Alcohol and Highway Safety in a Public Health Perspective

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Synopsis

The Public Health Service and the National Highway Traffic Safety Administration share the responsibility for problems related to injury prevention and control regarding the alcohol-impaired operation of motor vehicles. NHTSA activities have evolved over several decades within a general framework which emphasizes community-based systems.

The National Highway Traffic Safety Administration is promoting program activities that stress community-level involvement in problems of alcohol and highway use. The public health approach to the mortality and morbidity resulting from alcohol use and motor vehicle operation entails examining and promoting those activities that address human factors. Techniques for Effective Alcohol Management (TEAM) is a cooperative effort representing sports, entertainment, insurance, vehicle manufacturer, and other organizations and agencies building community coalitions. The Centers for Disease Control is establishing research and collaborating centers to stimulate studies and exchange information on injury-related research. Alcohol countermeasures programs include training for law enforcement and legal officials, technology development efforts, and changes in laws applied to use of alcohol and other drugs. Outreach and networking activities have encouraged the initiation and coordination of community level groups active in promoting highway safety with regard to the use of alcohol.

Statistical method changes are being discussed for surveillance of motor vehicle-related injuries for Health Objectives for the Nation for the Year 2000. NHTSA data systems being discussed are thought to be more timely and more sensitive to crash activity than methods now in use.

Public health approaches to the problems of alcohol and highway safety are benefiting from growing cooperation among highway safety and public health officials to reduce the morbidity and mortality resulting from operation of motor vehicles by performance-impaired drivers.

THE PUBLIC HEALTH APPROACH to the prevention and control of injuries from alcohol related highway accidents focuses on three major elements. They are the environment, including such factors as alcohol availability and road design; the host, namely drivers, passengers, pedestrians, or anyone subject to vehicular injuries; and the agent, which is the energy of the injury causing collision. Programs using this approach have shifted from the Department of Health, Education, and Welfare (DHEW) to the Department of Transportation (DOT) for the past 30 years. Only now, with the creation of the Centers for Disease Control's (CDC) Center for Environmental Health and Injury Control (CEHIC), do we see both agencies actively working to solve the problems of highway safety.

Major attention to the issues of highway injury and safety was a responsibility of the Public Health Service (PHS) of DHEW, now the Department of Health and Human Services (DHHS). Then, the Federal Government's programmatic response to vehicular safety was in the transportation field, first at the Department of Commerce's Bureau of Public Roads, and after the creation of the National Highway Safety Bureau in 1966 (*1*), with DOT.

At DOT, the major focus was on highway design and engineering, vehicle safety, and law enforcement, with secondary emphasis on behavioral interventions. Programs were the responsibility of the Federal Highway Administration, and the National Highway Safety Bureau, now the National Highway Traffic Safety Administration (NHTSA).

The organization which became the CEHIC, in August 1987, received its funding from Congress through NHTSA in order to give injury prevention

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issues new interdisciplinary and interagency attention. CEHIC manages basic research activities with a behavioral and biomedical focus, as well as State and community coordinating activities which receive grant support and assistance. NHTSA continues its applied research, data collection, and program development and management activities (*2,3*).

DHEW established a Motor Vehicle Injury Prevention Program within the Public Health Service's Disease Control Programs area in the early 1960s. A landmark report projected the costs and benefits through 1968 expected to obtain from the Federal commitment to the problem of highway crashes (*4*):

> " . . . (m)otor vehicle accidents (are) examined exclusively in terms of public health concerns. This mandate focused on the role of human factors in vehicular accidents and the amelioration of injury caused by vehicular accidents. In adopting this posture, three major factors in the vehicular accident complex—law enforcement, road design and traffic engineering—were, for the most part, excluded. This constraint had the effect of limiting the problem to considerations traditionally within the purview of DHEW, while excluding those elements which are traditionally handled by the Department of Commerce and other Government agencies."

Despite the lack of agreement about what amount of drinking may be "safe," alcohol use has always been identified as a problem in highway safety (*5–11*). By 1966, with the creation of DOT, most of the activities and responsibilities of the DHEW safety effort found a new home in the National Highway Safety Bureau, later to become NHTSA.

