TRAFFIC INJURY RESEARCH FOUNDATION

ALCOHOL INTERLOCKS: PLANNING FOR SUCCESS

PROCEEDINGS OF THE 9TH INTERNATIONAL ALCOHOL INTERLOCK SYMPOSIUM

TIRF

The knowledge source for safe driving

The Traffic Injury Research Foundation

The mission of the Traffic Injury Research Foundation (TIRF) is to reduce traffic-related deaths and injuries.

TIRF is an independent, charitable road safety institute. Since its inception in 1964, TIRF has become internationally recognized for its accomplishments in identifying the causes of road crashes and developing program and policies to address them effectively.

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TIRF also gratefully acknowledges the support of the International Council on Alcohol, Drugs and Traffic Safety and the European Transport Safety Council for its continued efforts in encouraging the international development and application of alcohol interlocks for a range of settings and users, and for its promotion of this symposium.

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Their ongoing commitment to this annual event facilitates discussion, the exchange of ideas, and a sharing of perspectives among practitioners, researchers and policymakers and industry that is needed to advance the field.

TIRF also acknowledges the contribution of the many speakers, moderators, discussion group leaders and note takers who encouraged dialogue, captured discussion, and facilitated the sharing of important information needed to support the delivery of alcohol interlocks in a range of settings.

Finally, TIRF extends its appreciation to all of the participants who attended this annual event to share their experiences, opinions, insights and expertise to help guide the development and implementation of alcohol interlock programs across jurisdictions and around the world. The content of this report is based on the summary of discussion and perspectives at the symposium and does not reflect the views of individual presenters, participants or sponsors.

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INTRODUCTION AND GOALS

It has been nine years since the first Annual International Alcohol Interlock Symposium was held in Montreal, Canada in 2000. Since that time, significant advances have occurred in the field of alcohol interlocks and several milestones have been achieved.

During the past decade, the field has witnessed considerable growth in the number of jurisdictions that are either using alcohol interlocks or exploring opportunities to use them. At the same time, there has also been an expansion in the diversity of strategies used to deliver alcohol interlocks to a broader population of users to a point where the application of alcohol interlocks in all vehicles as a standard technology is now being discussed. Of greatest importance, there has been immense effort towards and progress in addressing the key issues that have historically impeded the expanded use of alcohol interlocks and that have been the focus of discussion at previous symposia.

In sum, when researchers, politicians, agencies and jurisdictions consider the past nine years, the collective achievements in this field since the first symposium in 2000 in Montreal are numerous. Issues that have been the subject of discussion and, more importantly, that have demonstrated progress include the availability of research, technological challenges, the need for supporting legislation and policy, program development, and public awareness and support.

As evidence of this progress, from a research perspective, the many academic organizations frequently represented at this annual event have built a substantial body of research literature that illustrates and supports the effectiveness of these devices in a range of environments and with a range of users including offenders and commercial drivers. More recently, research initiatives have begun to investigate and explore the value of partnerships with other interventions or programs, such as substance abuse treatment, that can be combined with alcohol interlocks to further improve outcomes. Also, researchers have begun to explore how this combination of strategies can best protect the public and achieve the long-term risk reduction that jurisdictions are ultimately seeking.

From a technological perspective, manufacturers have continued to refine and improve the available technologies to minimize opportunities for offenders to circumvent devices, to respond to the challenges associated with extreme weather conditions, to move towards wireless use of the device and the provision of timely information to program authorities, and most importantly,

to work towards identifying the driver of the vehicle. Jurisdictions have responded to these technological advances by updating technical standards as has been done in the European Union, in Canada, and is soon to be completed in the United States.

In the political realm, government support has slowly grown and Federal and State governments, and even local and regional governments have initiated changes to legislation to support and to increase the delivery of alcohol interlocks to those drivers that are required and/or encouraged to use them. There is also growing political support to apply alcohol interlocks to expanded populations of users as jurisdictions ultimately move from a public safety towards a public health perspective — e.g., commercial drivers or even all drivers instead of just offenders.

More recently there has also been much attention devoted to the implementation and delivery of alcohol interlock programs, and the provision of much-needed support for practitioners to guide implementation and ensure they possess the knowledge, tools and skills to use alcohol interlocks in an effective way. In particular, knowledge translation has been a focus of several initiatives. Researchers are working to translate the research on alcohol interlocks to educate practitioners and provide them with good information to improve decision-making and program delivery.

At the same time, initiatives have also focused on understanding the concerns of practitioners and the challenges they encounter in applying interlocks. Efforts have been made to share these concerns with government and with researchers so they can be addressed in a meaningful way to improve program delivery.

Finally, there has been a tremendous increase in public awareness and support in some jurisdictions thanks to the efforts of grass-roots organizations with support from a whole host of other community and non-governmental organizations.

Collectively, each of these achievements has been integral to the progress that has been witnessed internationally, and these achievements provide the foundation for this report based on discussions at the 9th Annual International Alcohol Interlock Symposium.

The focus of the symposium and the subsequent proceedings contained in this report is "Planning for Success". Jurisdictions have long-recognized that the success of any alcohol interlock program, whether it focuses on offenders, or commercial drivers, or the public at large, is contingent on a range of key components — solid research, sophisticated technology, program development that is sensitive to context, political will sustained though legislation and policy, and finally public awareness and support. Researchers who have worked on this issue as well as those jurisdictions at have or are implementing alcohol interlocks have learned that success is intimately linked to achievements in each of these areas, and more importantly that success is not possible without good planning and preparation.

As such, knowledge translation, designed to incorporate research with practice, has been recognized by TIRF and other road safety research institutes as essential to progress in the area of alcohol interlocks, and also the field of traffic safety in general. It is critical that the work of researchers is made available to those who can use it, and to ensure that practice in the field is meaningfully informed by research. At the same time, it is critical that researchers listen to and learn from the concerns of practitioners and those in the field to provide direction to research efforts. That is the objective of this report — to provide jurisdictions with the latest knowledge about alcohol interlocks from a research perspective that is tempered by the experiences and insights of knowledgeable practitioners.

These proceedings are organized according to topic. Each topic section has a brief introduction, papers from presenters, and is followed by expert perspective on the topic that was derived from discussion groups after key paper sessions. Please note that at the time of this document's printing, papers based on the following presentations, The Importance of Policy Development by David Wallace; Progress in Finland by Janne Mänttäri and Costs and Benefits of Alcohol Ignition Interlocks by Rune Elvik were unavailable.

