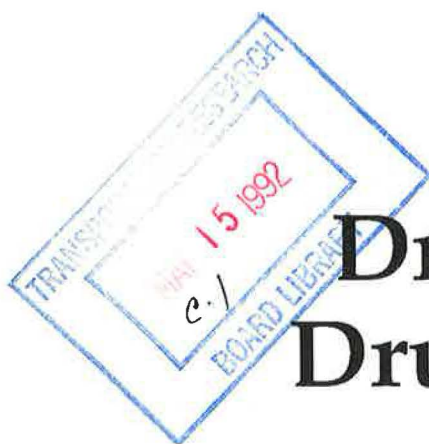


TRANSPORTATION
RESEARCH

Number 397, May 1992

CIRCULAR



Drugged and Drunk Driving

**DRUGGED AND
DRUNK DRIVING**

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2101 Constitution Avenue, N.W.
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FOREWORD

The abuse of alcohol and other drugs by operators of vehicles is one of the most serious transportation safety problems that the United States faces. This is especially true of the highway mode, where last year 22,083 persons died in alcohol-related crashes. In the past decade, progress has been made in reducing this tragic toll. Our attitudes have changed, and our laws have improved; legal loopholes have been tightened; and enforcement is more vigorous. In 1982, 57 percent of traffic fatalities were alcohol-related. By 1990, that figure had dropped to 50 percent. The largest decline occurred between 1982 and 1985, when alcohol-related fatalities fell from 25,170 to 22,360. Since then the number of deaths has leveled off.

Also in the 1980s we began to identify the role of alcohol and other drugs in accidents in other modes of transportation. Some of the most recent tragic accidents—such as the railroad crash at Chase, Maryland, that claimed 16 lives and the grounding of the Exxon Valdez in Alaska—involved the abuse of alcohol, other drugs, or both. As this problem began to be recognized, testing, education, and rehabilitation programs began to be implemented.

This Circular summarizes presentations made at the 70th Annual Meeting of the Transportation Research Board in Washington, D.C., in January 1991, on two aspects of the problem:

- Defining and defeating the drugged-driving problem, and
- The Surgeon General's Workshop on Drunk Driving—two years later.

Future Circulars will cover other areas of this subject.

Barry M. Sweedler
Chairman,
Committee on Alcohol, Other Drugs,
and Transportation

SESSION 1

DEFINING AND DEFEATING THE DRUGGED-DRIVING PROBLEM

DRUG-RELATED PEDESTRIAN AND BICYCLIST CRASH INJURIES

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Tri-Analytics, Inc.

A major goal of the National Highway Traffic Safety Administration (NHTSA) is to reduce significantly the morbidity and mortality resulting from vehicular injury. The agency aims much of its activity at understanding injury mechanisms so that it can better design and promote motor vehicle safety standards and highway safety programs to accomplish this goal.

Much research has been done on injuries that are fatal to operators and passengers in motor vehicle crashes. We now know who dies, when, and under what vehicle and road conditions. As societal concerns expand beyond saving lives to consider the long-term consequences of debilitating injury, we are shifting our focus to learning more about survivable major injury. Consequently, NHTSA has commissioned analyses of the American College of Surgeons' Major Trauma Outcome Study (MTOS) data base. Study data come from nearly 170,000 hospitalized patients treated from 1982 through 1989 at more than 150 trauma centers throughout North America. MTOS includes data on the etiology, demography, severity, and outcome of injury. It has had grant assistance from the Washington Hospital Center Research Foundation and the Centers for Disease Control, U.S. Public Health Service. MTOS was designed to provide information for evaluating the quality of trauma care. This is done by comparing institutional outcomes against pooled norms generated from severity and outcome data on a studywide sample of seriously injured patients. Research on quality assurance, emergency medical services (EMS) system management, rehabilitation, and costs of care can also be supported using the MTOS data base. Between 1982 and 1988, 63,625 (49.8 percent) of the 127,536 injuries in the data base were from highway crashes. This is the first time MTOS data have been analyzed for their contributions to highway safety knowledge.

This presentation addresses the presence of alcohol and other drugs in seriously injured bicyclists and pedestrians reported to MTOS from 1982 through 1988. These issues were chosen because pedestrian injuries make up a significant portion of highway casualties; furthermore, whereas there is some knowledge about

bicycle injuries and fatalities that result from involvement with motor vehicles, the popularity of bicycle use as a routine mode of transport is rising, making it all the more important that these data are used for developing countermeasures.

FINDINGS

Pedestrians

There were 9,337 pedestrian injuries reported to MTOS, 13.4 percent of which were mortal. Only injuries from gunshot wounds had a greater mortality rate (21.1 percent). The average length of hospital stay was 13.8 days—longer, on average, than for any other source of injury except motorcycle riding. For many patients, about half of that time was spent in the institutions' intensive care units (ICUs) (computed on those in the ICU for at least 1 day). Patients' ages ranged from infancy to more than 100 years; the majority were between 5 and 29. Mortality was inversely related to age: at least 25 percent of those over 70 died from their injuries.

There were 4,329 injured pedestrians (46.3 percent of the total) tested for alcohol in their blood. Almost 50 percent of those tested had measurable blood alcohol concentrations (BACs) at the time of the test. Remarkably, BAC levels were quite high: 586 (13.6 percent) tested at .01–.099 percent BAC, 486 (11.2 percent) at .10–.199 percent, 686 (15.9 percent) at .20–.299 percent, and 351 (8.1 percent) at .30 percent or above. The generally accepted BAC level for "legal" intoxication in most states is .10 percent, so more than 35 percent of those tested were considerably more intoxicated than permissible for the operation of a motor vehicle. Fatalities for those tested for the presence of alcohol were 13.8 percent of those at the .01–.099 percent level, 15.8 percent of those at .10–.199 percent, 11.7 percent of those at .20–.299 percent, and 8.5 percent of those at .30 percent or higher.

Testing for the presence of drugs other than alcohol was reported for 397 (4.3 percent) of the injured pedestrians. Positive drug screening was reported for 15.6 percent of them. Drugs predominating were cocaine (6.8 percent of those screened), narcotics (3.6 percent), and barbiturates (3.5 percent). We do not know, given a measurable BAC, the likelihood of the presence of drugs. We also do not know, because of the extremely small number of those tested, whether there are

variations in the type or frequency of drug use among pedestrian casualties over time. Answers to these questions must await subsequent analyses of the MTOS data base.

Bicycles

There were 802 bicycle injuries reported to MTOS, 4.7 percent of which were mortal. Stabbings and falls had similar mortality rates, at 4.5 percent and 5.5 percent, respectively. The average length of hospital stay was 7.4 days. Comparable lengths of hospitalization were seen for stabbings (5.2 days) and gunshot wounds (9.2 days). Patients' ages ranged from infancy to 79, and the majority were between 5 and 34. Mortality was bimodally distributed: both the very young and the very old were more likely to die from their injuries.

There were 285 bicycle patients (35.5 percent of the total) tested for BAC. Seventy-four (26 percent) of them tested for measurable amounts in their systems at the time of test. There were 16 cases (5.6 percent) at the .01-.099 percent BAC level, 26 (9.1 percent) at the .10-.199 percent level, 23 (8.1 percent) at the .20-.299 percent level, and 9 (3.2 percent) at .30 percent or higher. There were five fatalities among those with alcohol present at the time of injury, which represents 6.8 percent of the bicycle injury cases known to have alcohol involvement. This is a slightly greater proportion of fatalities than the total percentage of fatalities for bicycle riders in the MTOS data base, which is 4.7 percent, but smaller than the percentage of those tested for alcohol where no alcohol was found. This latter group's mortality rate is 9 percent.

Drug screening was conducted for 103 cases. Eleven cases were found to indicate the presence of drugs at the time of injury, with cocaine, barbiturates, and amphetamines predominant. Each of these drugs was present in 2.9 percent of the screened bicycle cases. As was true for the pedestrian cases, we do not know the distribution of cases for which both drugs and alcohol were present, nor do we know whether there were annual variations in types of drugs used.

CONCLUSIONS

The study of survivable major trauma in motor vehicle crashes is occurring with more frequency now that the public health community's attention is increasingly focused on the consequences of injury. However, bicyclists and pedestrians are not yet getting the attention that their injury incidence demands. As bicycle riding becomes more common in the United States, more attention should be focused on bicyclists' injuries.

