MADD International Technology Symposium

A Nation Without Drunk Driving

SUMMARY REPORT

November 2006

Contents

Introduction

Drunk driving continues to devastate America. While alcohol-related fatalities have declined by more than 40 percent since MADD was founded in 1980, every year nearly 13,000 people are killed by drunk drivers with an illegal alcohol level of .08 blood alcohol content (BAC) or above. This represents more than 1,000 families every month that must live with the tragic consequences of drunk driving.

If we continue to rely solely on current strategies to control drunk driving, any further reductions will likely be incremental. MADD's bold new vision of *A Nation Without Drunk Driving* requires new strategies to complement current methods.

Drunk driving control in 2006. Currently, the primary method to control drunk driving is through a system of laws, enforcement and sanctions. Thanks to the efforts of MADD and its supporters, laws in every state make it illegal to drive while impaired by alcohol or with a BAC of .08 percent or higher. When they are detected, drunk drivers are arrested, prosecuted and sanctioned. This system deters many people from driving drunk because they fear that they will be detected, arrested and punished.

Yet, thousands continue to drive drunk and get away with it. Law enforcement resources are stretched too thin. Officers simply cannot observe all roads, all the time, to watch for drunk drivers. And even when an officer is present, many drunk drivers may not be detected, because officers require probable cause to stop a driver (some traffic violation or other driving behavior that suggests that the driver is drunk) unless the stop is made as part of a properly administered sobriety checkpoint. It is estimated that drunk drivers make more than 80 million trips every year. The chances of being arrested on any drunk driving trip are less than one in 50[1] and the chances of being convicted may be as low as one in 300.[2]

Technology to control drunk driving. Technology's main role in today's drunk driving deterrence system is to support law enforcement. The most obvious way is to measure a driver's BAC using evidentiary breath test instruments at the station house or hand-held preliminary breath test devices at the roadside. Computers and automated record systems also help officers, prosecutors and judges identify and process drunk drivers.

A very different use of technology prevents persons from driving drunk. Alcohol ignition interlocks require drivers to pass a breath test to demonstrate sobriety before their cars will start. Current interlocks are highly accurate, using the same breath test technology as many evidential instruments used by law enforcement agencies nationwide. Having been used for more than 20 years on the cars of convicted drunk driving offenders, there is solid evidence that alcohol ignition interlocks are effective. Newly emerging technologies use different methods to measure a driver's sobriety. Interlocks using these methods promise to be quicker, less invasive and unobtrusive with the potential for use in vehicle fleets and by the general public.

There would be no drunk driving crashes if it were impossible for drunks to drive. These technologies suggest how this goal might be achieved and have turned the vision of *A Nation Without Drunk Driving* from wishful thinking to a real possibility.

Symposium Overview

In June 2006, MADD convened the International Technology Symposium: *A Nation Without Drunk Driving* to explore the role of technology in controlling and even eliminating drunk driving. Participants included more than 100 representatives from organizations involved in technology research and development, automobile manufacturing, insurance, law enforcement, the courts, communications, state legislators, MADD members and staff, and National Highway Traffic Safety Administration (NHTSA) officials. Appendix C lists all participants.

At the Symposium, invited speakers discussed four main themes in seven plenary sessions:

1) Alcohol ignition interlocks: how they are used currently; their benefits and drawbacks; how their use and effectiveness might be expanded; and some obstacles to their increased use. Speakers in Plenaries 1 and 2 presented evidence from the United States, Canada, Australia and Europe.
2) Emerging technologies for detecting alcohol in drivers: what methods are being investigated; their current level of development; how they might be used; and the research and development needed to develop effective and practical products from these promising ideas. Speakers in Plenaries 3 and 5 provided up-to-date information from cutting-edge research firms, automobile manufacturers, research institutes and NHTSA. Speakers also touched on other emerging in-vehicle technologies for monitoring driver performance and detecting driver fatigue, distraction and non-alcohol related impairment.
3) Public and institutions: how the public and key institutions view both alcohol ignition interlocks and potential driver performance monitoring technologies; and what is needed to build broad public and institutional acceptance. Speakers in Plenary 6 presented views from law enforcement, state legislatures and the media. The keynote dinner speaker presented results from a June 2006 public opinion survey of current and emerging technologies.
4) Next steps for development and implementation of emerging technology. Speakers in Plenary 7 outlined a roadmap for increasing the implementation of alcohol ignition interlocks and for the research and development of emerging alcohol detection technology.

In addition, speakers in Plenary 4 estimated the potential reductions in drunk driving fatalities that full implementation of alcohol ignition interlocks and emerging alcohol detection technologies could produce. Each plenary session concluded with a lively question and answer session.

The Symposium agenda in Appendix A lists all sessions and speakers. The presentations from the Plenaries and the dinner speaker are listed by author in Appendix B.