The symposium and the subsequent proceedings from it are designed to assist jurisdictions that have implemented, that are implementing or that are considering implementing alcohol interlocks to "plan for success" by sharing with them how to build and develop the essential ingredients of a successful interlock strategy. Participants at the symposium included many of the best, the brightest and the most experienced individuals in the field of interlocks along with those who possess the energy, the ability and the understanding of how alcohol interlocks can be implemented in each jurisdiction. The information presented in this report summarizes what is currently known in the field, what issues or challenges still need to be addressed, and what current thinking is regarding potential ways these issues can be resolved.

These proceedings were made possible because of the opportunity for engaged professionals to come together to discuss and share their experiences, insights and ideas. Such a discussion and exploration of ideas stimulates growth and progress which is what these symposia have been all about for the past nine years. It is hoped that the proceedings from this event can help other jurisdictions effectively deliver alcohol interlocks by planning for success.

Robyn Robertson, MCA
Program Chair
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ALCOHOL INTERLOCK PROGRAMS - PAST, PRESENT AND FUTURE

The development and implementation of alcohol interlock programs was a topic of much discussion at the 9th Annual Symposium. In recent years, the focus on program development has grown considerably as jurisdictions attempt to identify effective practices, streamline and coordinate implementation across agencies, and improve participation in these programs. Presenters on this topic were tasked with summarizing the experiences of many jurisdictions relating to the implementation of alcohol interlock programs, and creating a current state of knowledge with regard to program development. The following two papers are based on these presentations.

Alcohol Interlock Programs for Drink Driving Offenders in the European Union - Evolution and Expansion

By: Rene Mathijssen, SWOV Institute for Road Safety Research, The Netherlands

The first European pilot of a regional alcohol interlock program was initiated in Sweden in 1999. In just four years, this program expanded into a nation-wide implementation of alcohol interlocks by 2003. Following this successful pilot in Sweden, there was a coordinated effort involving pilot alcohol interlock programs in four other European countries (Belgium, Germany, Norway and Spain) that was sponsored by the European Commission. The application of alcohol interlocks to drink driving offenders in the European Union (EU) began in earnest following these coordinated efforts and the activities of other jurisdictions around the world.

Since the beginning of these trials, the evolution and expansion of alcohol interlock programs in the EU has moved quickly across Europe. In 2004, a small-scale regional program was initiated in Annecy, France. Later, in 2005, Finland began a pilot alcohol interlock program and, in 2006, alcolock legislation was put in place in the United Kingdom. By 2008, a permanent program was implemented in Finland and the French program was extended from Annecy to other regions. In addition, the Netherlands conducted a small-scale pilot project aimed at practical aspects, in preparation of a full-scale program in 2009. Similarly, the Norwegian Public Road Authority began the process of preparing a proposal for an offender program, in collaboration with the police and the Justice Department. Only in the UK has new alcohol interlock legislation not yet resulted in a specific implementation plan.

In Sweden, some 2,400 alcohol interlocks have been installed since 1999. The program has received much attention because of the high cost of the program combined with the low participation rate, although this is partly due to the fact that alcohol-dependent drivers are removed from the program after the first year, even if they have not recidivated. Also the fact that offenders with a relatively low-blood or -breath alcohol concentration (BAC) are eligible, may have contributed to the low participation rate.

The French program has attracted considerable attention due to the short duration of the program (6 months), the inclusion of an integrated driver improvement course, and the relatively low cost of the program. Recidivists and alcohol-dependent drivers are excluded. The participation rate is estimated at 50%, which is very high when compared to most other alcohol interlock programs both inside and outside of Europe. Due to the regional nature of the program, the total number of installations has been rather low, however in April 2008 the program was extended to other regions and the program is expected to grow.

The Finnish alcohol interlock program recently became permanent in July 2008. Of some importance, the duration of the program is flexible, depending on the original period of licence suspension, which becomes probationary for alcohol interlock program participants. The duration of the alcohol interlock installation period may vary from one to three years. Since March, 2008, an estimated 350 alcohol interlocks have been installed. However, the participation rate in the program is unknown. The cost of the program is about one-third of the cost in Sweden, although the Finnish program also includes assessment of alcohol dependency. In 2009, a separate program for recidivists will become operational, and this component of the program is expected to have a minimum installation period of three years.

The Netherlands has begun preparing for a full-scale implementation of an offender-based alcohol interlock program in 2009. Considerable efforts have been undertaken to ensure that this program represents best practice in many areas. This program will be administered by the driver licensing agency and the duration of the program will be two years, with the possibility of a 6-month extension based on performance. The program is designed to be mandatory for high-BAC offenders and recidivists and will have an estimated cost of €3,000-3,500 per offender. At this time, there are no plans for financial compensation, nor will there be any reduction of the disqualification period. Driver improvement courses and support will be integrated in the program. From the third year after implementation on, 4,000-4,500 offenders are expected to be in the program permanently, with a 15-20% participation rate.

Although the implementation of alcohol interlock programs in EU countries may appear to be progressing relatively slowly, the important thing is that progress is consistent. By comparison, in North America, it was some 25 years from the first alcohol interlock legislation in California in 1982, to today's full-scale implementation in a majority of jurisdictions in the United States and Canada.

It is important to note that several factors that are delaying or preventing the implementation of alcohol interlock programs in the EU will require coordinated efforts to pave the way for increased implementation in the coming years. The most important challenges involve both legal and bureaucratic barriers. There are also a variety of practical issues relating to the cost of programs, and the regular maintenance and monitoring of offenders that requires much attention. Of particular interest, the integration of regular medical tests and/or expensive driver support programs may have a negative effect, both on policy makers and on the participation rate of eligible drivers. In this regard, to date only in one Texas-based program a positive, albeit small effect of a motivational intervention has been demonstrated.

At the same time, there is the significant knowledge gap between researchers and policy makers that must be bridged to encourage progress. It is important that researchers not only raise concerns about existing countermeasures that have been partnered with alcohol interlock programs, but that they also try to find ways to effectively modify and integrate with alcohol interlock programs to improve outcomes. This will require input from practitioners.