Furthermore, these findings suggest that routine testing (or reporting and recording of test results) for alcohol and other impairing drugs is infrequent within the major trauma care environment. Despite the fact that fewer than half the pedestrian cases were tested for alcohol, for example, more than half of those tested had measurable quantities of alcohol in their system at the time of injury. This fact has significant clinical implications; alcohol testing should become part of the routine assessment of care needed for trauma patients.

DRUG PRESENCE IN FATALLY INJURED TRUCK DRIVERS

Barry M. Sweedler

National Transportation Safety Board

ABSTRACT

National Transportation Safety Board (NTSB) conducted a year-long study of 182 heavy-truck crashes in which the driver was fatally injured and found that 33 percent of the drivers tested positive for drugs of abuse. The most prevalent drugs found were marijuana and alcohol (13 percent each), followed by cocaine (9 percent), methamphetamines/amphetamines (7 percent), other stimulants (8 percent), and codeine and phencyclidine (PCP) (less than 1 percent each). Forty-one percent of those drivers positive for drugs of abuse were found to be multiple-drug users. Almost 11 percent tested positive for three or more drugs of abuse.

INTRODUCTION

To develop an estimate of drug and alcohol use among fatally injured drivers of heavy trucks, NTSB collected data on all fatally injured drivers of trucks weighing more than 10,000 lb gross vehicle weight (GVWR) in eight states for 1 year. "Fatally injured" is defined as being dead at the scene or within 4 hr of the accident. The states, selected to provide a geographic mix, were California, Colorado, Georgia, Maryland, New Jersey, North Carolina, Tennessee, and Wisconsin. The study period ran from October 1, 1987, to September 30, 1988. The full study is in press.

STUDY METHODOLOGY

So that as many as possible of the truck accidents that met the criteria could be included in the study, notification procedures were coordinated with state

police and the chief medical examiner. Upon notification of an accident that met the criteria, an NTSB highway accident investigator was sent to the scene to document the facts and circumstances and to gather information enabling NTSB to determine the probable cause of the accident. The investigator contacted the coroner or medical examiner and arranged to receive biological specimens for toxicological testing. NTSB provided "tox kits" for collecting blood and, if there wasn't enough blood, vitreous fluid. Using standard chain of custody methods, the samples were forwarded on ice, by express mail, to the Center for Human Toxicology (CHT) at the University of Utah for screening, confirmation, and quantification. The CHT tests searched for the presence of 44 drugs in the following classes: volatiles and gases, sedatives and tranquilizers, stimulants, opiates, antihistamines, hallucinogens, marijuana, analgesics, and anticonvulsants. A grant from the National Institute on Drug Abuse (NIDA) paid for the testing at CHT.

For each accident, the investigators developed information to describe completely the driver(s), vehicle(s), and roadway at the time of the accident. The investigator also interviewed representatives of the trucking company, available witnesses, and members of the driver's family to obtain more detailed data on hours of service, fatigue, carrier operations and maintenance, training and testing, preemployment screening, and other factors.

By developing such data, NTSB was able to determine the role that any drug found in the driver's system may have had in causing the accident.

To assist in this task, NTSB, in conjunction with NIDA and CHT, convened three scientific review panels made up of eminent forensic toxicologists and experts on the effects of drugs on human performance. The panels provided guidance on whether impairment occurred as a result of drug use and what role alcohol or other drug impairment may have had in the accident.

FINDINGS

During the study period, NTSB investigated 182 accidents involving 186 trucks. In one accident it could not be determined which of the two occupants was driving, so it was decided to exclude the case. Therefore, the analyses that follow include data on 185 drivers. As far as could be determined, the 182 accidents include all the accidents that took place in the eight states during the study period and met the established criteria. They represent about 25 percent of the heavy-truck accidents that occurred across the nation in that period.

NTSB considers the number of accidents in the study

to be a significant portion of the total accidents that occurred, but it does not suggest that the sample is statistically representative of such accidents nationwide. In addition, NTSB does not suggest that heavy-truck accidents that are fatal to the driver are representative of all truck accidents. However, NTSB believes that because of the large sample the findings are representative of heavy-truck accidents nationwide in which the driver is fatally injured.

Toxicological Test Results

NTSB was able to obtain biological specimens for toxicological testing by CHT for 168 (or 91 percent) of the 185 fatally injured drivers. Late notification was the reason that most of the 17 cases lacked specimens. In an additional 16 cases, samples were too small to test for certain drugs on the analytic plan. Rather than lose valuable data, the board chose to include in the analysis the cases in which CHT testing was carried out for most, but not all, drugs in the analytic plan. Thus, the sample sizes vary somewhat from drug to drug.

Of the fatally injured drivers for which CHT tests were performed, 112 tested positive for one or more of the drugs on the analytic plan. Of these, 56 drivers tested positive for drugs of abuse. This is 33.3 percent of the 168 cases for which at least partial toxicological results were obtained.

Drugs of Abuse

No barbiturates and no benzodiazepines (diazepam, flurazepam, and chlordiazepoxide) were identified in the fatally injured truck drivers. This is not unexpected, because these drugs function as sedatives, hypnotics, or anxiolytics that relax muscles or depress the central nervous system (or both) and would limit a truck driver's ability to drive for extended periods.

Almost 13 percent of the tested drivers, and 37.5 percent of those who tested positive for drugs of abuse, had measurable amounts of alcohol in their systems. This finding is not unexpected: data from the National Highway Traffic Safety Administration's Fatal Accident Reporting System (FARS) for 1982-1985 indicate that 15 percent of fatally injured drivers of trucks weighing more than 10,000 lb GVWR had some alcohol in their systems.

Some drivers believe stimulants help reduce fatigue and enhance performance. Of the 56 drivers testing positive for drugs of abuse, 19, or 28.8 percent, showed use of stimulants.

Marijuana was identified in 21 of the fatally injured drivers.

Polydrug Use

Of the 56 positive drivers, 23, or 41 percent, were polydrug users. In six of those cases, the driver tested positive for at least three drugs of abuse. In eight cases, alcohol was one of the drugs of abuse. The average blood alcohol concentration of the alcohol-polydrug user group was 0.13 percent.

Drug Use by Region

As for the type of drug used and location of the accident, alcohol and marijuana were found in drivers fairly well distributed across the states. The cocaine cases were found primarily in California and Maryland. As a percentage of total tests or total drug-of-abuse-positive cases, Maryland is significantly higher for cocaine. For amphetamines, virtually all such fatal accidents in the study occurred in California.

Drug Use by Age

Older drivers were less likely to test positive for drugs of abuse. The average age of all the fatally injured drivers was 42.4 years. The average age of the drug-free truck drivers was 44.6 years. The average age for drivers testing positive for drugs of abuse was 36.5 years. The single-drug user whose drug of choice was alcohol was significantly older (42.5 years) than any of the single-drug users whose drug of choice was other than alcohol (34.7 years).

Drug Use and History of Drug Problems

A prior record of alcohol and drug abuse was strongly related to a positive test for drugs of abuse among the fatally injured drivers. Of the drivers who had a history of problems, 82 percent tested positive for drugs of abuse.

Multiple Licenses

Drivers with at least one suspended or revoked license were more likely to have tested positive for drugs of abuse. Drivers with no known suspended or revoked licenses tested positive for drugs of abuse in 30.2 percent of the cases, whereas 57.9 percent of those with suspended or revoked licenses tested positive.

Medical Condition

Nineteen of the 185 drivers (10 percent) had such severe health problems that health was a major factor in or the probable cause of the accident. Seventeen of those 19 accidents involved a form of cardiac incident.

Drug Use and Accident Causation

In 49 (87.5 percent) of the 56 cases in which the drivers tested positive for drugs of abuse, impairment from using the drug or combination of drugs was a factor in causing the accident.

Fatigue and Drug Use

Professional drivers made up nearly 81 percent of the fatally injured drivers in the study. On the basis of an analysis of the probable causes of the accidents, professional drivers were involved in 87.2 percent of the fatigue-related accidents and 95.4 percent of the fatigue-and drug-related accidents.