The following report summarizes the Symposium's presentations, discussions and conclusions. Its four sections correspond with the four themes listed above and include key information from the plenary presentations. The full presentations are available on MADD's Web site: www.MADD.org.

Alcohol Ignition Interlocks

An alcohol ignition interlock is a device that measures a driver's alcohol level and is linked to the vehicle's ignition system. The vehicle will not start unless the driver's alcohol concentration is below a pre-set BAC.

Current interlocks use a breath test to measure alcohol. Every time a driver wishes to start the vehicle, he or she must blow into the device. They are highly accurate, using the same breath test technology as many evidential instruments used by law enforcement agencies nationwide. They have been used for over 20 years on the cars of convicted drunk driving offenders who are prohibited from driving after drinking. Their interlocks are set at a BAC level of .02 or .025 to allow for small variations in the accuracy of the breath test device and to avoid locking the ignition of drivers with very small amounts of alcohol from mouthwash, communion wine or other sources.

Interlocks may contain several features to prevent drivers from attempting to circumvent them. The "rolling retest" requires additional breath tests at random intervals while driving. This prevents a driver from asking a sober person to start the car or from leaving the car idling outside a bar. A data recorder logs the date, time and driver's BAC of every breath test.

Interlock programs in the United States. Interlocks are used as a condition of probation for drunk driving offenders after their driver's licenses have been reinstated. As of 2006, 45 states, the District of Columbia and most Canadian provinces and territories require or allow some offenders to use interlocks.[3] Some state and provincial interlock programs are administrative, managed by a motor vehicle or driver licensing department. Others are judicial, managed by the courts. About 100,000 interlocks are in service in the United States on the cars of fewer than 10 percent of all recently convicted drunk driving offenders.[4]

Interlock programs are operated by private interlock equipment providers. Typical costs are about $175 to install the device and about $2.25 per day while the interlock is on the car.[5] The interlock must be serviced regularly to check its accuracy and to download information from the data recorder.

Pennsylvania and New Mexico are two examples of successful ignition interlock programs. Pennsylvania's initial interlock law became effective in September 2001.[6] Following a one-year license suspension, repeat drunk driving offenders could choose either a second year of license suspension or a year restricted to driving interlock-equipped vehicles. In 2003, the law was changed to require all repeat offenders to use an interlock vehicle for one year after the one-year license suspension. Exceptions are permitted for employment – driving while on the job – and economic hardship. As of 2005, six interlock devices were approved for use, 120 interlock service centers were operating around the state, 2,787 interlocks had been installed, and drivers had accumulated 37 million sober miles and about 32,000 "lockouts" when an interlock vehicle would not start because the driver's BAC was too high.[7] In Pennsylvania, the courts impose the interlock requirement and sanction drivers who violate it by driving a car without an interlock. The Pennsylvania Bureau of Driver Licensing certifies interlock devices and suspends, restores

and modifies driver's licenses. The Bureau contracts with the Pennsylvania DUI Association to maintain a directory of interlock devices, providers and service centers; inspect the service centers; and maintain the program records.

New Mexico first allowed interlocks in 1999 as an option for repeat drunk driving offenders. In 2005, interlocks became mandatory for all drunk driving offenders: one year for first-time offenders, two years for second-time offenders, three years for third-time offenders and lifetime for fourth-time offenders.[8] As in Pennsylvania, the courts impose the interlock requirement on offenders. Some courts have quickly responded to the 2005 requirement while others have not. In Santa Fe Magistrate Court, over 65 percent of all persons convicted of drunk driving in 2004 had an interlock installed before July 1, 2005, while in other counties the installation rate was less than five percent.[9] As of June 2006, there were 5,265 interlocks installed in New Mexico, substantially more per capita than in any other state.[10]

Interlock effectiveness. Evaluations of interlock programs in seven states and two Canadian provinces consistently show that offender recidivism is about 65 percent lower for offenders with an interlock than for comparable offenders without an interlock. However, the effect disappears as soon as the interlock is removed from the car, when recidivism is similar for both offender groups.[11] Interlocks allow offenders to resume driving legally while substantially reducing their ability to drive drunk. In contrast, two-thirds of offenders with suspended licenses and no interlock continue to drive.[12]

Interlock programs in other countries.