In the health community, the problem of alcoholism and alcohol abuse was addressed primarily by the treatment and prevention demonstration programs of PHS's National Institute on Alcohol Abuse and Alcoholism (NIAAA), in existence by 1971. However, the community-based Alcohol Safety Action Projects (ASAP) of NHTSA brought the issue of alcohol abuse, in the context of the alcohol-impaired driving problem, before the public. Each ASAP reflected the particular needs and interests of specific local sponsoring agencies. States and communities were largely responsible for their implementation. ASAP addressed at least one aspect of the motor vehicle problem not found in the original DHEW motor vehicle injury prevention program—law enforcement and the entire legal system.

By the early 1980s, ASAP field experiments were coming to an end, and NIAAA was shifting away from directly funded services. Most treatment and prevention demonstration programs were being completed. The formula grant program assisting State-sponsored alcoholism services was redefined as block grants to the States, combining previously earmarked alcohol services funds with those for drug abuse and mental health (ADM). A State could allocate the block granted funds for any mix of ADM services based on its particular population needs.

In 1980, DHHS published specific health and safety goals for the Nation to be met by the year 1990 (*12*). Accident prevention and injury control received significant attention; most prominent in this section of the report was a discussion of the role of motor vehicle accidents in unintentional injury and trauma, with alcohol use accounting for nearly 50 percent of all fatal injuries. The health prevention and promotion measures suggested as program strategies were education and information, technology, legislation and regulation, and economic incentives. Interventions addressing the dangers of alcohol use combined with motor vehicle operation were discussed and cross referenced to the section on the misuse of drugs and alcohol. DHHS attention was being revitalized with regard to injury control, and especially motor vehicle related injuries. Additional sources of information are listed in the box.

The Current Situation

Since the mid 1980s, NHTSA has been promoting program activities that stress community-level involvement in the problems of alcohol and drug-impaired drivers, including motorcycle and bicycle riders and pedestrians. NHTSA, working through its regional offices, actively encourages and promotes State and local solutions, instead of trying solely at the Federal level to solve the problems of alcohol and drug impairment, as it did with ASAP.

NHTSA's community focus is reversing the trend of the last 20 years. Human factors, particularly attitudinal and behavioral (including health and medical) variables, are the subject of increased program attention, in addition to law enforcement, road design, and traffic engineering perspectives stressed in early DOT activity. In particular, NHTSA has developed initiatives that rely overtly upon community implementation of its strategies as well as the involvement of the public health field for successful execution.

NHTSA and Public Health Activities

TEAM. Techniques for Effective Alcohol Management began in 1985 with a series of informal discussions among representatives of the facilities management industry and the National Basketball Association about the problems of alcohol-impaired driving. A year later, a study was issued detailing the implementation and preliminary results from a seven-site pilot project (*13*). The program results from a coalition formed by NHTSA; Allstate Insurance Company; CBS, Inc., the International Association of Auditorium Managers; Major League Baseball; the Motor Vehicle Manufacturers Association; the National Basketball Association; and the National Safety Council (*14*). The program is designed to reduce injuries and fatalities resulting from alcohol or drug impaired driving following sports and entertainment events, to create a safer and more enjoyable spectator environment, and to introduce more effective crowd control techniques for arenas. The activities assist managers of sports arenas and stadia in developing policies to control the sale and consumption of alcoholic beverages and to help prevent the abuse of alcohol. Food and beverage service personnel and all staff members working in the facilities receive training in impairment prevention and intervention strategies. The sports facilities are designated as focal points of activity for community anti-impaired driving task forces and coalitions. Community-based networks reflect not only an area's highway safety interests, but involve representatives of the health and medical fields as well.

By the end of 1987, TEAM reported that community coalitions had been established in two cities (Detroit and Houston) (*15*), and four are in the initial stages of development (Atlanta, Denver, Phoenix, and Salt Lake City) (*16*). Alcoholic beverage service and sales practices have been introduced into and adopted by 44 facilities, with intervention and prevention training conducted for staff members at each site. TEAM has established a significant national and local public awareness campaign, having sports figures doing public service ads on television and radio, and in the print media (*15*).