It must also be recognized that licence disqualification may have a greater general deterrent effect than alcohol interlock programs, which in turn have a greater specific deterrent effect, as is demonstrated in various evaluation studies. It will be beneficial for researchers, practitioners and policymakers to find ways of combining these measures to maximize their effects.

In closing, there are two important questions that must be considered as part of any discussion surrounding the implementation of alcohol interlock programs. First, how many lives can be saved by large-scale implementation of alcohol interlock programs in the EU?

If the findings from a Dutch case-control study examining the risk of drink driving can be applied to the whole of the EU, it is estimated that drink driving contributes to some 25% of all EU road fatalities. In fact, this is the official estimate of alcohol-related fatalities that is used by the EU. Of greater concern, more than 3/4 of these fatalities are caused by hardcore drinking drivers with a BAC of 1.5 g/L or higher. The total number of hardcore drinking drivers is estimated at about 1-1.5% of the EU driving population and account for just 0.2% of all trips on EU roads.

Based on these figures, if 10% of these high-BAC drivers would permanently drive an interlock-restricted vehicle, the number of road fatalities would be reduced by approximately 1.5%, resulting is the saving of an estimated 600 lives annually. This estimate is based on the fact that, according to the results of North American and Swedish evaluation studies, alcohol interlocks reduce repeat drink driving by at least 70% when compared to conventional countermeasures like licence suspension.

Although an overall 10% participation rate of hardcore drinking drivers may not seem to be very high, it can only be reached if the level of police enforcement to detect hardcore offenders is consistent and the participation rate of apprehended offenders in alcohol interlock programs is fairly high. For example, if hardcore drinking drivers have an annual 10% risk of apprehension, the participation rate of apprehended drivers should be 50% in a 2-year alcohol interlock program in order to reach the 10% overall participation rate. In many EU countries, however, the risk of apprehension is probably lower, as are the participation rate and duration of alcohol interlock programs.

The second question is what is the estimated cost-benefit rate of an alcohol interlock program if just 10% of hardcore drinking drivers would permanently drive an alcohol interlocked vehicle?

It is estimated that some 60% of the population of the 27 EU countries has a driver's licence, corresponding to an estimated 300 million driver licence holders across these countries. In addition, the annual cost of an alcohol interlock, including maintenance and monitoring, is estimated at €1,000. This means that if just 10% of hardcore drinking drivers were driving an interlock-restricted vehicle, there would be an estimated 300,000 to 450,000 alcohol interlocks that are installed (assuming 1-1.5% of drivers, corresponding to 3-4.5 million are hard core drinking drivers). So, the total annual cost of the alcohol interlocks would then range from €300 to €450 million.

By comparison, the cost of the road toll, is estimated to be €5 million per fatality (including the cost of injuries and material damage). The bottom line is that if 600 lives are saved annually, the road safety benefit of alcolocks would mount up to €3 billion, thus exceeding the cost by approximately a factor eight.

Based on these calculations, it appears that the consistent implementation and application of alcohol interlocks to drink driving offenders is a worthwhile priority and investment in any jurisdiction.

The Future of Alcohol Interlock Programs - Challenges and Opportunities

By: Dr. Douglas J. Beirness, Beirness & Associates Inc., Ottawa Canada

The potential of an in-vehicle alcohol ignition interlock device that could prevent the operation of a vehicle by someone whose ability to do so was impaired by alcohol has intrigued safety advocates for 40 years. During this time, we have witnessed the development and implementation of a practical and economically viable alcohol interlock system that has been successfully deployed to prevent repeat impaired driving episodes among those convicted of a driving while impaired (DWI) offence. The purpose of this paper is to examine the future of interlock programs – both the opportunities for enhanced impact and the challenges we must overcome to get there.

In reviewing the history of alcohol ignition interlocks, it is apparent that we have come almost full circle over the past several decades. What began as an idea to develop a vehicle that "drunks couldn't drive" was first implemented as a countermeasure for those convicted of multiple DWI offences. As evidence of the effectiveness of the system accumulated, interlocks were increasingly deployed with first-time DWI offenders as a means to prevent them from becoming repeat offenders. Some jurisdictions have even begun implementing interlocks at the time of, or shortly following apprehension or arrest, but prior to a criminal conviction. Although yet to catch on in North America, widespread use of interlocks as a prevention measure in commercial transportation has taken hold in other countries, most notably Sweden. Recently, the U.S. National Highway Traffic Safety Administration (NHTSA) together with the Automobile Coalition for Traffic Safety launched a project to find an advanced alcohol detection technology that could be an integral part of every vehicle. There is a certain irony in the fact that this project brings us back to the original concept of a car that drunks can't drive, back to the idea of preventing DWI before it happens.

Future Challenges

Changing our approach to alcohol interlocks. To a large extent, there is the pervasive view that interlocks are yet another means of punishing DWI offenders. Certainly there are punitive aspects associated with having to use an interlock device – it is inconvenient, it can be embarrassing, it costs money, it prevents you from driving after a couple of drinks. If punishment were the objective, we could find less technologically sophisticated means of doing so. The primary purpose of installing an interlock in offenders' vehicles is incapacitation – i.e., to prevent repeat occurrences of alcohol-impaired driving. Accepting incapacitation as the primary reason for ignition interlocks allows policy makers, program managers and participants to look beyond the very limited perspective of punishment to consider the potential associated with the flexibility of being able to drive while at the same time virtually eliminating the risk of a further DWI event.

Among the advantages associated with a broader perspective on interlock programs is the ability to integrate participation in the interlock program with involvement in a concurrent alcohol rehabilitation/treatment program. The ongoing BAC test data provided through the interlock device can also be a valuable adjunct to rehabilitation efforts.

Replacing licence suspension with an alcohol interlock program. Typically, DWI offenders are required to serve a period of hard licence suspension prior to being eligible for an interlock program. This period of full licence disqualification can last three months, six months, or even a year or more. Even if offenders can reduce the total period of suspension by entering the interlock program, given that the chances of being apprehended for driving under suspension are small, the perceived benefits of driving while suspended are perceived by many to be superior to those associated with the interlock program. Personal transportation has become an essential element in the lives of many people. The desire — perhaps the "need" — to drive appears to be a powerful motivator and not having a valid licence is often an insufficient deterrent. To avoid offenders learning the ease with which they are able to drive with relative impunity while suspended, there have been repeated calls to have participation in an interlock program begin as soon as possible after conviction.