Fatigue and drug use are closely linked. More than half of the drivers who violated federal guidelines for hours of service tested positive for a drug of abuse. This was significantly higher than the drug use found for drivers who did not drive more hours than prescribed by the guidelines. The most prevalent drug of abuse among the drivers in violation was marijuana. Differences were also suggested for the stimulants amphetamine, methamphetamine, and cocaine. There appeared to be no difference between these groups in alcohol or multiple-drug use. Use of amphetamines and methamphetamines was disproportionately high not only among drivers in violation of hours-of-service guidelines, but also among drivers involved in accidents between midnight and 6:00 a.m. and especially among drivers who veered off the road or collided with other vehicles in ways that suggested dozing at the wheel. It is not surprising to find these drugs associated with fatigue-related accidents. Some drivers perceive that some drugs help to extend the amount of time they can drive without extended rest. These drivers do not realize that fatigue is aggravated when the initial effects of stimulants wear off. Sleep deprivation becomes a deficit that drugs cannot overcome. Depressants, such as alcohol, aggravate and reduce the initial effects of stimulants.

CONCLUSIONS

The findings of the NTSB study will be useful in identifying the magnitude, scope, and characteristics of drug and alcohol use among drivers of heavy trucks. In addition, the problems of fatigue and medical conditions were identified. These data will help government and industry in their efforts to develop and implement programs to reduce these problems.

For a copy of the complete study report—*Safety Study—Fatigue, Alcohol, Other Drugs and Medical Factors in Fatal-to-the-Driver Heavy Truck Crashes*, PB 90917002, NTSB/SS-90/01—contact Barry M. Sweedler at (202) 382-6810 or fax the request to (202) 382-8006.

DRUG EVALUATION AND CLASSIFICATION PROGRAM

Lt. J. C. Grant

Arizona Department of Public Safety

I will not dwell today on the statistics associated with the hazards presented by the drug-impaired driver. Other speakers have very forcefully shown that the drug-impaired driver is, and should be, a very real concern to the traffic safety community. The cost in lives lost, injuries sustained, and economic impact is staggering. I will, however, offer one statistic that I feel is of importance: the National Highway Traffic Safety Administration (NHTSA), in its report to Congress entitled *Use of Controlled Substances and Highway Safety* (1988), disclosed that between 14 and 50 percent of impaired drivers detained by police showed some indication of drug involvement.

The dilemma faced by law enforcement officers is familiar: a driver is stopped and arrested on suspicion of alcohol-impaired driving, and a breath test is administered that indicates that the subject's blood alcohol is substantially below the level required to prove intoxication. At this point, the officer has several alternatives:

1. The officer can pursue charges of driving under the influence (DUI) against the suspect, placing the burden on the prosecutor to prove impairment. It is unlikely that the prosecutor will pursue the case because of a lack of evidence to prove the cause of impairment.
2. If local laws permit, the officer can request the suspect to submit to a blood or urine test to determine the presence of drugs. The expense of toxicological

testing precludes many agencies from testing for a wide range of possible drugs that may be present; and, if drugs are confirmed in the sample, the burden of proving that these drugs—and not some medical or other defect—are indeed the reason for the impairment still rests with the officer.

3. The officer can cite the suspect for a lesser offense, thus allowing the suspect to "skate" on the more serious offense of DUI drugs.

In the late 1970s, officers of the Los Angeles Police Department, recognizing the problem created by the drug-impaired driver, pioneered the development of a drug-recognition procedure. This procedure allowed a trained officer to examine an impaired suspect and obtain compelling evidence that impairment was consistent with ingestion of a certain type or category of drugs.

In 1984, NHTSA, in cooperation with the National Institute on Drug Abuse (NIDA), sponsored a controlled laboratory evaluation of the drug evaluation and classification (DEC) process. The evaluation showed that drug recognition experts (DREs) were able to classify 98.7 percent of high-dose subjects as impaired and identify the category of drugs for 91.7 percent of the high-dose subjects. This study was followed by a NHTSA-sponsored field validation, the results of which demonstrated that trained DREs were able to identify the presence of certain categories of drugs in a majority of cases. In fact, the study found that

- When DREs predicted the presence of drugs other than alcohol, the drugs were detected in 94 percent of the cases;
- When DREs identified a suspect as being impaired by a specific drug category, the drug category was detected in the suspect's blood 79 percent of the time; and
- Only 3.7 percent of the suspects who had used drugs had blood alcohol concentrations (BACs) equal to or greater than 0.10 percent. It is likely that most, if not all, of the remaining suspects would have been released if the DREs had not recognized the drug symptoms.

After these studies, NHTSA developed a standardized curriculum for training officers as drug recognition technicians and in 1987 initiated pilot programs in Arizona, Colorado, New York, and Virginia. As of this time, the Drug Evaluation and Classification Program has expanded to 16 states and the District of Columbia.

The DEC process is a standardized and systematic means of examining an impaired subject to determine (a) whether the suspect is impaired, (b) if so, whether the impairment is drug-related or medically related, and (c) if it is drug-related, the broad category (or categories) of drugs most likely to have caused the impairment.

The DEC process is a postarrest procedure that takes place in a controlled environment such as a police station or jail facility. The process is not a way to determine the exact drug a person has taken; instead, it allows the presence of drugs to be narrowed down to broad categories of drugs that have similar symptoms. The process is not a substitute for a chemical test. Although a DRT can testify that there is impairment and that certain types of impairment may be consistent with certain categories of drugs, scientific corroboration of this testimony is still highly desirable.

For purposes of the Drug Evaluation and Classification Program, a drug is defined as "any chemical substance, natural or synthetic which, when taken into the human body, can impair the ability of the person to operate a motor vehicle safely."

Seven broad categories of drugs can be identified through the DEC process. These categories are based on the observable symptoms produced by the drugs rather than on medical or pharmacological qualities. The categories are central nervous system depressants, central nervous system stimulants, hallucinogens, phencyclidines, narcotic analgesics, inhalants, and cannabis.

The drug evaluation process is standardized in that officers are taught to perform the evaluation in exactly the same manner each time for every suspect. No steps are to be left out of the process, and none are to be added. The process is systematic in that it is based on a variety of observable signs and symptoms that are known to be reliable indicators of drug impairment. A DRT's conclusion is based on the totality of facts and indicators observed, never on a single clue or element of the examination. These facts are obtained from careful observation of the suspect's appearance, behavior, performance on psychophysical tests, eyes, and vital signs. The drug evaluation consists of a 12-step process, and each step is performed in a prescribed sequence and manner.

It is often asked whether it would be much simpler to obtain a blood or urine sample from persons who are impaired but whose BACs do not account for the level of impairment. This approach appears reasonable, but it often does not result in successful prosecution of DUI drugs cases. There are several reasons for this.

1. Often courts require that there be probable cause, or at least articulable suspicion, that drugs are the cause of impairment. The mere absence of alcohol as a causative factor may not be so construed.

2. Conducting tests for the presence of a full range of drugs, even if the search is limited to those most commonly abused, is costly and time-consuming. Add to this the fact that many substances abused by drivers are not routinely tested for in drug-screening processes, and you quickly realize the value of the DRT in helping to direct the laboratory technicians toward likely causes of impairment.

3. At this time, there is no means by which we can assume that a certain concentration of a drug in the blood or urine of a subject will cause a given level of impairment. Even more complex is the situation caused when several types of drug are taken or when drugs are taken in combination with alcohol, as frequently happens with drug abusers.

For these reasons and many others, it is essential that the arresting officer, the DRT, and the toxicologist form a partnership in arresting, prosecuting, and convicting the drug-impaired driver. Each has an essential role, and the absence of any one greatly reduces the effectiveness of the others.

Any questions about the Drug Evaluation and Classification Program may be directed to J. Michael Sheehan, Chief, Police Traffic Services Division, NHTSA, 400 Seventh Street S.W., Room 5119, Washington, D.C. 20590.

ALCOHOL AND OTHER DRUG INVOLVEMENT IN SERIOUS TRAFFIC CRASHES: DEVELOPMENT OF A RESEARCH PROTOCOL

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SUMMARY

Difficulties were encountered with project implementation, mostly on the issue of patient confidentiality, but they appear to have been sufficiently overcome (at the cost of delays) to permit a broader use of the proposed protocol. Two projects produced two results. First, methodology has been proposed and tested to permit researchers to more closely examine the roles of alcohol and drugs in nonfatal traffic crashes and the accuracy of police reporting of such involvement.

Second, the results of the pilot implementation indicate that drug involvement is possibly greater than previously suggested and that police underreport alcohol involvement and substantially underreport drug involvement in such crashes.