- **Australian** interlock programs operate in the states of South Australia (since 2001), Victoria (2003) and New South Wales (2003) and are being planned in Queensland and Western Australia.[13] The existing programs operate at a fairly low level with approximately 2,500 interlock installations as of June 2006. Each program could be more successful if legislative or implementation deficiencies were addressed.
- In **Canada**, almost all provinces and territories have interlock programs, all of which are administered by driver licensing agencies.[14] Most are voluntary, with drunk driving offenders receiving earlier reinstatement of their driver's license if they agree to have an interlock installed on their vehicle. Some are open to all drunk driving offenders while others are restricted to repeat officers. In some, the interlock period can be extended for drivers who fail to comply with the interlock restriction.
- **Sweden** has introduced interlocks in two different ways. Since 1999, drunk driving offenders have had the option of keeping their driver's license if they participate in the interlock program.[15] For two years, drivers must drive only interlock-equipped vehicles and cannot drive outside of Sweden. All attempts to start the vehicle are recorded. Drivers are dropped from the program for two or more positive BAC tests in the first year or for any positive tests in the second year. Every three months, drivers must submit a doctor's certificate documenting biological markers to identify any alcohol use. Drivers are dropped from the program if they are not completely sober during the second year. Drivers must pay the full two-year program costs of approximately $5,750. Thirteen percent of convicted drunk drivers have elected to participate in the interlock program, and 60 percent of the participants had a diagnosis of alcohol dependence or abuse. About half the participants completed it successfully. Two years after they left the program,

successful participants had substantially fewer drunk driving arrests and crashes than they did before they entered the program. Drivers dropped from the program returned to their previous drunk driving behavior.

Sweden has also installed interlocks in several vehicle fleets, beginning in 1999 with a taxi company, a bus company and a trucking company. In 2003, the Swedish Abstaining Motorists' Association (MHF), in cooperation with an insurance company, began to promote interlocks to municipalities and companies. By 2005, a survey of 84 municipalities showed that 22 percent had installed interlocks on some vehicles, especially vehicles used to transport school children. The Swedish government is considering proposals to increase the use of interlocks in various fleets.[16]

- A 2001 **European Union** interlock feasibility study led to field trials involving Belgian drunk driving offenders and alcohol dependent patients, German truck drivers, and Norwegian and Spanish bus drivers.[17] Interlock programs are being tested in Finland, France, Germany and Great Britain. All use interlocks as a voluntary alternative to other sanctions for convicted drunk drivers.

What is needed to increase interlock use. Interlock technology does not need further research or development before it can be implemented widely, as demonstrated by the approximately 100,000 interlocks in service today in the United States. Rather, the challenge is to substantially increase interlock use by drunk driving offenders. There are two key steps.

- **Laws:** require interlock use by all drunk driving offenders, including first offenders, as New Mexico does.[18] This requires political leadership, a successful legislative campaign and public support.[19] This also will require changing a common belief that many first-time offenders have just made one mistake and should not be punished severely. In many states, first-time offenders often receive very light penalties. Their drunk driving charge may be reduced to reckless driving or some other traffic offense. Their charge may be dropped if the offender attends an alcohol education program. Yet, as previously stated, most first-time offenders have driven drunk many times before they are arrested and convicted. If not prevented by an interlock, many will continue to drink and drive.
- **Judges and prosecutors:** educate and encourage judges and prosecutors to assign drunk driving offenders to interlocks as allowed or required by state law. Some judges do not require interlocks even when a state's law mandates their use, as New Mexico data show.[20] Some judges do not understand how interlocks work and how effective they are at preventing drunk driving. Judges are crucial to interlock programs because they have the power to uphold interlock laws and penalize drivers who fail to comply with interlock program requirements. Prosecutors also may not understand the value of interlocks and may not support or encourage their use. Active judicial and prosecutorial education is necessary to increase interlock use.

Interlock programs can be managed by a driver licensing department, the courts and probation offices or jointly as in Pennsylvania. The courts have the power to require offenders to use interlocks and to punish offenders who violate this requirement. Probation offices can monitor offenders by using data from the interlock's data recorder, which will show any suspicious patterns in the vehicle's use. The data recorder also will help probation officers determine if the offender had been drinking: many offenders with interlock vehicles have a positive BAC when they try to start their vehicle in the morning because they had been drinking on the previous

night.[21] Driver licensing departments can issue driver's licenses that require interlock use and can implement interlock programs uniformly statewide. An ideal interlock program includes both judicial and administrative components.

Interlock programs must also address several practical issues including program costs for indigent offenders, how to deal with offenders who transfer their vehicle's registration to avoid an interlock and how to provide service in sparsely populated rural areas. Interlock programs across the states and Canadian provinces provide examples of how these issues can be resolved.

Model interlock program goals, components and results. The goal is simple: assure that all convicted drunk drivers use an interlock for a period of time after their driver's license is reinstated. Three strategies may help expand the use of interlocks and increase their benefits.