This approach essentially requires a fundamental shift in how society deals with DWI offenders. Advocates fought long and hard during the 1980s to ensure that DWI offenders served a period of hard licence suspension. Suspension was, and still is, an effective sanction for DWI offenders. However, research has repeatedly demonstrated that interlock program participation is considerably more effective than suspension. Rather than using suspension as the primary response to DWI and having an interlock program as an alternative, reversing the order of priorities would be more effective.

Using alcohol interlocks pre-conviction. In keeping with the concept of early entry to interlock programs, consideration needs to be given to the idea of having DWI offenders enter an interlock program immediately following arrest. This idea is consistent with administrative licence suspension and could be imposed as a requirement for obtaining a conditional licence or work permit following a DWI arrest.

Developing program standards. Technical standards have been a feature of interlock program for many years. These standards have helped to ensure that the technology effectively keeps drinking drivers from operating the vehicle while at the same time allowing users to drive with the minimum of inconvenience when they have not been drinking. Other elements of interlock programs — i.e., eligibility, duration, conditions, monitoring, sanctions for non-compliance — vary

considerably from program to program with no two programs having exactly the same features. At times, interlock programs appear to have been designed primarily on the basis of operational or logistical considerations.

Two decades of experience with interlock programs provides sufficient evidence to begin the development of a set standards or guiding principles that will enhance the overall effectiveness of programs.

Expanding non-offender programs. As the value of interlock programs to prevent repeat DWI behaviour among offenders continues to mount, greater attention will undoubtedly be given to the potential of this technology to play a role in primary prevention. Essentially, this means having interlocks installed on vehicles driven by people who have never been convicted of a DWI offence. Sweden has pioneered the use of non-offender interlock programs in commercial vehicle fleets. However, there remains a good deal of reluctance in North America to adopt such uses of the technology but key targets might include vehicles carrying hazardous materials, school buses, vehicles used for public transportation, and rental vehicles. As noted previously, there is work underway to find the technology that can become a standard feature of every vehicle manufactured.

Future Opportunities

Advancing technology. Alcohol interlock technology has improved substantially over the past 20 years. Devices are now smaller, easier to use, and more reliable. Standards for interlock devices perform as expected and help ensure that those with BACs in excess of the threshold are unable to drive while at the same time enabling legitimate use of the vehicle by those who have not been drinking. In addition, the technology provides for protection against circumvention and tampering, helping to ensure that the device is used properly.

Nevertheless, users continue to seek further improvements in the speed of the device, the level of convenience, the intrusiveness, and the cost. For offender applications, the general public has relatively little sympathy with concerns about convenience and intrusiveness. However, there is also a need to recognize that if users find it too inconvenient or too costly, they will be less likely to use the device and more likely to find alternatives (e.g., simply using another vehicle). Hence, it is imperative that we make an effort to ensure that the technology encourages – or at least does not discourage – proper use of the equipment.

One final note on technology. In recent years, the use of psychoactive drugs other than alcohol by drivers has become an issue of increasing interest and concern. As effective as ignition interlock programs have been in preventing repeat offences among those convicted of an alcohol-impaired

driving offence, the technology is not yet available – and, indeed, does appear to be forthcoming – that would easily and reliably detect psychoactive substances other than alcohol and prevent that person from operating a vehicle.

Streamlining legislation. Alcohol interlock legislation needs to be strong, clear, consistent, inclusive, and fair. It must recognize the need to provide a safe and secure road environment while at the same time acknowledging the "need" for personal transportation in the 21st Century.

Evidence of the superiority of effectiveness of interlock programs over licence suspension continues to accumulate. Hence, it would seem reasonable to replace licence suspension with interlock program participation as the primary response to a DWI offence. This will require a fundamental change in the way we think about DWI sanctions. The persistent call for ever more stringent sanctions must be balanced with the need for effective incapacitation and rehabilitation.

Legislation should also provide for sanctions for violations such as attempted circumvention, tampering, driving a vehicle not equipped with an interlock, soliciting a breath sample from another person, and providing an unauthorized breath sample.

Developing program practices. Among the numerous interlock programs in operation throughout the world, each is unique. There is little consistency in program elements. Granted, jurisdictional precedents and established practices can (and should) be considered in the development and operation of an interlock program. Nevertheless, there are key features that should be included because they can influence the effectiveness of the program. To this end, efforts are underway to develop a set of standards or guidelines for interlock programs. Ideally, these standards should be based on research evidence of effectiveness or at least established principles of what constitutes best practice.

The responsibility for monitoring and reporting often falls upon an existing sector of the public service (e.g., probation officers) who are typically unprepared to deal with this added responsibility. The increased caseload alone may overwhelm the system. Hence, there is a need for increased workforce capacity. More importantly, there is a need for workforce development. Those who deal directly with interlock program participants must understand the data output from the device and be skilled at dealing with the types of issues presented by participants, most notably issues associated with alcohol abuse.

As more and more interlock programs become mandatory, there will be increasing pressure for programs to be flexible – i.e., to develop a system of rewards that allow for a series of graduated steps towards removal of the interlock that could include the opportunity for early release from the program and sanctions that extend the duration of participation. At the very least, programs

should incorporate a system of evidence-based removal whereby participants must demonstrate that they no longer require the device to prevent impaired driving before they are released from the program.

Finally, interlock programs need to demonstrate that the impact can be prolonged beyond the period of installation. This will undoubtedly require the integration of treatment/rehabilitation services and support for DWI offenders that go well beyond the traditional boundaries of an interlock program. It requires a comprehensive approach of which interlocks are but one element.

Translating research into practice. Over the years, research on the effectiveness of interlock programs seems to have been held to a higher standard than that required of other DWI countermeasures. There is an expectation that interlocks will have a beneficial impact beyond the duration of program participation and the repeated absence of such a finding often leads to the conclusion that "interlocks don't work". No such expectation exists with measures such as licence suspension, vehicle impoundment, or incarceration.

Although research has repeatedly demonstrated reduced recidivism among interlock program participants, there is also a need to demonstrate that interlocks reduce alcohol-related collisions. This will require large scale studies with relatively long periods of follow-up.

The existing body of research knowledge on ignition interlock programs must be adapted for use with policy-makers, program specialists, politicians, and program participants. Specialists in knowledge translation/knowledge exchange are required to ensure that key messages are discerned from the technical jargon of research in a manner that will facilitate understanding and ultimately uptake and expansion of interlock programs.