INTRODUCTION

This paper describes the conducting of a study on alcohol and drug involvement in traffic crashes. The research objectives are fairly simple, but developing research protocols and getting the study operational in the field were complex and time-consuming. An interim summary of study results is also included; a more detailed examination of the study's results will be presented in the future. A more detailed description of the implementation process is available from the author.

BACKGROUND

Problems associated with driving under the influence (DUI) are well known, but most studies have focused only on alcohol as the impairing substance, and the most commonly quoted DUI statistics are based on fatal-crash studies. The purpose of this study was to assist in filling gaps in the state of knowledge.

State of Knowledge

Alcohol-Involved Crashes

The popular press often quotes the statistic that "half of all traffic fatalities are *caused* by impaired (or 'drunk') drivers." There is some truth in that statement, but it is often taken well out of context. Many studies have shown that roughly 50 percent of drivers killed in traffic crashes have an impairing quantity of alcohol in their systems (Perrine, 1971; Fell, 1983). These studies do not, however, examine the "causes" of the fatal crashes. The involvement of an intoxicated motorist in the crash does not mean that alcohol was a crash factor. The percentage of fatal crashes caused by an intoxicated driver for which the intoxication was a factor in the crash is not well established.

The role of alcohol-impaired drivers in injury crashes is even less well known. Although complete toxicology examinations are often done on fatally injured drivers, the only time that alcohol or drug testing is done in nonfatal crashes is when a police officer requests it. The advent of the National Accident Sampling System (NASS) in the late 1970s provided a partial solution to this problem, although the data are still dependent on impairment detection by police officers. An examination

of the NASS data indicated that 18–25 percent of injury crashes were alcohol-related (Fell, 1982). Earlier studies provided broadly similar (although generally lower) results (Borkenstein, 1964 and 1974; Farris, 1977; Treat, 1979).

Drug-Involved Crashes

The literature does contain studies of alcohol involvement in fatal and nonfatal crashes, but few are concerned with the involvement of other drugs. Again, most of the studies on drug involvement have focused on fatal crashes (Cimbura, 1982; Mason, 1984; Williams, 1985).

Two large-scale studies have been done on drug involvement in injury crashes (Terhune, 1981; Soderstrom, 1988). Both studied patients admitted to hospital emergency departments after crashes. Because Terhune needed informed consent from his test subjects, he lost about a quarter of his potential subjects. Soderstrom, who did not have a significant loss in population, tested only for cannabis and alcohol.

Police Reporting of Alcohol and Drug Involvement

Only one study has been found that compares police reporting of impairment to laboratory test results on the same drivers (Pendleton, 1986). It looked at fatal crashes in Texas and found substantial police underreporting of alcohol involvement.

Limitations of Studies

Most of the literature in this field relies on data from studies of fatal crashes, which can provide misleading information. First, for drugs other than alcohol, there is little agreement about what concentrations will affect driving performance. Second, many drugs can be detected in the system after they are no longer psychoactive. Third, if the victim dies more than a few hours after the crash, tests are suspect because of metabolism and hospital therapy. Finally, use of drugs other than alcohol also may not be accurately reported, because in many states the applicable law requires that tests be conducted only to determine the presence of alcohol.

Testing for the presence of drugs in nonfatally injured drivers is even more difficult. Police infrequently make arrests for driving under the influence of drugs because it is not an easy charge to prove. The courts have held that if impairment can be shown and if alcohol can be eliminated as the intoxicating agent (e.g., through a breath test), it is reasonable to assume that the

impairment is due to drugs. In practice, however, if a low result is obtained from the breath test, the suspect is often released by the police even if there is other physical evidence of impairment.

Studies by Fell (1986) and Burns (1987) have indicated that for every five drivers killed in traffic crashes who have more than the legal concentration of alcohol in their systems, about one has other impairing drugs. The ratio of arrests for DUI of alcohol to arrests for DUI of drugs is more than a magnitude greater than 5 to 1.

CURRENT RESEARCH EFFORT

This study will produce information in several areas. The three general research questions follow.

1. What percentage of drivers injured in traffic crashes have alcohol, drugs, or both, in their systems?

As discussed earlier, little information is currently available on impairment levels of drivers involved in nonfatal crashes, particularly if the impairment is caused by a substance other than alcohol.

2. Are there variations by population subgroups in alcohol or drug involvement?

Specific variables to be addressed for this question include driver age and gender, impairing substance(s) found, and time of and number of vehicles in the crash.

3. How accurate are the police in detecting alcohol or drug presence in drivers injured in crashes?

Studies indicate that police officers fail to identify the majority of alcohol-impaired drivers with whom they have face-to-face contact (Zusman, 1979; Vingilis, 1982). These studies are based on routine traffic stops. The additional turmoil of a crash scene can further affect a police officer's ability to detect an impaired driver.

DEVELOPMENT OF RESEARCH PROTOCOLS

Initial Protocol Development

It was initially hoped that data collection could be carried out as follows: urine specimens would be collected from all drivers injured in traffic crashes who are immediately treated in a hospital emergency department, and emergency department personnel would fill out a brief form that provides basic patient

demographics. The urine samples would then be transported to a toxicology laboratory for analysis. The results of the toxicological analysis would be reported to the project team using a unique control number. The information from the laboratory reports would be combined with the data from the hospital and analyzed by members of the project team. Finally, these results would be compared with police reports of the accident.

The police report can be obtained with information from the hospital. To protect patient confidentiality, all personal identifiers would be removed from the report before laboratory information was added to the file.

Difficulties were encountered in getting the proposed protocol accepted, first through the university's institutional review board (IRB) and later at candidate hospital sites. The study concept was supported, but there were concerns about compromising patient confidentiality. The IRB concerns were resolved through the application for and receipt of a U.S. Department of Health and Human Services Certificate of Confidentiality, which makes the project data immune from all subpoenas.

The hospitals were concerned about the release of patient names under any circumstances. The names were not needed for study purposes per se but for obtaining police accident reports. Because the names would not be released, it would not be possible to match the laboratory reports to a specific accident report. As an alternative, it was decided simply to match the class of laboratory reports to the class of accident reports for which an injured driver was taken to a participating hospital. Analyses would then be done on the matching demographic subgroups in the two classes.

Analysis of Police Reports

The accuracy of police reporting of alcohol and drug impairment of drivers is analyzed by reviewing police accident reports. Two types of information were checked on this report. The first was whether an arrest was made for DUI. The second comes from a set of items on the back of the report form. Under "Apparent Physical Condition," an officer can mark "Normal," "Medicated," "Other" (with a blank to fill in), "Had Been Drinking," or "Unknown." There are also places to mark if a chemical test was offered, test type, test results, and whether the driver was tested for drugs other than alcohol.

If a DUI arrest was made, or if any of the impairment-related items on the back of the report form were marked, it would be assumed that the officer had detected the presence of an impairing substance. The lack of an arrest or lack of marks in those boxes would imply that no such detection was made.

Pilot Implementation Interim Results

Samples were collected from about 200 individuals at a pilot test hospital for 1 year. A complete analysis of the data is under way, but preliminary results are available as follows:

- 54 percent of all drivers in the sample had drugs, alcohol, or both in their systems;
- Evidence of impairing drugs (other than alcohol) was found in 32 percent of the driver sample;
- Evidence of alcohol (ethanol) was found in 42 percent of the sample;
- 79 percent of the drivers 25–34 years old had alcohol, drugs, or both in their systems;
- None of the drivers involved in crashes between 8 a.m. and noon had any impairing substances in their systems;
- 67 percent of the drivers involved in crashes between 12 p.m. and 8 a.m. had impairing substances in their systems;
- 72 percent of the drivers in single-vehicle crashes had impairing substances in their systems; and
- None of the police reports contained a reference to an officer's suspicion that a driver was under the influence of drugs, and fewer than five mention alcohol.

PROJECT STATUS AT OTHER HOSPITALS

After the pilot study was well under way, it was decided to implement the project in other hospitals. Implementing the project in other hospitals has been much slower than anticipated. As of mid-1989, specimen collection had been initiated at three additional hospitals and was continuing at two of them.

GUIDELINES FOR PROJECT IMPLEMENTATION AT OTHER SITES

If projects similar to this were to be initiated in other areas, it is recommended that the tasks as described below be followed to facilitate project implementation.

