

Commentary

GUIDELINES FOR RESEARCH ON DRUGGED DRIVING: A GOOD FIRST STEP

Interest in the potential effect of drug use on vehicle crashes has been growing in North America, Europe, and Australia. However, the multiplicity of potentially impairing substances makes the study of drug effects on driving a far more difficult problem to deal with than alcohol, which, after a century of research, is still involved in 41% of all traffic fatalities [1]. At the moment, evidence that drug use is a factor in crash causation is tenuous [2]. As noted by Beirness *et al.* [3, p. 12], '... there are many drugs that can alter behavior and potentially affect driving, but research to investigate their contribution to crashes has lagged'. It is therefore heartening to see the systematic approach to drugged driving embodied in the Guidelines for Research on Drugged Driving (GRDD) produced by the International Council on Alcohol, Drugs and Traffic Safety's (ICADTS) Working Group on Drugs and Driving. The GRDD should help standardize research approaches to the study of this important problem. Equally significant is that the GRDD will provide a base for a living document that can grow over time as this rapidly developing field produces improved drug assay methods and as new policies and interventions are tested. To achieve this growth, a responsible group of experts from a broad range of countries meets periodically to update the GRDD.

The current GRDD is limited to three research topics: Behavior, Epidemiology, and Toxicology [4]. It does not include Policy research. Because most industrialized nations already have laws against driving under the influence of drugs (DUID) [5], it is important to add a fourth component covering the evaluations of laws and policies that emanate from the basic research on drugs and driving. Converting research on alcohol into effective traffic safety programs has taken the better part of a century and still has many imperfections. The experience with the implementation of new DUID laws and their integration with existing driving under the influence (DUI) of alcohol laws [5] should provide guidance to behavioral and epidemiological researchers, as well as stimulate the need for better biological fluid collection and analysis methods. Legal issues will be particularly salient to the decision of the type of DUID law to be enacted by states within the USA. Currently, 14 US states have zero-tolerance laws that make any detectable amount of a drug in the blood an offence. Only one US state specifies a higher than zero per se illegal level based on evidence,

such as concentration in blood, is indicative of impairment. Zero-tolerance laws based on the presence of a defined illegal drug do not require research demonstrating their relationship to crash involvement. Such laws are based on an extension of the federal drug enforcement activity to the automobile driver. On the other hand, laws that specify a concentration level that impairs driving must be based on research demonstrating that the concentration specified is related to crash involvement. Roeber [6, p. 95] has characterized this legislative question as a decision between 'anti-drug laws and anti-crash laws'. Obviously, the implementation of anti-crash laws will require considerable additional research.

Much of the current focus on drugged-driving research is on the development of evidence to support legislation, but most of the available evidence for the significance of drugged driving is tangential to that issue. Although drugs have been shown to affect driving-related skills and are frequently present in both arrested and injured drivers in emergency rooms, the prevalence of drugs in such groups does not in itself demonstrate that drugged-driving causes crashes, which is the public health issue of concern. That evidence must come from case-control studies (similar to those of Borkeinstein *et al.* [7] or, more recently, Blomberg *et al.* [8]) that have been persuasive in supporting alcohol-impaired-driving legislation. Evidence that such studies have been lagging is provided by the failure to recommend case-control studies in E2, the design section of the epidemiology standard of the GRDD. Only designs that are '... representative of the general population of drivers of motorized vehicles' are mentioned. The US national roadside surveys [9, 10] took an alternative approach, basing the sampling system on the occurrence of crashes by using the stratified random sampling procedure used by the National Highway Traffic Safety Administrations' National Automotive Sampling/Crashworthiness Data System (NASS/CDS, 1995; <http://www-nrd.nhtsa.dot.gov/Pubs/NASS94.pdf>). Using a crash-based system, the significance of the drug involvement of drivers can be related more directly to the crash problem, as illustrated by studies such as those of Zador *et al.* [11,12].