Building public acceptance. As society engages in a process designed to find a technology that will introduce alcohol detection devices into every vehicle, creating a receptive environment among the public will emerge as a future challenge. To date, interlocks have been portrayed as a means to control the behaviour of DWI offenders. They are also generally perceived as punitive and expensive. Undoubtedly, many will object to having an interlock in their vehicles, including the substantial portion of the population that does not consume alcohol.

Conclusions

There is little doubt that the role of interlock programs in the control of DWI offenders will continue to expand. Commercial uses of interlocks appear to have a strong foothold in Sweden and may eventually be introduced throughout Europe and North America. There are, however, many challenges that remain for interlock programs. In pursuing these challenges, it will be

important to listen to what others have to say. In particular, we must listen to who work with interlock programs on a daily basis – i.e., users, and program specialists. There is still a great deal to learn in our collective efforts to create the most effective interlock programs possible.

Expert Perspective on Alcohol Interlock Programs

At the conclusion of the presentations on alcohol interlock programs, symposium attendees participated in discussion groups. These groups were facilitated by experienced discussion leaders and designed to further explore ideas and share experiences regarding what other efforts are needed to advance and improve the development and implementation of alcohol interlock programs and to provide insight into future directions. This section contains the highlights from those discussions and summarizes other strategies that may improve the delivery of alcohol interlock programs in a range of environments.

Increasing the knowledge base among practitioners. Practitioners that are implicated in the implementation and delivery of alcohol interlock programs must receive adequate education and training to ensure their support in delivering the devices to offenders. As has been clearly illustrated by past experience, a mere mandate is not sufficient to ensure that offenders will receive alcohol interlocks. Historically, practitioners have not always been supportive in delivering alcohol interlocks because of serious gaps in knowledge, misperceptions, and miscommunication. For example, many practitioners believe that alcohol interlocks are expensive and not affordable for many offenders when in fact these devices only cost about $3-4 (USD) per day or about the cost of a drink. Practitioners must have a clear understanding of how alcohol interlock devices function, the research in support of alcohol interlocks, and their role in delivery in order to ensure the success of any alcohol interlock program.

At the same time, many practitioners who are ultimately expected to deliver alcohol interlocks to the target population are frequently not consulted or involved in the process of program development. This often results in a disconnect between what is intended and what is achieved. Practitioners are an excellent resource who can provide much-needed input into identifying ways that necessary tasks can be practically achieved within the confines of the system they work in. For this reason, their involvement in the program development process is essential.

Improving program participation rates. In North America, it is currently estimated that only between 10-25% of eligible offenders participate in alcohol interlock programs. This is in sharp contrast to an estimated 87% of drunk driving offenders who participate in alcohol interlock programs in Victoria, Australia. Greater efforts are needed to improve implementation to ensure that those offenders who are subject to alcohol interlock supervision have the device installed. Simple strategies are needed to enable follow up with offenders and rapid identification of offenders who fail to install the device. For example, regardless of whether the program

is administered by a court or a licensing authority, offenders can be required to produce the certificate of installation from the service provider as evidence that the device has been installed. This strategy places the onus of the offender to complete installation and provides the program authority with a simple mechanism to easily identify those who fail to comply. Education and training of program officials to follow up on installation and ensure that this certificate is received can support this strategy.

Enhancing detection of unlicensed drivers. Although most jurisdictions have administrative licence suspension programs in which the licensing authority suspends the driver's licence pre-conviction for a specific period as a result of an impaired driving charge, the enforcement of these programs in many jurisdictions is low. As a consequence, drivers with a suspended licence are frequently able to drive without detection. The end result is that there is no disincentive to drive and no incentive to install the alcohol interlock to allow them to drive legally.

This challenge can be addressed by bolstering alcohol interlock programs with other initiatives such that the ability of suspended drivers to drive undetected is substantially reduced. Many jurisdictions are already beginning to update existing driver record systems to produce more accurate and current driver records with complete information. As another example, the use of automated tag readers can greatly facilitate the detection of these drivers. Automated tag readers are a relatively recent innovation that is being applied in the United States and Australia. Police vehicles are equipped with a device that can scan the licence plate of passing vehicles or parked vehicles to flag vehicles that are stolen, vehicles owned by persons with outstanding warrants, and vehicles driven by suspended drivers. The application of this technology can effectively increase the likelihood of detection and discourage unlicensed driving among those drivers who fail to install the alcohol interlock.

For those drivers who are apprehended for driving while suspended or revoked, or for driving a non-interlocked vehicle, the application of vehicle impoundment initiatives may be appropriate. Other considerations to overcoming this challenge may include increasing training or resources for officers to enforce administrative licence suspension (ALS) programs or initiatives to increase penalties for offenders who persist in driving without a licence.

Accounting for increased mobility among offenders. Programs need to be able to account for a mobile society and track offenders and interlock-restricted drivers as they move across jurisdictions. In the European Union (EU), there are largely open borders and many drivers hold a driver's licence in two or more countries. There is a need for over-arching legislation or practice to ensure that drunk drivers do not avoid the alcohol interlock by using an alternative driver's licence from another jurisdiction. Currently, there is reciprocity among service providers to manage out-of-jurisdictions drivers, but not reciprocity in licensing – licensing agencies and/or courts

do not consistently share data and neither do enforcement agencies. So for jurisdictions with multiple borders where offenders may often hold more than one driver's licence, this reciprocity and tracking of licensing status across jurisdictions must be a consideration when developing an alcohol interlock program.

Facilitating entry to alcohol interlock programs. In some jurisdictions, alcohol interlock programs may not be designed to facilitate the entry of impaired driving offenders. For example, many offenders are diagnosed with cognitive deficits (affecting such factors as memory and understanding) as a result of their drinking. On a practical level, it is very difficult for this population to complete paperwork, to follow instructions or to anticipate consequences, so program entry can be especially challenging for these offenders.

Further compounding this problem, there are often long waiting periods between arrest and conviction, or long periods of mandatory (hard) licence suspension, meaning that offenders often have several months to "learn" that they can drive without a licence, creating a disincentive for them to participate. To address this problem, it is important that offenders be able to install the alcohol interlock device as quickly as possible so they are driving safely and are retained in the driver licensing system where they can be tracked and monitored. One strategy to accomplish this is to apply the alcohol interlock as condition of pre-trial release as is the case in Texas.