- Develop model interlock legislation for states and have it approved by the National Committee for Uniform Traffic Laws and Ordinances (NCUTLO).
- Install an interlock on the offender's car quickly. Long license suspensions may not be the most effective strategy since many drivers with a revoked or suspended license will drive anyway.[22] Long suspensions delay the time before an interlock can enforce sober driving.
- Keep the interlock on the offender's car until he or she has demonstrated a period of sober driving, as is done in a handful of states and some Canadian provinces. Sober driving can be measured by having no interlock breath test failures or as in Sweden by biological markers.[23]

The benefits of installing interlocks on all convicted drunk drivers' cars would be substantial. About 1.4 million drivers are convicted of DWI each year, but fewer than 10 percent use an interlock when their driver's license is reinstated.[24] Without an interlock, they are likely to resume driving drunk; with an interlock, their drunk driving recidivism would decrease by up to 90 percent.

A longer-term goal is to incorporate interlocks into a broader strategy to reduce drunk driving by all drivers. Sweden's experience suggests that there may well be a market for current interlocks in some vehicle fleets or as optional aftermarket equipment for the general public.

Emerging Technologies

A person's alcohol level can be measured in various bodily fluids as well as in a person's tissue and breath. Alcohol also affects a driver's actions. These effects can be observed in hand and eye movements and in how the vehicle accelerates, brakes, steers and maintains its position on the road.

In addition to the breath testing technology used in current evidential alcohol test instruments and interlocks, four technology categories are being investigated actively for potential use in interlocks: advanced breath testing, tissue spectroscopy, transdermal perspiration testing and eye movement measurement. Each is in a different stage of research and development. Each offers potential advantages relative to breath testing but face substantial challenges before they are

ready for use in interlocks. Additional advanced technologies, which were not fully discussed at the Symposium, include algorithms to detect weaving and biometric identification such as thumbprint screens.

Breath testing technology. Researchers are investigating methods to make breath test interlocks easier to use. One company has developed a prototype hand-held breath test unit, about the size of a cigarette package, using solid-state instead of fuel cell technology to measure breath alcohol.[25] The unit is not connected physically to the car. Instead, the unit is electronically connected to the car's door locks and ignition system. To use it, the driver approaches and unlocks the car with a remote key button, just as most recent cars are unlocked, except that the remote key is integrated into the breath test unit. Then the driver presses a button on the breath test unit and blows into it. If the driver's BAC is lower than the pre-set level, the unit automatically sends a signal that unlocks the car's ignition and the driver can start the car. If the driver's BAC is above the allowable level, the car will not start.

This system could be used for convicted drunk drivers as interlocks are used currently in the United States, for vehicle fleets or as dealer-installed aftermarket equipment. The developers are investigating many technological, practical and social issues that must be resolved before the system can be implemented.

Tissue spectroscopy technology. Light reflected from tissue just beneath the skin can measure alcohol in the tissue. A person being tested places a finger or forearm on a lighted sensor pad.[26] The pad contains a spectroscope which measures the amount of reflected light of different wavelengths. Since alcohol affects the amount of light of certain wavelengths that is reflected and absorbed, the spectroscope can determine the person's BAC as accurately as a breath test instrument. If used on a subject's finger, this technology can record an "internal optical fingerprint" of the small blood vessels just below the skin. Each person has a unique "internal optical fingerprint." The sensors are sufficiently accurate and the information they obtain is sufficiently detailed that they can accurately verify an individual's identity, just as a normal fingerprint can.[27]

Tissue spectroscopy is quicker and easier than breath testing. It requires a person only to touch a sensor, not to blow into an instrument. It is also not invasive. Devices using tissue spectroscopy currently are being used to measure glucose levels and other chemicals in clinical settings and to measure alcohol levels in probation offices and worksites. They also are being used for identity verification in military and national security settings and in a major theme park.[28]

Devices using tissue spectroscopy have not been developed for use in vehicles. To be practical for interlocks, they must be considerably smaller and less expensive than the current devices used in clinical settings. If very small devices could be developed, they could be placed in the steering wheel where they could monitor driver alcohol continually and invisibly. Some initial discussions have been held between some tissue spectroscopy research and development companies and representatives of the automobile industry and NHTSA.

Transdermal perspiration measurement technology. If alcohol is present in the body, then alcohol also appears in perspiration, and the proportion of alcohol in perspiration can be used to

estimate BAC. Perspiration alcohol measurement is used to monitor alcohol consumption in persons who are ordered not to consume alcohol. A device currently in use, SCRAM (Secure Continuous Alcohol Monitor), is strapped to the offender's ankle. It has a wireless link to a modem that relays data to the agency that is monitoring the user. A second device currently in prototype testing is small enough to be worn on the wrist. One company has developed a prototype perspiration alcohol measurement device that can be embedded in a vehicle's steering wheel.[29]

Transdermal perspiration measurement technology does not appear to be as promising as tissue spectroscopy for use in interlocks because BAC estimates from perspiration are less accurate than from tissue spectroscopy and because alcohol does not appear in perspiration until at least 30 minutes after drinking. Perspiration measurement devices in a steering wheel potentially may be useful for other alcohol monitoring applications.