Task 1: Establish Procedures and Protocols

Before the final selection of hospitals, procedures for specimen analysis must be established and an experienced toxicology laboratory identified. One lab should do all testing for an entire region. Costs of various analyses should be examined because they can

vary substantially among laboratories. Deciding not to test for substances rarely found in vehicle drivers can also reduce analysis costs.

A general protocol for conducting tests in hospitals should be developed (a sample is available from the author upon request). If the research is being conducted by most research institutions or the federal government, some type of protocol approval by a human subjects testing review panel is usually required. For the protection of all parties, obtaining a Certificate of Confidentiality from the U.S. Department of Health and Human Services is recommended.

Task 2: Obtain Hospital Cooperation

Candidate hospitals must be sought to participate in the project. The candidate hospital must demonstrate to the research team willingness to obtain the necessary specimens from all eligible drivers and to provide complete demographic data in a timely manner at a reasonable cost.

It is difficult to suggest specific guidelines on hospital type. When initiating a project in an area, the willingness of the hospital to participate (or the willingness of someone within the hospital to advocate participation) is the key factor. Another important factor is the number of potential test subjects admitted to the hospital's emergency department.

Because emergency-department personnel (usually the nursing staff) will do the actual project "work," cooperation and, preferably, project direction from department management is helpful. It is important that the hospital staff realize the potential value of the study, both nationally and locally. Participation can be sought for any or all of the following reasons:

- Public health will be benefited as the extent of the involvement of drugs and alcohol in traffic crashes is better identified;
- The health profession could be made more aware of the possible drug involvement of crash victims that they are treating;
- The study could be carried out without cost to the hospital (if adequate project funding is available);
- The hospital could enhance its professional standing by participating in such research; and
- Some data could be made available to the hospital staff for use in their own research efforts.

It is difficult to initiate research of this type within a limited time. It can sometimes take more than a year for the approval to work through the hospital administration.

It is also important to monitor test-site hospitals. Even if staff members receive training on their roles in the project, some will initially forget to collect or store samples. Providing hospital staff with project updates and interim results is also recommended for keeping interest (and necessary participation) at a high level.

Task 3: Obtain Cooperation of Law Enforcement Agencies

Besides identifying a laboratory and hospitals, seeking the cooperation of law enforcement agencies is necessary to permit the assessment of police reporting practices. Ideally, all that is wanted from them are copies of reports of accidents in which an injured driver was taken to a participating hospital. It may not be easy for some law enforcement agencies to provide reports that meet those criteria. Decisions must then be made about omitting that agency or asking (and possibly paying) for a larger set of reports, discarding those that do not meet the criteria.

Task 4: Collect Data

After all agreements have been completed with the hospital, police, and any other parties, actual data collection can begin. Primary data collection will be made by the hospital and law enforcement agencies. Collection from the hospital must be continuous, but the police data should be collected only once, after hospital collection is finished.

Task 5: Interpret Data

After the data have been collected, summaries similar to the following should be prepared:

- The percentage of drivers involved in serious-injury and fatal crashes who have evidence of drug or alcohol in their systems, cross-tabulated by such variables as driver demographics, crash time, and quantity and type of drug or alcohol; and
- A comparison of hospital-supplied data with data from police accident reports.

DRUG INVOLVEMENT AMONG DRIVERS ADMITTED TO A REGIONAL TRAUMA CENTER

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TRAUMA AS DISEASE

A 1966 National Research Council document entitled *Accidental Death and Disability: The Neglected Disease of Modern Society* identified trauma as a major health-care concern in the United States. In that report, trauma was recognized as the "leading cause of death in the first half of life's span" (1). A 1985 follow-up report, *Injury in America: A Continuing Public Health Problem*, indicated that injury had become the leading cause of death for Americans between the ages of 1 and 44 (2). In 1985, 143,000 people suffered injury-related deaths, making injury the fourth-leading cause of mortality in the United States. Overall, approximately 60 million people required treatment and 2.3 million required hospitalization for their injuries. The estimated aggregate lifetime financial burden incurred by those injured in 1985 is \$158 billion (3).

From 1985 through 1987, the years of potential life lost due to injury exceeded those from the leading causes of death—heart disease and cancer—combined (4,5). Whitfield and colleagues (6) predicted that 8 million people alive in 1980 will eventually die as the result of injuries, including 5.3 million men. Two million people are expected to die from traffic crashes: half of the predicted 1.4 million men will die by age 35, and half of the predicted 600,000 women will die by age 40.

TRAUMA CENTERS IN THE UNITED STATES

The "*Accidental Death and Disability*" document provided the impetus for the creation of trauma centers throughout the United States. In 1985 there were approximately 350 trauma centers of various levels; by the end of 1990 there were more than 500.

The Shock Trauma Center of the Maryland Institute for Emergency Medical Services Systems (MIEMSS) of the University of Maryland in Baltimore is a Level I trauma center. Trauma centers have been characterized by the Committee on Trauma (COT) of the American College of Surgeons (ACS) as Levels I, II, and III on the

basis of available personnel and equipment (7). Level I centers are the most sophisticated centers. According to COT of ACS, "the Level I facility is a Regional Resource Trauma Center. It is the primary hospital in the trauma system and has the capability of providing total care for every aspect of injury...The Level I center should serve as both an acute care facility and a tertiary referral center." A primary distinction between Level I and Level II centers is the Level I commitment to research and education.

TRAUMA CENTERS AND THE CARE OF VEHICULAR CRASH VICTIMS

In Maryland patients are triaged from crash scenes to a trauma center if they have multiple injuries, shock, or evidence of head or spinal-cord injury. Mechanism of injury, death at the scene, and clinical suspicion of occult life-threatening injury are also used as guidelines for transport to a trauma center. To assist trauma centers and systems in identifying which patients could benefit from transfer to a trauma center, COT of ACS has developed a triage decision scheme. Part of that scheme provides guidelines for the triage of vehicular crash victims to trauma centers. That portion of the scheme is reproduced in Figure 1 (7).

ROUTINE CLINICAL TESTING FOR ALCOHOL AND OTHER DRUGS

At the MIEMSS Shock Trauma Center, in addition to having a blood alcohol concentration (BAC) determination on admission, patients are tested for a cadre of licit and illicit drugs. Toxicology information is obtained for the clinical management of patients, not for

legal purposes. Patients with elevated BACs and those who test positive for illicit drugs are assessed for substance problems by the center's alcoholism counselor (for more than 15 years, COT of ACS has indicated that an "essential" resource for Level I and II trauma centers is drug and alcohol screening). A 1985 national survey of U.S. trauma centers indicated that just over half of such centers routinely tested their patients for alcohol on admission (8). Preliminary results of a updated survey indicate similar results.

SIGNIFICANCE OF SHOCK TRAUMA CENTER DATA

Although the Shock Trauma Center is in Baltimore, approximately 80 percent of the patients treated at the center are not from Baltimore. The center is designated as the Level I regional trauma center for the most populated area of Maryland. Clinically oriented prehospital triage protocols dictate the facility to which trauma patients are taken. About 75 percent of the patients are transported to the center by a Maryland State Police MedEvac helicopter. Most are injured in rural or suburban settings. Hence, toxicology data from the center's patients represent drug use among individuals from counties surrounding Baltimore, distant counties, and contiguous states.

PROFILE OF SHOCK TRAUMA CENTER PATIENTS

Data in Table 1 derived from the Shock Trauma Clinical Registry illustrate the demographics of the patient population treated for FY 1989.