At the same time, the re-licensing process is very challenging in many jurisdictions. This problem must be addressed so offenders do regain their driver's licence instead of becoming part of the dangerous unlicensed driver population.

It is also important to emphasize the benefits of participation. For example, in Sweden research has shown that those offenders who participate in the alcohol interlock program report that they actually save money because they are drinking less.

Accommodating indigent offenders. Indigence is frequently raised as a political concern in most jurisdictions, particularly in light of the significant costs that are already associated with an impaired driving conviction (e.g., court fees, fines, treatment, insurance, etc.). For many, the cost of the alcohol interlock is perceived as the proverbial "straw that broke the camel's back", and frequently results in the misconception that alcohol interlocks are not affordable, even though the cost-benefits of the alcohol interlock in reducing impaired driving are well-established in the research.

Indigence has become a prominent issue of some concern in relation to alcohol interlock programs in recent years, and the strategies designed to accommodate the participation of indigent offenders in alcohol interlock programs vary dramatically across jurisdictions. In some

jurisdictions, such strategies are non-existent, while in others they are commonplace. The reality is that this issue is often raised as a growing concern, although the magnitude of the problem is not well understood. For instance, in Victoria, Australia just 11% of offenders met the requirements of indigence. Similarly, some jurisdictions may have an indigent offender fund that is rarely tapped. For this reason, it is important for jurisdictions to gain a real sense of what proportion of offenders might require subsidized funding in their jurisdiction before this is deemed a roadblock at a political level.

Indigent funds can be supported using many different strategies. There are several different funding alternatives that can be applied to defray costs for offenders who are unable to afford these costs. In some jurisdictions, each offender may pay a slightly higher price to subsidize costs for indigent offenders. In other jurisdictions, an indigent fund may be supported by vendors or government. For example, in New Mexico the indigent fund covers the costs associated with installation and removal, as well as half of the leasing fee. Courts may also be able to waive or reduce fines to install the interlock (e.g., Florida). Some jurisdictions have also negotiated with service providers for a reduced rate for indigent offenders, or to have the service provider monitor one offender at no charge for every X number of offenders on an alcohol interlock. So while funding arrangements for indigent offenders vary, it is important to note that there is flexibility and no offender need to be denied a device for lack of the ability to pay for it.

Currently there is no consistent strategy to determine which offenders qualify as indigent. Indigence may be determined by the courts according to accepted practices, or may be determined by the licensing or other agency that has authority to administer the alcohol interlock application or any associated indigence fund.

For those jurisdictions that do have some scheme for determining indigence, there is a wide variety of ways that indigence may be defined. In court-based alcohol interlock programs, indigence is often determined by the courts. For example, in Texas indigent offenders are identified at the discretion of the courts and there are no set eligibility procedures (which can be problematic and substantially influence the volume of offenders deemed indigent). Conversely, in Minnesota, if an offender qualifies for a public defender then they would be considered qualified as an indigent offender. Finally, in Michigan, if the offender is under the 150% federal poverty guidelines, the fee is $1.00 per day with no installation or removal charge, although this fee will increase to $2.00 as of October 2010. Vendors complete the calculations and determine the eligibility of offenders.

In licensing-based alcohol interlock programs, indigence is also determined using different means. In New Mexico, the indigent fund was developed in 2003 and is administered by the State. Funds were previously collected based on the gross sales of vendors. Now the funds come

from other traffic fines. Judges make the determination of which offenders are indigent. The process of determining indigency requires careful consideration. More recently, New Mexico has witnessed the use of the indigent fund increase drastically as the number of offenders that are eligible for assistance has grown from less than 100 up to more than 3,500, as courts have largely determined which offenders are deemed indigent.

One of the possible criteria for indigence that was considered in Colorado was qualification for food stamps. In Maryland, repeat offenders may claim a financial hardship in order to be exempt from the requirement of having an alcohol interlock device installed and maintained on each vehicle owned or co-owned by the offender. The criteria for determining financial hardship are set out in the Administrative Rules and documented proof of financial hardship is required. An administrative law judge may determine financial hardship. An approved alcohol interlock vendor may also determine indigence based upon proof that a person has an income level of depending on the number of family members. (To see the Administrative Rules please refer to: http://www.dsd.state.md.us/comar/idq_files/search.idq or http://www.dsd.state.md.us/comar/subtitle_chapters/11_Chapters.htm#Subtitle07)

The bottom line is that service providers and vendors are committed that no offender who needs an alcohol interlock will go without one because it is not affordable.

Tailoring alcohol interlock programs to the level of risk posed by offender. Jurisdictions are moving towards a "graduated" approach to alcohol interlock programs. In these programs, there are lower levels of intervention and supervision for low-risk offenders; and, more intensive intervention combined with treatment for more difficult or repeat offenders. The interlock program should be tailored towards risk/needs of individual as opposed to a "one-size fits all" approach.

Post-installation training for offenders. Many jurisdictions experience a large volume of complaints from offenders shortly after the alcohol interlock device is installed on their vehicle. This is not unusual and typically occurs because during this period offenders are coping with a range of unpleasant consequences that are associated with an impaired driving conviction. As a result, they are often distracted, angry and unable to focus on the training that is provided during installation, and easily frustrated. Not surprisingly, offenders frequently find it challenging to operate the device and follow simple instructions that are provided at the time of installation, and quickly develop a perception that the "device does not work".

Jurisdictions can easily address this issue by including some follow up training for offenders, in addition to the initial training, shortly after the device has been installed and they have had an opportunity to use the device. For example, many offenders initially encounter difficulty starting

their vehicle following a night of drinking. This occurs rather frequently and happens because the offenders still has a significant amount of alcohol left in their system from the previous night of drinking. This demonstrates that many offenders are not aware of the impact of the volume of alcohol that they are consuming in an evening and presents a "teachable" moment to educate offenders.

Requesting that service providers include some form of follow up training to review key instructions is one way that jurisdictions can minimize this issue. Of greater importance, the inclusion of this training may potentially bring offenders into compliance more quickly, and reduce the number of offenders who drop out of the program as a result of their frustration.