TEAM is a diversion from traditional governmental approaches to assuring the public's health and well-being. Current plans call for it to be independently incorporated, a unique example of the energy and enthusiasm that can come from public-private sector partnerships (*16*), and a major, highly visible example of the community focus that NHTSA is encouraging.

Center for Environmental Health and Injury Control. In 1983, DOT requested that the National Academy of Sciences (NAS) examine the status of trauma in the United States. NAS published "Injury in America" in 1985 (*17*), reviewing injury as a public health problem and delineating five areas for which governmental support and intervention were appropriate: epidemiology, prevention, biomechanics, treatment (acute care), and rehabilitation. As a result of the report's findings, Congress appropriated nearly $10 million to DOT, to be used by the CDC for a 3-year pilot program (1986–88) in a newly created research coordination and support unit, the Division of Injury Epidemiology and Control (DIEC). Now organized as a research center within CDC, the Division solicited and reviewed the first round of research project and research center proposals, and has made funding decisions. Research centers are located at Harvard University School of Public Health, Wayne State University, University of Washington Harborview Medical Center, the University of North Carolina, and the Johns Hopkins University School of Hygiene and Public Health. Serving as an important focus of intellectual and scholarly exchange concerning injury-related research activities, the centers have been encouraged to provide training opportunities, particularly at the post-doctoral level, for professionals in the interdisciplinary field (*2*).

Recently, eight more institutions were approved as collaborating centers; they are at the University of California at Los Angeles, University of Colorado and the Colorado Department of Health, University of Texas Health Science Center, University of California at San Francisco and the Trauma Foundation, University of Minnesota, University of Alabama, the State University of New York at Buffalo, and the University of Vermont. Thirty research projects are being supported in the five

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needed areas cited in "Injury in America" (*17*).

NHTSA staff participated in research and center proposal reviews in order to assure that agency concerns for highway-related injury were well represented in the selection of projects during the initial funding cycle. Since then, more than two-thirds of the research grants funded have NHTSA staff members assigned to them in a coordination capacity, demonstrating the value of these projects to DOT operational and program development mandates.

The next round of grant solicitations will address services and research coordination activities, historically an area of concern in this field (*18, 2*). These projects are likely to reflect the community-level coordinated perspectives currently being encouraged by NHTSA's State and local program strategies. Awards are to be made to State and community (municipal and county) departments of health by the end of fiscal year 1988.

Alcohol countermeasures. Traditionally, the alcohol countermeasures program has developed and promoted training for the law enforcement, prosecutorial, and judicial communities in innovative techniques for the identification, apprehension, prosecution, conviction, and sanctioning of persons driving under the influence of alcohol. The program has, for example, sponsored development of standards for breath testing devices used to determine blood alcohol content, speed measuring devices, in-vehicle alcohol interlock mechanisms, and such strategies as standardized field sobriety test techniques, validation of detection cues for alcohol-impaired automobile and motorcycle operation, the sobriety roadblock or checkpoint, and the Mortimer-Filkins screening test for level of involvement with alcohol. The countermeasures program has encouraged States to adopt legislative and regulatory innovations that have demonstrated a positive effect, such as passage of a 21-year-old minimum drinking age law, administrative revocation of drivers' licenses for alcohol-impaired operation, fixed periods for license suspension, and administrative determination of guilt based on a given blood alcohol concentration, typically .10 percent BAC, known as "administrative per se."

Recently, NHTSA began expanding its traditionally alcohol-specific countermeasures to include identification of impaired motor vehicle operation resulting from use of substances other than alcohol. The drug recognition program is being pilot tested in four sites around the country, building upon the well-documented value of traditional enforcement techniques, especially standardized field sobriety tests, and adding physiological measures for determining impairment.

A project conducted jointly with the National Institute on Drug Abuse and the Office of Juvenile Justice and Delinquency Prevention concerns field testing instruments for drug and alcohol use screening and diagnosis among adolescents and young adults convicted of impaired driving (*19*). The effort was designed to continue to validate and determine the practicality of the use of instruments in the court setting that were originally developed for the adolescent drug abuse treatment field. The results are expected to augment, for adolescents, the Mortimer-Filkins screening instrument available for use among adults convicted of driving under the influence of alcohol.

