical qualifications, those items that might apply to headache syndromes include item 9, "has no mental, nervous. organic or functional disease or psychiatric disorder likely to interfere with the ability to drive a commercial vehicle safely." In essence the problem of headache and driver qualification is not adequately addressed in this form. Headache receives attention in regulatory criteria for evaluation under section 391.41 (b) (9) a mental, nervous, organic or functional disease or psychological disorder . headache, . . . and chronic nagging pain may be present to such a degree that certification for commercial driving is inadvisable." The current regulations can reasonably be considered vague and underdeveloped.

Recent Advances

The major investigative advances for the clinical patient relate to the use Of non-

invasive techniques, in particular CT and MRI scanning, to refine the diagnosis and exclude organic structural diseases that present with headache, e.g., early diagnosis of brain tumor. Thus, the diagnostic advances over the last 20 years aid in the identification of serious structural disease in patients with chronic and chronic recurring headache.

The major therapeutic advances include new types of drugs for the acute and prophylactic management of headache. The specific categories will be mentioned later. In general, a number of these drugs may themselves impair driver performance.

Suggested Strategy for Evaluation and Disposition

Information on Working Conditions--The most important safety consideration in relation to headache is the psychophysical condition of the driver. Environmental factors associated with precipitation or worsening of headache syndromes include abrupt duty hour changes, sleep deprivation, irregular work/rest cycles, temperature and weather extremes, long trips without regular meals, tight delivery schedules, enroute delays, night driving, the stress of responsibility of passenger carriage, accumulative fatigue from long lay-overs without adequate rest, extra duty, and driving at peak hours. These are factors which are unavoidable for commercial drivers. The physical effort associated with driving and related duties may influence the frequency and severity of such conditions as benign exertional headache or cough headache.

Issues of Clinical Evaluation and Disposition--The clinical evaluation will consist of history and physical examination and, when indicated, laboratory investigations such as CT and MRI scans. Headaches secondary to structural brain disease (such as brain tumor or stroke) or metabolic dysfunction (hypoglycemia) are discussed in Task Force I Report: Static Neurological Conditions and Task Force II Report: Progressive Neurological Conditions, respectively.

The primary headache syndromes with no underlying structural or metabolic abnormality are as follows:

* Tension-type headache.
* Migraine, with and without neurological deficit.
* Cluster headache: typical and chronic.
* Post-traumatic head injury syndrome.
* Drug-related headache.
0 Cranial neuralgias.
* Atypical facial pain.
* Cough or exertional headache.

Patients with these headache diagnoses require a detailed historical evaluation before certification. Patients with episodic headache may require only temporary disqualification during periods when the headaches are likely to be frequent or require treatment. Other types of episodic headache may require special evaluation and consideration and may warrant

automatic disqualification, e.g.. chronic cluster, migraine with neurological deficit, and cranial neuralgia. In determining the disposition of headache patients, close attention must be paid to the following features:

* Freauencv and severity of the headache--Some headache syndromes may be chronic. others chronic-recurring. In some syndromes. the history of headache may be remote enough from the time of first presentation (e.g., cluster headache) to be judged non-disqualifying. The same headache syndrome presenting in frequent episodes may be grounds for disqualification. The severity may range from mild, e.g., chronic tension type headache; and judged non-disqualifying where as severe pain, e.g., cluster headache, trigeminal neuralgia, may be disqualifying.

* Associated Features--Certain associated features should lead to automatic disqualification. These features are underlined below:

  --Visual Questions concerning changes in vision or unusual visual experiences may reveal a history of halos, scintillations, teichopsias, scotoma quadrant-anopia hemianopia, diplopia, astereopsis mosaic vision, visual distortion or visual hallucination. Photophobia is common in headache syndromes.

  --Nausea and vomiting are major features of such syndromes as migraine and may be acute and rapid in onset.

  --Dizziness, vertigo disequilibrium, and ataxia may be features of basilar migraine

  --Mood swings from depression to agitation may occur. Rarely, transient osychosis has been noted as a complication of migraine.

  --Syncope is a rare association but may occur with migraine. Syncope may be due to severity of pain or rarely may be due to a seizure disorder, either partial or generalized.

  --Deficits of cognitive function may include inattention, memory loss, confusion, disorientation, loss of concentration, speech disturbances, receptive deficits, and coma.

  --Motor deficits may include ataxia hemiparesis hemiplegia quadraoaresis, quadriplegia These deficits may accompany certain types of migraine.

The Use of Medications

Commonly used medications for prophylaxis of chronic and acute headache syndromes are listed below. Certain medications should lead to automatic disqualification. These medications are underlined.

* Beta-receptor blockers, e.g., Propanolol.

* Calcium channel-blockers, e.g., Nifedipine, Verapamil.

* Major antidepressants, e.g., Amitriptyline, Trazodone.

o Sedatives, e.g., Bensodiazapine

* Barbiturates, e.g., Phenobarbital.

* Anticonvulsants, e.g., Phenytoin, Carbamazepine.

* Lithium.

* Non-steroidal antiinflammatory agents (NSAID's), e.g., Anaprox

* Steroids-Glucocorticoids, e.g., Prednisone.

* Antiserotonin drugs, e.g., Methysergide.