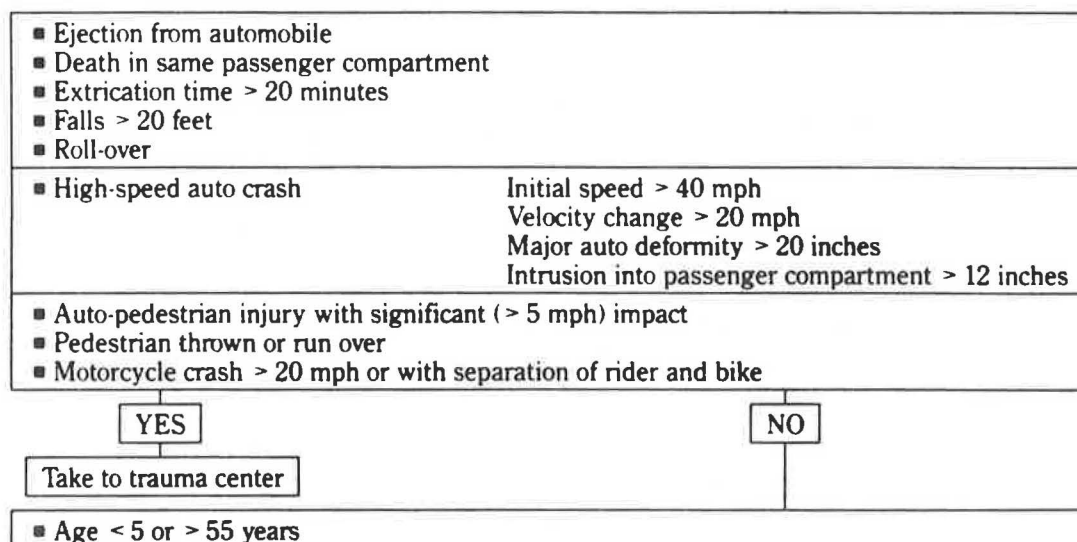


FIGURE 1 Triage decision scheme, vehicular crash victims.

TABLE 1 PATIENTS ADMITTED TO SHOCK TRAUMA CENTER: FY 1989
 [N=2,397; DIRECT ADMISSIONS=1,811 (76%); TRANSFER=586 (24%)]

Sex		
Men	1751	(73%)
Women	646	(27%)
Age		
<18	231	(10%)
18-20	297	(13%)
21-35	1106	(48%)
36-50	434	(19%)
≥51	329	(10%)
Race*		
Caucasian	1806	(75%)
Non-Caucasian	589	(25%)
Injury Type**		
Unintentional	2033	(85%)
(% Vehicular)	(1518)	(64%)
Intentional	359	(15%)
(% Gunshot/Stab)	(233)	(9%)

* 2 unknown ** 5 unknown

[Data courtesy; Shock Trauma Clinical Registry⁹; 1990]

A TRAUMA PATIENT TOXICOLOGY DATA BASE

Through a contract funded by the Maryland Department of Transportation, clinical toxicology data from the Shock Trauma Center have been linked to Maryland Automated Accident Reporting System crash report information to create a crash/drug data base. The Trauma Patient Toxicology Database was created under the direction of Patricia C. Dischinger, an epidemiologist researcher at the National Study Center (NSC) for Trauma and EMS (10). The data base, which is housed and maintained at NSC, an affiliate of the Shock Trauma Center, is strictly confidential. Because clinical and crash data can be linked, information about the prevalence of alcohol and other drug use among crash victims and the characteristics of the crashes in which they were injured can be studied. Accumulation of data over time will allow for analysis of trends. A summary of vehicular crash victims for whom complete data are available for January 1988 through December 1989 is presented in Table 2.

TABLE 2 DRUGS OF ABUSE AMONG 2,179 VEHICULAR CRASH VICTIMS TREATED AT THE MIEMSS SHOCK TRAUMA CENTER, BALTIMORE, MARYLAND (JANUARY 1, 1988—DECEMBER 31, 1989)

Victim Type	Drugs of Abuse*						
	ALC (99%)	AMP (87%)	BAR (99%)	COC (87%)	MTH (87%)	OPI (87%)	PCP (87%)
Car/truck driver (N=1276)	33.9	0.4	2.2	7.1	0.2	3.5	3.0
Car/truck passenger (N=440)	36.8	0.3	0.7	7.3	0.3	2.9	3.4
Motorcyclist (N=217)	52.3	--	0.9	12.0	0.5	3.6	8.8
Pedestrian/pedalcyclist (N=246)	45.5	--	0.8	8.2	--	5.3	1.4

* ALC=alcohol, AMP=amphetamine, BAR=barbiturates, COC=cocaine, MTH=methadone, OPI=opiates, PCP=phencyclidine (Data courtesy: PC Dischinger; NSC; December, 1990)

MARIJUANA

Testing for marijuana is not routine in clinical centers. Reports documenting the prevalence of marijuana use in patients from such settings are obtained as the result of research initiatives.

In a prospective study of 1,023 patients admitted to the Shock Trauma Center, the prevalence of alcohol and marijuana use was ascertained (11). In that group of patients (92.2 percent of whom survived), marijuana was detected in 35 percent and alcohol in 34 percent of the patients. There was no significant difference in the incidence of marijuana use among victims of vehicular trauma [N=692 (34 percent)] and those injured as the result of other traumatic insults [N=331 (37 percent)]. Of the 463 drivers studied, 33 percent tested positive for marijuana use. More than half of those drivers testing positive for marijuana also had positive BACs on admission.

The Shock Trauma Center marijuana study is significant for three reasons: (a) it is the largest prospective study of its kind, (b) the population studied involved individuals from counties throughout Maryland, and (c) the test method used reflects marijuana use proximal to the time of injury. A serum radioimmunoassay (RIA) test was used to detect marijuana's active ingredient, delta-9-tetrahydrocannabinol (delta-9-THC). Urine tests for marijuana metabolites can yield positive results up to 10 days after a single use of the drug. In contrast, serum delta-9-THC activity usually will not be detected with an RIA test 3 to 4 hr after cessation of smoking marijuana.

ALCOHOL AND OTHER DRUGS: STUDIES FROM OTHER CENTERS

Alcohol use plays a major role among patients admitted to trauma centers. Data from six regional trauma centers scattered throughout the United States involving 4,063 trauma patients indicate that 40.2 percent had a positive blood alcohol level at the time of admission (11-16).

Compared with alcohol, there are few large studies of the prevalence of other drugs of abuse among trauma patients in general, and among vehicular crash victims in particular. Among the 1,244 trauma patients from three trauma center studies (12-14), 29 percent tested positive for cocaine and 33 percent tested positive for marijuana. In one study (14), 10 percent of 623 patients tested positive for phencyclidine (PCP).

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SESSION 2

THE SURGEON GENERAL'S WORKSHOP ON DRUNK DRIVING—TWO YEARS LATER

INTRODUCTION

Barry M. Sweedler

Two years have now gone by since former Surgeon General C. Everett Koop convened his controversial and historic Workshop on Drunk Driving. Dr. Koop brought together more than 100 traffic safety officials, public health professionals, citizen activists, and researchers to develop a national response to the crisis of impaired driving.

The workshop was historic because unlike previous workshops and conferences on this problem, it considered all policies and programs that could reduce the impaired driving problem—including those that were opposed by the alcoholic-beverage, advertising, and broadcasting industries. The workshop was controversial because it went ahead despite the efforts of the opposition to cancel or delay it.

Two years are not all that have gone since the workshop. More than 45,000 Americans have also gone—victims of the drunk driver. This session will discuss the recommendations that came from the workshop and the progress that has been made to implement them.

GOVERNMENT IMPLEMENTATION OF THE WORKSHOP RECOMMENDATIONS

Robert W. Denniston

Office for Substance Abuse Prevention

In December 1988, then surgeon General C. Everett Koop convened a Surgeon General's Workshop on Drunk Driving to focus national attention on the problem of alcohol-impaired driving. The workshop, which was the last in a series of 11 such meetings held during Koop's term, was attended by 120 professionals who served on 11 expert panels that made more than 200 recommendations.

The recommendations addressed alcohol pricing and availability, advertising and marketing, epidemiology and data management, education, judicial and administrative processes, law enforcement, transportation and alcohol service policies, injury control, youth and other special populations, treatment, and citizen advocacy. After reviewing all of the recommendations, Koop endorsed 10 Key Summary Recommendations that continue to guide

program and policy decisions related to alcohol-impaired driving. These 10 recommendations are as follows:

1. Reduce the illegal blood alcohol concentration (BAC) for drivers from its present level of 0.10 percent to 0.04 percent by the year 2000, and establish a level of 0.00 percent for drivers under 21 years of age.
2. Increase excise taxes on alcoholic beverages, and tax beer, wine, and distilled spirits equally based on alcohol content.
3. Have every state provide a system to fund comprehensive alcohol-impaired driving programs.
4. Reduce the availability of alcoholic beverages.
5. Pass legislation in every state to confiscate drivers' licenses on the spot for those found to be above the legal BAC.
6. Match the level of alcoholic-beverage advertising with an equal number of prohealth and prosafety messages.
7. Restrict certain types of advertising and marketing practices, especially those that reach underage youth.
8. Conduct public information efforts that are based on social marketing and communication strategies and on sound learning principles.
9. Conduct drinking-and-driving education within worksites, communities, health care agencies, and schools.
10. Increase the enforcement of drinking and driving laws, and expand the use of sobriety checkpoints.