Activating anti-circumvention features. Consistent efforts are needed in every alcohol interlock program for offenders to ensure that the anti-circumvention features that are available on most alcohol interlock devices are activated and that requirements according to the technical standards in most jurisdictions are enforced. Highly publicized cases involving device failures are unfortunate but present an excellent opportunity to reinforce the importance of monitoring vendors and service providers to ensure they are compliant with jurisdictional requirements.

Using alternative sanctions for non-compliance. Jurisdictions frequently rely upon fines for non-compliance. For example, in Pennsylvania and Texas offenders are fined for tampering. More recently programs have begun to include a range of alternative and perhaps more constructive sanctions such as increasing the level of monitoring/reporting or adding a camera to the device, or requiring some form of treatment intervention.

It must be noted that the way that violations, tampering and circumvention attempts are defined in a program can greatly impact workload. Of greater concern, the manner in which these events are responded to has significant implications for program management. Sanctions for repeated non-compliance should not have the effect of forcing offenders out of programs, but instead should keep them in until they demonstrate they can separate drinking from driving. For example, offenders may be fined for tampering (this is done by some manufacturers, and some jurisdictions require providers to do this), or in other jurisdictions like Nova Scotia the response to negative events involves the offender participating in a brief counselling session to discuss what happened and how it can be avoided in the future. Both are sanctions to an offender but they each embody a different approach or philosophy.

Using the alcohol interlock to monitor offender abstinence. The alcohol interlock was initially designed to stop drunk drivers and not to monitor drinking behaviour on a continuous basis. Applying the device as a tool that enables the court to monitor offender drinking behaviour beyond their driving experiences can create an increased workload for courts and

decrease support for the use of this device among justice practitioners who are impacted by this. Therefore, efforts to use this tool to monitor abstinence bear careful consideration and input from practitioners.

Reserving driver licence sanctions for driving offences. Jurisdictions should avoid removing an offender's driver's licence for offences that are unrelated to driving (e.g., failure to pay child support).

THE ROLE OF TREATMENT

More recently, there has been much interest in and discussion regarding the combination of sanctions that partner incapacitation and rehabilitation philosophies. The goal of these interventions is to both protect the public while simultaneously addressing the drinking issue that is frequently the underlying disorder that contributes to the cycle of offending. However, research in this area has been limited and few jurisdictions have embraced this trend. This is beginning to change as alcohol interlock programs are starting to actively incorporate a treatment component that is suited to the offender's needs in conjunction with the alcohol interlock program. Efforts are also ongoing to provide training and education to treatment professionals and to encourage partnerships across agencies to achieve long-term risk reduction. The following papers summarize the experiences of a new alcohol interlock program in Nova Scotia, Canada that contains a strong treatment component, as well as an overview regarding what activities are needed to build support among the treatment community.

Treatment Applications in Alcohol Interlock Programs - Nova Scotia's Experience

By: Wanda McDonald, Addiction Services, Government of Nova Scotia, Canada.

Background

The province of Nova Scotia is located on the eastern coast of Canada and has a population of 936,000 who reside in both urban and rural communities. In January, 2006, several agencies formed a steering committee to guide the development of an alcohol interlock program for the province. Members of this committee represented a variety of key agencies, including, Transportation and Public Works (the lead agency), the Registry of Motor Vehicles, the Department of Justice, the Department of Health Promotion and Protection, and the Addiction Services Provincial Committee on Impaired Driving.

Collectively, these agencies developed a comprehensive project charter designed to guide the implementation of the Nova Scotia program. This charter was developed based on the Best Practices for Alcohol Interlock Programs report by the Traffic Injury Research Foundation and the Ignition Interlock Program Standards for Canada report by Beirness and Associates.

Both of these documents emphasized the importance of a rehabilitative component designed to target the offender's drinking behaviour, a frequent source of offending.

Program Structure. At the conclusion of discussions, it was agreed that Nova Scotia would develop a "hybrid" program that included both voluntary and mandatory components depending on the seriousness of the offence and the characteristics of the individual offender. Drivers that are convicted of certain offences, and under certain circumstances would be able to apply for early reinstatement of their driving privileges (e.g., during the licence suspension/revocation period) if they have the alcohol interlock device installed on their vehicle. As part of the program, participants will be required to carry an "interlock licence" which means the licence would only be valid when the driver is operating a specific vehicle with the device installed. In conjunction with this initiative, fines for driving while suspended were also increased to $1,200 (CAD) for a first offence. This amount is nearly double the previous fine and is intended to tip the "risk/reward" scale in favour of program participation.

The regulations that were developed to support the alcohol interlock program covered a range of critical issues such as eligibility, early reinstatement, and entry requirements. To begin, persons who are convicted of a 1st impaired driving offence are able to voluntarily apply for participation in the program. Conversely, program participation is mandatory for those 1st offenders who are deemed to be high risk following a mandatory assessment, those offenders convicted of a repeat offence, and those offenders convicted of causing bodily harm or death due to impaired driving. The only participants that are deemed ineligible for the program are those offenders with four or more impaired driving convictions within a ten-year period.

While all impaired driving offenders in Canada are subject to a federal driving prohibition under the Criminal Code of Canada, eligible offenders are able to apply for an early reinstatement of their licence as part of the Nova Scotia program. Under this scheme, a 1st offender is eligible after three months, a 2nd offender after six months, and a 3rd offender after twelve months. Early reinstatement is also contingent on satisfactory participation in an alcohol rehabilitation program. Those offenders that are convicted for bodily harm or death are not eligible for early reinstatement. Finally, the entry requirements for the Nova Scotia program are based on the offender's driving history, information provided by Addiction Services, relevant medical history and other information.

The Role of Treatment

Addiction Services in Nova Scotia is tasked with delivering a range of treatment interventions to the residents of Nova Scotia. Their services range from simple addiction education classes and structured 21-day treatment programs to detoxification, in-patient treatment, and methadone maintenance services. They use a range of assessment tools and actively monitor outcomes. They also provide services related to nicotine and gambling addictions. This agency is funded by the

Department of Health and the Department of Health Promotion and Protection, and is comprised of nine district health authorities and IWK Health Centre (Adolescent Treatment Services). Of importance, Addiction Services is accredited by Accreditation Canada (http://www.cchsa.ca/).