Eye movement measurement technology. Alcohol and certain other drugs affect a person's eye movements. The Horizontal Gaze Nystagmus test, which measures involuntary eye movements, is the most accurate of the three components of the Standardized Field Sobriety Tests that officers use every day as an initial indication of whether a driver is drunk. Other eye measurements can indicate other forms of driver impairment.[30] A driver's Percent of Eye Closure, or PERCLOS, may be used to indicate drowsiness. Tunnel vision, looking only at the roadway, also can indicate drowsiness or other forms of impairment. On the other hand, frequent or extended glances away from the road are a sign of driver distraction.

A driver's eye movements could be continually observed and measured in a completely non-invasive and passive manner to detect changes in driver performance. However, eye movement measurements require in-vehicle cameras or other equipment which is highly unlikely to be practical or acceptable in the foreseeable future. In addition, eye movements alone do not accurately identify whether a driver is impaired by alcohol, another drug or fatigue.

Research and development needs and challenges. Tissue spectroscopy holds great promise for use in interlocks to control drunk driving if practical test devices can be developed. Transdermal perspiration measurement may be useful for other alcohol monitoring applications. There is broad consensus on the requirements that a good device must meet. It should not hassle sober drivers. It should be small, quick, non-invasive, accurate, reliable, repeatable, durable and easy to maintain.[31] The cost must be acceptable. It should be easy to use. If possible, it should be automatic, unobtrusive and, perhaps, invisible to the driver. It will be even more useful if it can serve more than one function such as verifying a driver's identity to prevent theft or detecting other forms of driving impairment.

Many steps are needed to bring a promising concept to market which include surveying the potential market to refine product requirements; developing one or more concept devices; building and testing prototypes in the laboratory; integrating a successful prototype with other vehicle systems: testing an integrated system in the field; and developing production and marketing capacity.[32] It is reasonable to imagine that advanced technologies could be ready for testing in selected vehicle fleets in less than 10 years. In time, the devices could be refined based on field test experience and introduced to the public as standard or optional equipment on some

vehicles. In the future, the devices could be further refined as needed to be ready for full implementation.

This research and development can best take place with the participation of the companies that are developing advanced technology, the automobile manufacturers and automobile equipment suppliers who must integrate it into their vehicles and products, and NHTSA. Other groups and constituencies including law enforcement, the courts, licensing agencies, the Insurance Institute for Highway Safety and MADD will be vitally interested in this research and development and will be crucial to the implementation and success of the technology. In hosting the Technology Symposium, MADD has demonstrated its strong support.[33]

In several previous instances, technical working groups have brought many parties together to share information, cooperate on research and develop voluntary standards. Recent examples include the Blue Ribbon Panel on Advanced Airbag Evaluation and the Side Airbag Out of Position Injury Technical Working Group.[34] This technical working group model may be especially valuable here, with even more companies, industries and constituencies involved.

Potential benefits. An alcohol test device that is unobtrusive, quick, accurate, reliable, repeatable, durable and easy to maintain could be installed on vehicle fleets and made available to the public. If installed on every vehicle, it could make it impossible for drunk drivers to operate a vehicle. In 2004, there were 13,142 traffic fatalities involving a driver with a BAC of .08 or more. Based on data showing how the risk of a fatal crash increases as a driver's BAC level increases, almost 8,000 of these fatalities would have been prevented if vehicles could not be operated by drivers with a BAC over .08 percent.[35]

Public Support

Technology is effective only if the people who use the technology welcome and accept it. As an example, consider safety belt ignition interlocks. Similar to an alcohol ignition interlock, a safety belt interlock prevents a car from starting unless the driver's safety belt is buckled. Beginning with the 1973 models, NHTSA required that all new cars have either a belt interlock or an airbag and, subsequently, all manufacturers installed belt interlocks. Belt use in these new cars promptly rose to about 75 percent. But the public rebelled. Congress quickly acted and prohibited NHTSA from requiring belt interlocks. Nationally, belt use remained at 10 to 15 percent for about ten years, until states began passing belt-use laws.

Therefore, it is important to gauge current public support for any new technology on cars, especially technology that can prevent a car from starting. As a first step, MADD sponsored a national public opinion survey of 800 drivers, conducted June 8-11, 2006.[36] Key findings from this survey include:

- Overwhelming support for mandatory alcohol ignition interlocks for repeat drunk driving offenders: 65 percent strongly support and another 20 percent support, for a total of 85 percent.
- Support for mandatory interlocks for first-time offenders: 40 percent strongly support, 23 percent support, 63 percent total.