After the recommendations were released in May 1989, primary responsibility for implementing them was assigned to the office for Substance Abuse Prevention (OSAP) in the Alcohol, Drug Abuse, and Mental Health Administration, U.S. Public Health Service. Over the past 2 years, OSAP has developed an alcohol-impaired driving initiative and is now involved in the following types of activities and programs related to implementing the workshop recommendations:

- Developing white papers on counteradvertising, designated-driver programs, administrative license revocation, and college drinking;
- Convening an Impaired Driving Initiative Expert Panel to advise OSAP on its impaired-driving activities.
- Conducting an analysis of media efforts to influence the entertainment community by various advocates of alcohol and other drug education such as

the Harvard School of Public Health, the Scott Newman Center, and the Entertainment Industries Council.

- Supporting the National Coalition to Prevent Impaired Driving, a nonprofit educational organization that was established as a result of the workshop.

- Conducting (in collaboration with the U.S. Departments of Transportation and Education) regional college workshops and train-the-trainer workshops on alcohol, other drugs, and traffic safety.

- Funding public information and education grants that assist local communities in developing educational and media advocacy activities.

- Organizing an issues forum to examine the implications of the mixed messages society sends to youth about alcohol, tobacco, and other drugs and to develop environmentally based strategies for reducing the impact of these messages.

- Conducting alcohol advertising and availability counteradvertising campaigns in six sites to reach racial and ethnic audiences that are heavily targeted by the alcohol industry.

- Documenting through case studies current or recent media advocacy experiences by organizations, coalitions, or individuals in African-American and Hispanic communities.

- Developing materials (e.g., advocacy packages, position papers, and fact sheets) and compiling data bases and files of speeches, slide shows, journal articles, and videos on impaired driving.

OSAP is also promoting the Healthy People 2000 National Health Promotion and Disease Prevention Objectives, which address many of the workshop recommendations. In particular, OSAP staff are making presentations and providing technical assistance to selected sites to promote the Healthy People 2000 objectives that call for a lowering of BAC levels; administrative driver's license suspension and revocation laws; education for children, youth, employees, and primary care providers; reduction in youth access to alcoholic beverages; and restrictions in promotion of alcoholic beverages to youth.

Updated data on the workshop recommendations addressed in the Healthy People 2000 objectives are being compiled by OSAP for a December 1991 briefing for the Assistant Secretary for Health, James O. Mason. Additional data on the workshop recommendations and ways they are being implemented at the federal, state, and local levels will be presented at the Secretary's Conference on Alcohol-Related Injuries, which OSAP is convening from March 23-25, 1992, in Washington, D.C. This landmark conference will provide a forum for

educating individuals about the risks and costs associated with alcohol-related injuries and for empowering communities to implement effective prevention strategies.

NATIONAL COALITION TO PREVENT IMPAIRED DRIVING: A COORDINATED RESPONSE

Laurel E. Harris

National Coalition to Prevent Impaired Driving

The National Coalition to Prevent Impaired Driving (NCPID) exists today because of former Surgeon General Koop's Workshop on Drunk Driving held in December 1988. One of the important recommendations of that workshop, and one strongly endorsed by Dr. Koop himself, was the formation of a national coalition designed to coordinate efforts to promote the recommended strategies that came from the workshop's drinking-and-driving expert panels. These strategies are summarized in the Ten Key Summary Recommendations, which act as a boilerplate for the coalition's agenda.

Not all of the recommendations deal directly with intervention at the driving level; instead, they look at a bigger picture. The idea is that to truly reduce drinking and driving, both sides of the equation must be considered; that means examining policies that also affect the social environment that encourages, normalizes, and pushes drinking as an essential part of American life. Stricter law enforcement and other driving deterrence measures that focus on individual behavior are just part of a comprehensive attack on drinking and driving. Policy intervention at the societal level creates conditions in which fewer people ever reach the point of being behind the wheel of an automobile when they are too impaired to drive.

Research has shown that as consumption goes down, alcohol-related problems also go down, including problems related to drinking and driving. Several of the recommendations developed at the workshop address policies that will help reduce consumption by affecting the availability and pricing of alcoholic beverages, advertising and marketing, and public information and education.

The coalition's agenda reflects the comprehensiveness and substantive breadth of the workshop recommendations. For the first time ever, a drinking-and-driving group has embraced the full range of alcohol-prevention policies that hold promise for reducing impaired driving—underscoring the belief that only through such an approach will the entire spectrum of alcohol-related problems, which include traffic crashes

and fatalities, be substantially reduced. The alcohol industry views the coalition as a threat precisely because of this philosophy. In response, it has framed coalition members as neoprohibitionists who desire to end drinking altogether.

The coalition is not against all drinking, but it is against youthful, abusive, and high-risk drinking. And that means it will promote policies that reduce, as well as change, consumption patterns across the board. The U.S. Department of Health and Human Services, as mentioned earlier, has recommended substantial reductions in the consumption of alcoholic beverages, particularly among youth, in its Healthy People 2000 report.

NCPID mirrors the uniqueness of the workshop recommendations in ways besides its comprehensive nature. Its membership composes the most broadly based organization concerned about impaired driving, with groups from the public health, traffic safety, consumer education, law enforcement, medical, and professional arenas. Members include the American Public Health Association, the National Association of Governor's Highway Safety Representatives, RID (Remove Intoxicated Drivers), National Council on Alcoholism and Drug Dependence, General Federation of Women's Club, General Motors Research Laboratories, Marin Institute for the Prevention of Alcohol and Other Drug Problems, and many others.

Coalition membership policies have attracted some criticism, mostly from the alcoholic-beverage industry. The coalition does ask its members to support, or at least not actively oppose, the Ten Key Summary Recommendations of the Surgeon General's Workshop. This is done to maintain the common goal of the coalition's direction and not, as the alcoholic-beverage industry maintains, to censor opposing views.

And although it is true that NCPID asks potential members to disclose any financial support that they receive from the alcoholic-beverage industry, it has not barred member status to any applicant who supports the Ten Key Summary Recommendations—even to those who have disclosed such funding. This information merely serves to clarify whose interests might be represented. In the past, too many well-meaning attempts by similar groups have been undermined by vested interests that inhibit the freedom to consider and pursue all policies that hold promise for reducing the damage caused by impaired driving. This was evident at the Koop workshop itself in the actions taken by certain organizations with such interests.

The industry—brewers in particular—claims that for years it has worked diligently to ensure the responsible consumption of its products through paid commercials,

research, alcohol awareness and educational programs, and more. Its efforts to promote responsible drinking should be recognized, but it is, nevertheless in the business of selling alcoholic beverages to make a profit. Its goal will always be to increase demand. Naturally, the industry's moderation and educational messages will be tempered by its quest for profit.

The designated-driver program, for example, is a campaign recently appropriated by the alcohol industry and allied broadcasters, sports teams, and so on. The coalition recognizes the merit of this program, but it also believes that heavy public-service focus on it alone will not really reduce in drinking and driving. The designated driver does nothing to change public attitudes about consumption. The industry can support this program because the program ignores overconsumption and its effects as long as one doesn't drive.

The industry's other educational messages are equally limited. "Know when to say when." "Party smart." "Think when you drink." These are vague and ambiguous messages that fail to provide concrete health and safety information to the consumer. They put the burden of alcohol problems squarely on the shoulders of the individual, exculpating the industry's responsibility for some of the devastation caused by the use of alcohol.

The industry—and brewers are perhaps the worst offenders—actively and habitually engages in questionable marketing practices that appeal to young people and encourage excessive, unrestrained drinking. Advertising campaigns such as "Spuds Mackenzie, Party Animal," college spring-break promotions, and TV ads that depict wild, partying youth far outweigh the brewers' messages of moderation.

Alcohol advertising, despite what brewers want us to believe, does far more than create brand awareness. A deluge of images abounds that helps to shape public attitudes and establish societal norms about drinking. "If you want to have a good time, make sure you have plenty of beer around," and "When you get together with your buddies, you're supposed to drink." Drinking is depicted as a generally harmless, everyday, anytime activity. Compare the \$2 billion worth of the prodrinking messages with the relatively insignificant number of holiday-oriented alcohol-education messages.