Section B21 of the GRDD, among others, emphasizes the collection of blood samples in behavioral and hospital research. However, the much less intrusive oral fluid collection procedure is more appropriate for field studies that are likely to be the key evidence for the influence of drugs on driving and crashes. The collection of oral fluid in behavioral and hospital studies would contribute to a more standardized set of data for comparison across

domains. Further, if evidence supports the enforcement of DUID laws, the use of oral fluid, which does not require a phlebotomist or doctor to collect the sample and is easy for police officers to monitor, will be much more likely to result in increased apprehensions, just as the advent of the breath test increased DUI arrests. The guidelines in this issue provide a good foundation for the emerging research in drugged driving, but the need for expansion to cover new techniques and program evaluations is clear.

Keywords Crashes, drugged driving, DUI, DUID, epidemiology, oral fluid.

ROBERT B. VOAS

*Pacific Institute for Research and Evaluation, 11720
Beltsville Drive, Suite 900, Calverton, MD 20705-3111,
USA. E-mail: voas@pire.org*

References

1. National Highway Traffic Safety Administration. 2006 Data: Overview. Washington, DC: National Highway Traffic Safety Administration; 2006. Report No.: DOT HS 810 809.
2. Shinar D. Drug Effects and Their Significance for Traffic Safety. In: Transportation Research Circular No. E-C096: Drugs and Traffic: A Symposium, June 20–21, 2005. Woods Hole, MA: Transportation Research Board of the National Academies; 2006. p. 52–64.
3. Beirness D., Simpson H. M., Williams A. F. Role of Cannabis and Benzodiazepines In Motor Vehicle Crashes. In: Transportation Research Circular No. E-C096: Drugs and Traffic: A Symposium, June 20–21, 2005. Woods Hole, MA: Transportation Research Board of the National Academies; 2006. p. 12–21.
4. Walsh J. M., Verstraete A., Huestis M. A., Mørland J. Guidelines for research on drugged driving *Addiction* 2008; **103**: 1258–68.
5. Verstraete A., Walsh J. M. Legal Framework for Dealing with Drugs In Traffic. In: Transportation Research Circular No. E-C096: Drugs and Traffic: A Symposium, June 20–21, 2005. Woods Hole, MA: Transportation Research Board of the National Academies; 2006. p. 84–94.
6. Roeber D. E. Commentary on the Legal Framework for Dealing with Drugs in Traffic. In: Transportation Research Circular No. E-C096: Drugs and Traffic: A Symposium, June 20–21, 2005. Woods Hole, MA: Transportation Research Board of the National Academies; 2006. p. 95–96.
7. Borkenstein R. F., Crowther R. F., Shumate R. P., Ziel W. B., Zylman R. The role of the drinking driver in traffic accidents. *Blutalkohol* 1974; **11** (Suppl 1): 1–132.
8. Blomberg R. D., Peck R. C., Moskowitz H., Burns M., Fiorentino D. The Long Beach/Fort Lauderdale relative risk study. In: Logan B. K., Isenschmid D. S., Walsh J. M., Beirness D., Morland J., editors. Proceedings of the T2007 Joint International Meeting of TIAFT/ICADTS/IIS, August 26–30. Seattle, WA: ICADTS; 2007.
9. Voas R. B., Wells J., Lestina D., Williams A., Greene M. Drinking and driving in the United States: The 1996 National Roadside Survey. *Accid Anal Prev* 1998; **30**: 267–275.
10. Lestina D. C., Greene M., Voas R. B., Wells J. Sampling procedures and survey methodologies for the 1996 survey with comparisons to earlier National Roadside Surveys. *Eval Rev* 1999; **23**: 28–46.
11. Zador P. L. Alcohol-related relative risk of fatal driver injuries in relation to driver age and sex. *J Stud Alcohol* 1991; **52**: 302–10.
12. Zador P. L., Krawchuk S. A., Voas R. B. Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: An update using 1996 data. *J Stud Alcohol* 2000; **61**: 387–395.