- Support for "smart vehicle technologies" that would not allow a car to operate if the driver was tired, distracted or above the legal alcohol level: 57 percent said they would spend an additional $100 to have this technology on a new car and 69 percent would if their insurance premium were reduced.
- Support for interlocks for first-time offenders increased from 63 percent to 74 percent, after respondents learned that "two-thirds of drunk driving offenders continue to drive even when their license is suspended."

These and other results from the survey provide strong evidence that the public will support the expanded use of interlocks for drunk driving offenders and is receptive to even broader use of technology to prevent drunk drivers from operating vehicles. But the subject is complex, the information and terminology is sometimes confusing and the public still needs further education on the issue. It will be critical to conduct additional market and survey research and to carefully develop messages and communications campaigns for the public.[37]

Legislators, law enforcement, prosecutors, judges and driver licensing agencies. These five groups are critical to increasing the use of alcohol ignition interlocks by drunk driving offenders. Legislators must pass the laws authorizing or requiring interlock use. Law enforcement must enforce drunk driving laws. Judges and prosecutors must include and enforce interlock requirements in drunk driving offender sanctions. Driver licensing agencies must implement administrative interlock requirements, issue driver's licenses with an interlock restriction and enforce these restrictions. All five groups both respond to and help form public attitudes and opinions.

As with the general public, there are many things about interlocks that many legislators, law enforcement officers, judges, prosecutors and driver licensing officials do not know or have yet to understand.[38] All five groups need to be involved from the beginning in efforts in any state to expand the use of interlocks. Special information and other communications directed specifically to each group may also be useful.

Conclusions and Next Steps

Symposium participants reached a strong consensus that technology offers substantial opportunities to reduce drunk driving. Today, alcohol ignition interlocks monitor and control the driving of about 100,000 convicted drunk driving offenders. No new technology research or development is needed to expand their use to the approximately 1.4 million drivers convicted of drunk driving each year. Emerging technologies may make accurate alcohol measurement quicker, less invasive and, perhaps, even automatic and undetectable. But substantial research and development is needed to confirm this promise and bring practical devices to market.

Symposium participants agreed on a three-part strategy to move forward.

Alcohol ignition interlocks: substantially increase their use by convicted drunk driving offenders. The goal is that all offenders will resume driving only interlock-equipped vehicles until they demonstrate that they do not need this restriction. Each state will have its own next

steps toward this goal, depending on the state's current interlock laws and practices. While only a few states do not authorize interlocks, only New Mexico requires interlocks for all offenders. States should consider new laws to expand the use of interlocks to all offenders. States also should consider methods to install interlocks on offenders' cars as quickly as possible and to keep the interlock installed until the offender has demonstrated a period of sober driving. States should consider how courts and driver licensing agencies can best work together to expand interlock use and monitor offenders who use interlocks.

Effective communications and broad support are essential. Regardless of a state's law, some judges have not imposed either a voluntary or mandatory interlock requirement. An active judicial education program is critical. Law enforcement support is equally important both to continue active drunk driving enforcement and to assist in enforcing interlock requirements. And without the support of the public and the media, improved interlock laws will not be passed, drunk driving laws will not be enforced and interlock requirements will be ignored. As the national survey results show, the public does support expanded interlock use for convicted offenders, but this support must be further increased and focused through well-designed, factual communication campaigns.

Emerging technologies: research, development and gradual implementation. While tissue spectroscopy, transdermal perspiration measurement and other technologies have great promise, the research and development challenges are substantial, especially in view of the many companies, industries, organizations and constituencies that must be part of successful research, development and implementation. To guide the research and development, the Insurance Institute for Highway Safety agreed to help form a Blue Ribbon Panel on Advanced Alcohol Detection Technology. All groups at the Symposium enthusiastically supported this Blue Ribbon Panel and offered to participate. The Panel's goal will be to develop a step-wise, data driven, voluntary timetable that will enable fleet and general population demonstrations only when the technology and the public are ready.

Implementing these technologies in fleets or for the public will bring additional challenges. As an example, interlocks might be set at different BAC levels for different audiences – perhaps.02 or .025 percent for vehicles where no drinking should be is tolerated such as offenders, commercial fleets, school buses and vehicles owned by drivers under 21, and set at the legal limit of .08 percent for other vehicles. Any interlock implementation in fleets or for the public will require careful preparation through accurate and persuasive communications.

Drunk driving enforcement: build on success. These emerging technologies provide a vision of a time when drivers cannot drive a car while drunk. But today they can, and all too frequently do. High-visibility enforcement remains the cornerstone of successful efforts to reduce drunk driving. Congress has recognized the importance and success of high-visibility enforcement by allocating $116 million over four years for national paid ads to support drunk driving and safety belt use enforcement. These ads first aired in August 2006, when more than 11,500 law enforcement agencies in all 50 states participated in the national drunk driving crackdown under the slogan: "*Drunk Driving. Over the Limit, Under Arrest.*" A similar crackdown will occur in December 2006. The checkpoints and saturation patrols of these crackdowns support every law enforcement agency in the country as they patrol the roads, day in and day out, to protect the

public from drunk drivers.