* Antihistamine%, e.g., Cyproheptadine (mostly for antiserotonin effect).

Drugs used for acute attacks include:

* Ergotamine compounds

* Analgesics including:

--Aspirin and other over-the-counter agents.
--Codeine preparations.
--Propoxyphene preparations.
--Analgesic combinations containinn sedatives or antihistamines.
--Narcotic%
--Sedatives, e.g., Bensodiazapine.
--Glucocorticoids.
--Phenothiazines.

Special consideration should be given to the possible side effects of beta-blockers, antidepressants, and anticonvulsants. These side effects include depressed mood, cognitive. deficit, decreased reflex responses, unsteadiness, and sedation.

Head pain may be of the chronicity and severity to cause impaired attention and judgment. Certain headache disorders may be accompanied by agitation, disorientation, confusion, inattention, memory loss, receptive loss, and mood disorder. Episodic and transient visual disturbance, nausea, vomiting, motor and sensory deficits may also accompany certain headache.

When, in determining an individual's fitness to drive, headache and accompaniments Of headache are judged chronically or periodically incapacitating, disqualification may be warranted. The chronic or periodic use of certain headache medications may warrant disqualification.

VERTIGO AND DIZZINESS

Multiple conditions may affect equilibrium or balance resulting in acute incapacitation or varying degrees of chronic spatial disorientation in a commercial driver. The normal ability to maintain balance and orientation during the operation of a commercial vehicle depends upon peripheral nervous system (PNS) sensory input from three major systems and their appropriate motor integration in the central nervous system (CNS). The three PNS sensory systems are vestibular, visual, and propricoception. Inappropriate interactions of

these systems or their interactions within the CNS may produce an unsafe degree of vertigo or dizziness. Vertigo is defined as an illusory sensation of movement, while dizziness is a broader term including sensations such as lightheadedness, disequilibration, swaying, floating and imbalance, etc. Conditions which may produce dizziness and vertigo are grouped under three major headings: vestibular (end-organ), central, and systemic conditions(5,6).

Recent Advances

There are numerous sophisticated quantitative tests of balance in the vestibular system, but these are primarily research tools and add little to the practical diagnosis of these conditions. There have been no substantive advances in the treatment of vertigo and dizziness.

Conditions

Vestibular

- Benign Positional Vertigo(?)--A condition characterized by sudden vertigo produced by certain head positions such as head turning, producing a sudden brief episode of acute vertigo often accompanied by nausea, vomiting, and disorientation. Characteristic movements of the eyes, nystagmus, may be seen during office examination when the head is placed in the offending position. For several days after an acute attack, the patient may have dizziness. This condition is disqualifying for driving a commercial vehicle. A driver can then be considered for recertification after being symptom-free for two months.

- Acute and Chronic Peripheral Vestibulopathy--A disorder of the peripheral vestibular apparatus (labyrinths) initially causing acute vertigo worsened by, but not necessarily provoked by, certain head positions. The initial attack may be incapacitating and last for days, but recurrent episodes, usually of lesser severity, are common. These conditions are disqualifying for driving a commercial vehicle. A driver can then be considered for recertification after being symptom-free for two months.

- Meniere's Disease(8)--A condition characterized by sensory-neural hearing loss, tinnitus, pressure sensations within the ear, and severe attacks of vertigo. The condition is of sufficient severity and unpredictability such that the diagnosis would render the individual unqualified for driving a commercial vehicle.

- Labyrinthine Fistula--A condition characterized by post traumatic or spontaneous leak of the fluid from the semicircular canals producing severe vertigo, usually accompanied by hearing loss. The presence of an untreated fistula would render the individual unqualified for driving a commercial vehicle.

- Nonfunctioning Labyrinths--Usually due to bilateral chronic disease or previous administration of vestibulotoxic medication, particularly antibiotics. Nonfunctioning labyrinths would produce a degree of potential disorientation sufficient to render the individual unqualified for driving a commercial vehicle. Vertigo and dizziness due to structural disease, such as stroke or tumor, (6) or metabolic disorders, such as hypothyroidism, are discussed in the Task Force I Report: Static Neurological Conditions and Task Force II Report: Progressive Neurological Conditions, dealing with the specific disorder or, in the case of metabolic disorders, by another FHWA conference.

Use of Medications

The most common medications used to treat vertigo are antihistamines (e.g., meclizine). benzodiazapines (e.g., diazepam), or phenothiazines (e.g.. prometharine). The requirement for either benzodiazapines or phenothiazines for the treatment of vertigo would render the individual unqualified for driving a commercial vehicle. Special consideration should be given to the possible sedative side effects of antihistamines; the physician must determine if these drugs are producing sedation in an individual driver.

Examination Reauired

In most instances, the diagnoses of disorders causing vertigo and dizziness would require a complete neurological and neuro-otologic examination. Such examination would include neurologic examination, assessment of the peripheral vestibular and auditory apparatus, and metabolic evaluations.

TASK FORCE IV REPORT: EPISODIC NEUROLOGICAL CONDITIONS II

W. Allen Hauser, M.D. (Chairman)
Sudhansu Chokroverty, M.D.
Donald Dawson, M.D.
Gerald Friedman, M.D.
Allan Krumholz. M.D.