Networking and outreach. NHTSA sponsors nonlaw enforcement activities that address the public health perspective. Among these, in additional to TEAM, are networking and outreach efforts in cooperation with professional health and medical organizations, such as the Association for the Advancement of Automotive Medicine (a series of specialized courses, research monographs, and jointly-sponsored conferences), and the Society of Public Health Education (a special issue of Health Education Quarterly on health promotion and impaired driving). Activities with constituent organizations, such as Mothers Against Drunk Driving, Remove Intoxicated Drivers, and the National Black Alcoholism Council–Blacks Against Drunk Driving, consist of issues workshops, strategy meetings, and mini-grants to local affiliate chapters to encourage coordination of activities with State and local offices of highway safety, health, and ADM departments. Networking activities involve the National League of Cities and the U.S. Conference of Mayors, and consist of workshops and strategy meetings which focus on prevention activities.

Other interagency activities. In addition to interagency projects described previously, NHTSA is working with such agencies as CDC, Office of Maternal and Child Health, Indian Health Service, and the National Committee of Injury Prevention and Control. Products include a handbook on injury prevention, a censuses workshop report, and agency plans for public health programs and strategies.

Each December, a time of increased alcohol- and drug-impaired driving, NHTSA sponsors National Drunk and Drugged Driving Awareness Week. States and localities plan special events and media campaigns for this week. In 1988, the Office of the Surgeon General will sponsor alcohol-impaired driving initiatives that correspond with National Drunk and Drugged Driving Awareness Week, among them a major national conference.

In summary, the focus of NHTSA's alcohol-impaired driving program has evolved from national level programs to encouraging State and local perspectives which see networking and outreach as the wave of the future. Emphasis is on general deterrence strategies, community focus, a systems approach, enhancing constituent impact, and encouraging prevention and intervention techniques.

Conclusions

In February 1988, DHHS published summaries of the Centers for Disease Control surveillance activities concerned with the 1990 health objectives for the Nation (*18*), noting the predominant role of injury in morbidity and mortality (the leading cause of death for those under the age of 55), and the lack of Federal commitment to its amelioration. The authors suggested that because of the unintentional nature of injury—"the accident"—injury prevention has not received major planning emphasis in government programs. They suggested that the lack of an integrated governmental response had hindered large-scale injury intervention and prevention. In the 1970s, for example, both DHEW and DOT had emergency medical services programs. Local projects funded by one department had little knowledge of or coordination with those of another. Overlap of planning and delivery of emergency and acute care services may have occurred in a number of communities throughout the country.

Most notable concerning the surveillance summary on motor vehicle-related injuries (*20*) was the discussion of proposed methods of measurement for the year 2000 health objectives. For the 1990 objectives, CDC used motor vehicle crash fatality data from its own data system (National Center for Health Statistics (NCHS) death certificate reports), and calculated fatality rates based on 100,000 population. NCHS data indicated a 2 percent higher fatality rate than comparable NHTSA figures for the surveillance period (1978–84). The author notes that the NHTSA data systems, the Fatal Accident Reporting System (FARS), and the National Accident Sampling System (NASS), are probably more sensitive to crash activity and more timely for surveillance purposes than the data CDC routinely used. The reason is primarily because a 30-day waiting period is required for case entry into FARS, making annual data available within 6 months of the close of the calendar year, rather than the 12 months post-crash reporting needed for enumeration by NCHS. NCHS data are then accessible 18 to 24 months after file closing. Additionally, NHTSA calculates rates with an exposure measure, not on a population base, using fatalities per 100,000 vehicle miles travelled, more in line with the public health perspective's concern with assessment of relative risk.

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Fortunately we are seeing growing cooperation among the highway safety and public health fields to reduce the morbidity and mortality resulting from operation of motor vehicles while impaired. We are witnessing the acknowledgement, after more than 30 years of experience, that no one discipline, or strategy, or agency, can on its own solve this tragic and costly problem. Highway safety specialists welcome the participation of the public health and medical communities in the

cooperative attack on deaths and injuries resulting from alcohol- and drug-impaired driving.

Cooperation among the public health, medical, and highway safety communities will facilitate more effective and quicker responses to the mandates of the Highway Safety Act of 1966. This equates to a healthier, safer America.

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