MADD's Vision: *A Nation Without Drunk Driving.*

With technology, the vision that drunk drivers will not be able to operate vehicles is no longer a dream but a promise. But to achieve it, all three strategies must succeed. Interlock use must expand to all convicted drunk drivers. Emerging technologies must be developed into effective and practical devices. High-visibility enforcement must continue. All three must be backed up by effective communications and broad public support.

The challenge is great, and success is not guaranteed. But the promise is even greater. With the resources, cooperation, good will and common goals expressed at the Symposium, the vision can be achieved.

Notes

[1] Hedlund and McCartt (2002), Drunk Driving: Seeking Additional Solutions, p. v.
[2] Marques, Plenary 1, slide 15.
[3] MADD (2006), *State-by-State Alcohol-Related Laws*. www.madd.org/laws/
[4] Marques, Plenary 1, slide 2.
[5] Marques, Plenary 1, slide 2.
[6] Kerr, slide 2.
[7] Kerr, slide 9.
[8] O'Connor, slides 6 and 7.
[9] Roth, slide 26.
[10] O'Connor, slide 12; Roth, slide 24.
[11] Marques, Plenary 1, slides 6 and 7.
[12] McInturff, slide 26.
[13] Libbesson, slides 9 and 18.
[14] Marples, slides 8 and 10.
[15] Agge, slides 4 and 5.
[16] Agge, slide 13.
[17] Robertson, slides 3-9.
[18] Marques, Plenary 7, slide 4.
[19] Cullerton; Culver.
[20] Roth, slide 26.
[21] Marques, Plenary 1, slide 12.
[22] Marques, Plenary 7, slide 9.
[23] Marques, Plenary 7, slide 10.
[24] Fell, slide 18.
[25] Lange, Plenary 3, slides 5, 6, and 12.
[26] McNally, Plenary 3, slides 6-8.
[27] Ennis, slides 8 and 9.
[28] Ennis, slides 13 and 14.
[29] Demonstrated at the Symposium but not included in any presentation.
[30] Medford, slide 7.
[31] Ferguson, slide 8; Lange, Plenary 5, slide 3; McNally, Plenary 5, slide 3; Medford, slides 8 and 9.
[32] Bernat, slide 6; Ennis, slide 20; Lange, Plenary 5, slide 2.
[33] Hurley, slides 3 and 7.
[34] Ferguson, slides 1-7.
[35] Lund, slide 10.
[36] McInturff, slide 2.
[37] Mitchell; Vallese, slide 11.
[38] Cullerton; Culver; Young.

Appendix A: Symposium Program

International Technology Symposium

A Nation Without Drunk Driving

Monday, June 19

International Technology Symposium Opening Session

Chuck Hurley, CEO, MADD US - Welcome, MADD Strategic Plan and Symposium Goals
Glynn Birch, National President, MADD US - Mission Moment

Plenary #1: Status and Outlook of Ignition Interlock Devices and Other Criminal Justice Technologies – US Experience

Discussion of current levels of utilization, evidence of effectiveness, funding strategies, potential for further utilization.
Moderator: **Dr. Paul Marques**, Pacific Institute for Research and Evaluation, Calverton, MD
Rachel O'Conner, State DWI Czar, Office of the Governor, Sante Fe, NM
Dr. Dick Roth, Scientist/Advocate, Albuquerque, NM
Judge Richard Culver, Hancock County, Indiana
Lynda Kerr, Pennsylvania DUI Association, Harrisburg, PA

Plenary #2: Status and Outlook of Ignition Interlock Devices and Other Criminal Justice Technologies – International Experience

An international perspective on current levels of utilization, evidence of effectiveness, funding strategies, potential for further utilization.
Moderator: **Andy Murie,** CEO, MADD Canada**,** Ontario, Canada
Ian Marples, Alcohol Countermeasure Systems, Ontario, Canada
Les Libbesson, Guardian Interlock, North Rocks, NSW, Australia
Robyn Robertson, Traffic Injury Research Foundation**,** Ontario, Canada
Maria Agge, MHF, Stockholm, Sweden

Lunch Keynote Speakers:
The Honorable Kent Cravens, New Mexico Senate
The Honorable Ken Martinez, **New Mexico House of Representatives**

Plenary #3: Status and Outlook of Vehicle-Based Impairment Detection Technologies

Discussion of promising detection approaches & technologies, their current level of development, estimated effectiveness levels, other potential benefits such as detection of fatigue & distraction.
Moderator: **Rob Strassburger**, Alliance of Automobile Manufacturers, Washington DC
Jim McNally, TruTouch Technology, Albuquerque, NM
Bob Lange, General Motors, Warren, MI
Bob Harbour, Lumidigm, Albuquerque, NM