In a similar vein, although increasing the price of alcoholic beverages through excise taxes will presumably reduce consumption and the impaired driving that results, this strategy is strongly opposed by the industry and its vested organizations. When the price of a six-pack of beer is about the same as a six-pack of soda, what message does that send about beer, especially to young, price-sensitive consumers? Particularly among youth, taxation may be the most effective way to reduce

alcohol consumption.

Advertising and taxation are just two issues for which policy changes promise beneficial effects on drinking behavior and alcohol problems. The coalition wants to be free to consider all new prevention tactics and not just those with which the alcohol industry is comfortable.

A little bit of history on the coalition: NCPID was officially established 1 year ago, in January 1990, after several key participants in the workshop got together to organize a national coalition, working closely with the Office for Substance Abuse Prevention. NCPID is housed as a project of the Advocacy Institute, a Washington public interest support center.

Much of the first year's effort went into installing a structural and administrative foundation from which to work. The coalition built a notable and influential board of directors and currently has more than 150 organizational and individual members.

The first major effort the coalition launched was a "Drive Alcohol Free" campaign designed to call attention to the incongruity of brewers' sponsorship of motor-sports events. Beer producers spend close to \$50 million a year on motor-sports sponsorship, and as a result motor-sports events are heavily dominated by drinking cues and fast racing cars. Furthermore, young motor-sports fans are among those most likely to be arrested for driving under the influence or to be killed in alcohol-related car crashes. NCPID sought to counter these cues by delivering the "Drive Alcohol Free" message on the track; it held a press conference in May and asked brewers to withdraw voluntarily from motor-sports sponsorship, honored two drivers who refused to promote alcoholic beverages with their driving, and announced efforts to attract nonalcohol marketers to sponsor drivers who refuse to accept alcohol funding. The coalition is continuing its efforts in this campaign to find funding for one of the drivers honored at the press conference who, besides having a "Drive Alcohol Free" message on his vehicle and at the track, wants to spread this message by speaking to kids at schools, community groups, and other places.

NCPID also works with the Coalition for Alcohol Advertising and Family Education in support of congressional legislation calling for health and safety messages in alcohol advertising. This legislation, introduced in the last Congress by Representative Joseph Kennedy and Senator Albert Gore, would require rotating health messages, similar to the warnings in cigarette advertising, to be in all print and broadcast alcohol advertising. The print ads would also include a toll-free 800 number to call for help or more information on alcohol abuse. The bill will be reintroduced in the present Congress, and more action is expected this

session.

The coalition was also involved in the recent campaign during the congressional budget talks to raise federal excise taxes on all alcoholic beverages. In response to the Anheuser-Busch media blitz "Can the Beer Tax," NCPID issued an analysis of how federal excise taxes would affect the public, given the distribution of beer consumption in today's population. Drawing from data compiled in the last National Center for Health Statistics Interview Survey, NCPID demonstrated that increases in beer taxes would be almost painless for most adults and beer drinkers. In essence, Joe Six-Pack is not the average American: almost half the adult population doesn't drink beer at all, and half of beer drinkers consume fewer than two beers a week. NCPID presented this information at an economists' briefing on Capitol Hill in an effort to show that a federal beer tax would only minimally affect most Americans.

One of the workshop recommendations also includes passing legislation for an administratively imposed license revocation sanction in each state. NCPID has joined the larger Administrative License Revocation Coalition formed by the National Highway Traffic Safety Administration and the National Transportation Safety Board to disseminate information and educate its constituents about the importance of this legislation.

Throughout the year, coalition staff and board members have participated in presentations and panel discussions at major conferences in the alcohol and traffic safety fields. NCPID was at Lifesavers, the American Public Health Association's annual meeting, the National Governors' Highway Safety Representatives conference, and the National Association of State Liquor Administrators meeting, among others.

The Advocacy Institute is currently developing an electronic communications system called ALCNET in conjunction with the Marin Institute for the Prevention of Alcohol and Other Drug Problems. The coalition will use this computer network to link various contingents of the drinking-and-driving-control movement from around the country, enabling them to exchange ideas and strategies and giving them access to daily news and legislative updates. It also promises to facilitate the communication and effectiveness of emerging state and local coalitions as well as to link researchers, activists, and others in the alcohol movement. The system should be ready to use in about 6 months, and coalition members are to be involved as soon as possible.

Unfortunately, plans for the coalition are hampered by a lack of resources, but the staff is busy searching for additional funding for the upcoming year. NCPID, nevertheless, has become a recognized name in the press

and in the alcohol and drinking-and-driving fields and plans to continue doing its part to further the recommendations of the Surgeon General's Workshop.

**BEYOND DETERRENCE:
THE NEW ORDER OF BUSINESS**
H. Laurence Ross

The Surgeon General's Workshop on Drunk Driving has been called historic. It was also subversive, in that it had the consequence of undermining an existing paradigm and substituting a new one.

The paradigm by which drunk driving was understood before this workshop included the idea that the problem was isolated, only incidentally related to such broad social problems as general traffic safety and alcohol abuse. Individuals caused the drunk-driving problem, either through moral deficiency or disease; in any event, they belonged to a small group of deviants as different from typical Americans as sheep are from goats. Drunk driving was primarily a matter of criminal behavior, and it could best be handled by beefing up the criminal justice system—the police, courts, and jails. This paradigm was well expressed in the 1983 report of the Presidential Commission on Drunk Driving.

The new paradigm expressed in the background papers and report of the Surgeon General's Workshop views drunk driving as being intimately involved with other problems surrounding alcohol and traffic safety. Effective countermeasures dealing with drunk driving are likely to impinge on the broader problems, and vice versa. The Surgeon General's Workshop emphasized the social causes of these problems. Drunk driving is a comprehensible, predictable consequence of normal activities in American society, embodied in the institutions of recreation and transportation: it is normal in America to consume alcohol in recreational settings, and it is normal to drive. Because driving with any amount of alcohol in the blood is driving impaired to some degree, and there is no line between drunk driving and "safe" drinking and driving, crashes caused by driving while impaired are often the product of behavior conforming to norms, either general ones or those of particular groups including youth and some ethnic minorities. No sickness, moral turpitude, or other individual deviance need be involved.

Countermeasures for drunk driving in the new paradigm center on changing institutions. In particular,

the greatest hope of change lies in effective means for reducing drinking in general, and heavy drinking in particular, and for reducing driving in general, and driving in order to drink in particular. The pricing and marketing of alcoholic beverages are among the centerpieces of these strategies. The criminal justice system, central in the old paradigm, is not abandoned in the new, but within deterrent approaches stress is placed on the certainty and swiftness of threatened punishment rather than on its severity. This emphasis is based on research evidence testifying to the ineffectiveness of such penalties as mandatory jail sentences when they are extremely unlikely to be applied.

The old paradigm was sponsored by a coalition of citizen activists, law enforcement agencies, vested interests including driver educators and therapists, and the media and alcohol industries. It flourished in the conservative political atmosphere of the 1980s, in which social problems were often blamed on individual moral fault and in which punishment was deemed necessary and even respectable. The new paradigm results from the entry of public health officials who are concerned with preventing deaths and injuries rather than with the morality of drinking and driving. Alcohol and transportation policies, the heart of countermeasures suggested by the new paradigm, are more consistent with liberal than conservative politics. In addition, a line of countermeasures suggested by public health considerations but irrelevant to the old paradigm is that of conserving lives notwithstanding drunk driving. Examples are measures to simplify driving through vehicle and highway engineering, remove roadside hazards, provide air bags and other restraints to reduce crash forces in vehicles, and improve the quality of emergency medical services. Many of these measures require state action, again in contrast to the old paradigm.

The paradigm emerging from the Surgeon General's Workshop promises to displace the old. Its successor organization, the National Coalition to Prevent Impaired Driving, will challenge the successor organization to the President's Commission, the National Commission Against Drunk Driving. Those who speak against drunk driving no longer speak with one voice. It is hoped that the argument among them will be brief and bloodless so that a combined effort, harnessing the energy and indignation of citizens, movement to the pragmatic program of public health advocates, can continue the progress made so far in reducing the lives lost to drunk driving.