Plenary #4: Summary of Potential Role of Technology in Reducing Alcohol-Related Traffic Fatalities

To reiterate potential technology benefits and envision implementation scenarios – how technologies might work within a comprehensive impaired driving criminal justice system.
Moderator: **Brian McLaughlin**, National Highway Traffic Safety Administration, Washington, DC
Jim Fell, Pacific Institute of Research and Evaluation, Calverton, MD
Dr. Adrian Lund, Insurance Institute for Highway Safety, Arlington, VA

Dinner Keynote: **Bill McInturff**, Public Opinion Strategies
Results of MADD public opinion survey on ignition interlocks and advanced technologies

Tuesday, June 20

Opening Comments
Terry Huertaz, MADD New Mexico
Victoria Serna, Albuquerque, NM**,** Mission Moment

Plenary #5: Technology Development Challenges
Discussion of technology development needs to realize envisioned implementation scenarios including basic research and technology development needs, operational testing requirements, estimated development times and cost projections.
Moderator**: Dr**. **Sue Ferguson**, Insurance Institute for Highway Safety, Alexandria, VA
Ron Medford, National Highway Traffic Safety Administration, Washington, DC
Bob Lange, General Motors, Warren, MI
Jim McNally, TruTouch, Albuquerque, NM
Al Bernat, Takata Corporation, Auburn Hills, MI

Plenary #6: Public Acceptance and Institutional Challenges
Discussion of current public acceptance of vehicle-based driver performance monitoring and strategies for building a market demand. Consideration of institutional changes necessary to accommodate advanced technologies in the criminal justice system and potential barriers to such change. Includes discussion of lessons learned from similar change efforts.
Moderator: **David Mitchell**, GMMB, Washington, DC
Illinois Senator John Cullerton
Asst. Chief Les Young, Washington State Patrol, Olympia, WA
Julie Vallese, US Consumer Product Safety Commission, Washington, DC

Lunch Keynote: **Nicole Nason**, Administrator, National Highway Traffic Safety Administration

Plenary #7: Milestones on the Path to Development and Implementation
Discussion of development and implementation steps including standards development, ongoing dialog among stakeholders, coordination of research plans, opportunities for incremental deployment and demonstration, and strategies for building public confidence and demand.
Moderator**: Dr. Jim Hedlund**
Ron Medford, National Highway Traffic Safety Administration, Washington, DC
Dr. Paul Marques, Pacific Institute for Research and Evaluation, Calverton, MD
David Mitchell, GMMB, Washington, DC

Call to Action Chuck Hurley

Adjourn

Appendix B: Symposium Presentations

Maria Agge, Alcolock development in Sweden (Plenary 2)

Al Bernat, Commercializing a new product (Plenary 5)

Senator John Cullerton, Principles of highway safety legislation (Plenary 6)

Judge Richard Culver, Interlocks and the judiciary (Plenary 1)

Matthew Ennis, Impairment detection on Lumidigm's biometric platform (Plenary 3)

Jim Fell, Potential role of technology in reducing alcohol-related traffic fatalities (Plenary 4)

Sue Ferguson, Technical working groups for voluntary standard development and research cooperation and dissemination (Plenary 5)

Chuck Hurley, MADD's Campaign to Eliminate Drunk Driving (Symposium Introduction)

Lynda Kerr, Pennsylvania ignition interlock (Plenary 1)

Robert Lange, Invention status: Saab AlcoChek system (Plenary 3); Future technology implementation: what is necessary? (Plenary 5)

Les Libbesson, Interlocks in Australia (Plenary 2)

Adrian Lund, Eliminating alcohol-impaired driving: potential effects of technology applied to the general population (Plenary 4)

Ian Marples, Interlock programs in Canada (Plenary 2)

Paul Marques, Technology today: controlling DWI offenders with alcohol ignition interlock progams (Plenary 1); The way forward once we get serious: using intelock technology with known offenders (Plenary 7)

Bill McInturff, A presentation of key findings from a national survey of 800 drivers conducted June 8-11, 2006 (Dinner)

Jim McNally, A revolutionary system: Noninvasive alcohol testing with identity verification (Plenary 3); Technology development challenges (Plenary 5)

Ron Medford, Emerging technologies: requirements, research, and development (Plenary 5)

Rachel O'Conner, Ignition interlock in New Mexico (Plenary 1)

Robyn Robertson, Alcohol ignition interlocks in the European Union (Plenary 2)

Richard Roth, Interlocks in New Mexico (Plenary 1)

Julie Vallese, Public perception and acceptance (Plenary 6)

Asst. Chief Les Young, The role of enforcement (Plenary 6)

Appendix C: Symposium Participants

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