The role of Addiction Services in the alcohol interlock program is to provide appropriate treatment services to alcohol interlock program participants based on the outcomes of a screening process. Before enrolling in the interlock program, participants must go to Addiction Services to complete a two-day alcohol education program, a bio/psycho/social assessment, and the RIASI (Research Institute on Addictions Self Inventory) in order to obtain a risk assessment rating. Once they have been assigned a rating, participants will apply to the Registry of Motor Vehicles for entry into the alcohol interlock program and have the device installed. This assessment rating will be used to determine what type of treatment intervention, if any, is appropriate for each offender. A treatment plan will be developed for each offender, and offenders will meet bi-monthly with Addiction Services staff in order to review data from the interlock device (also bi-monthly), and receive counselling sessions. Data will be collected at multiple points in the system to monitor progress and to facilitate evaluation.

As part of the preparation for the involvement of Addiction Services in the alcohol interlock program, the director of one of the nine district health authorities (also the Chair of the provincial impaired driving committee) was an active member of the Program Steering Committee. This director was considered an important ambassador for the program and essential to creating support among all of the district health authorities who provide the treatment component of the program.

Addiction Services and Health Protection and Promotion worked in collaboration with the provincial impaired driving committee to develop a training plan which took into account the need to educate staff about the program and provide information about evidence-based interventions. Of some importance, the principles of engagement, change management and building a support network were viewed as paramount to the success of the alcohol interlock program.

The training that was delivered to Addiction Services staff was quite comprehensive in order to support program delivery. Components of the training included: a "train the trainer" model which was considered important to sustainability and succession planning to account for high turnover; familiarity with the program purpose and interlock device regulations; data entry into the RMV information system; understanding of the interlock device reports; a review of the bio/psycho/social assessment tools; a review of the RIASI; and working with mandated clients using motivational interviewing principles. A toolkit was also developed by Addiction Services to facilitate this training. The toolkit included: the program overview, principles and objectives; process and reporting requirements; step-by-step RMV data entry; screening using the RIASI; a

comprehensive assessment; the theoretical approach related to stages of change, motivational interviewing and cognitive behaviour therapy; regulations, Addiction Services Standards for Alcohol Interlocks; outcome monitoring protocols, a contact list of service providers, and other resources.

To build support for this initiative, Addiction Services also developed a support network for their staff. The purpose of this network is to address concerns regarding processes, interagency communication and clinical issues. This network is facilitated using monthly teleconferences during the first six months of the program, in-person meetings, ongoing training, and linkages with the pending evaluation of the program.

Evaluation

A comprehensive evaluation of Nova Scotia's alcohol interlock program, including both a process and an outcome evaluation, is currently being planned. The objectives of the evaluation are to:

- determine the effectiveness of the program;
- determine stakeholders perceptions of the program;
- determine how the implementation of the program progressed compared to expectations; and,
- identify potential improvements to the program or implementation of the program.

Note: In late 2008, the Traffic Injury Research Foundation was awarded the contract to undertake a comprehensive evaluation of Nova Scotia's Alcohol Interlock Program in 2009-2013. Results are expected in 2014.

Engaging and Educating Treatment Professionals and Their System of Care

By: Dr. Paul Marques, Pacific Institute for Research and Evaluation, Maryland, United States.

It has been long-recognized that a significant proportion of impaired driving offenders suffer from some form of alcohol addiction, abuse or dependence issue that must be addressed in order to support a long-term risk reduction approach to this problem. For this reason, the goal of the alcohol interlock was to separate an offender's drinking and driving behaviour by preventing them from starting their vehicle after drinking. The alcohol interlock was never designed to address the offender's drinking issue, and this is clearly evidenced by research that demonstrates that once an alcohol interlock device is removed from an offender's vehicle, the offender may continue to drink and drive – i.e., the drinking issue remains.

In order to support sustained reductions in recidivism, those researchers and practitioners engaged in the field of alcohol interlocks are beginning to seek ways to incorporate treatment services into alcohol interlock programs in order to improve outcomes once the interlock device has been removed. To achieve this goal, efforts are needed to both educate treatment professionals about alcohol interlock programs and engage them to alter existing practices and support this partnership. In the United States, this will require drug, alcohol and mental health professionals to place a higher priority on the impaired driving problem, and the development of strategies to deliver cross-professional training involving criminal justice, health practitioners and health researchers to support cooperation.

A comprehensive approach involving multiple points of intervention can encourage the engagement of treatment professionals in alcohol interlock programs. For example, in the United States, there are a range of organizations (Substance Abuse and Mental Health Services Administration; Addiction Technology Transfer Center Network) that are tasked with delivering educational opportunities to practitioners, clinicians and health care workers. There are also a range of professional associations such as the American Society for Addiction Medicine; the National Association of State Alcohol and Drug Abuse Directors) that have influence and are able to encourage and promote support for partnerships to improve the delivery of alcohol interlock programs. Finally, it will be necessary to engage employers, governments, and commercial insurers of health services to facilitate the incorporation of treatment services into alcohol interlock programs.

There are a range of treatment professionals who should be targeted by these initiatives. In the U.S., the Substance Abuse Professional (SAP) is a certification program by the U.S. Department of Transportation that is designed to deal with transport safety related problems. Such a program may be a logical place to initiate discussions regarding educational opportunities with this community. Ultimately, efforts are needed to engage professionals with different levels of certification to ensure a broad range of services are available as part of alcohol interlock programs (e.g., in-patient, out-patient, partial hospitalization and aftercare facilities) to meet offenders' needs.

There are also several important messages that need to be communicated to the health services industry, and these messages must be articulated in a way that resonates with the goals and philosophies of this community. Such messages may include:

> Alcohol interlocks can assist treatment professionals in monitoring behaviour and predicting risk of recidivism;
> Alcohol interlocks correlate with other objective problem measures;

- Motivational intervention methods have been developed to work specifically with interlock-using impaired driving offenders; and,
- The benefit to cost ratio of alcohol interlocks is estimated to be 7:1.

Research clearly demonstrates that the 20+% of the population who are most dependent:

- Will have the highest rates of elevated BAC tests (e.g., lockouts) relative to all tests taken;
- Will have "first thing in the morning" elevated BAC tests that generally reflect drinking the night before to very high levels;
- Can be identified by monitoring blood, urine or hair for alcohol markers; and,
- Should be linked to treatment or motivational programs, and/or medical boards.

More research in support of these messages can be found at
http://www.interlocksymposium.com/site/ywd_acs_corporation/assets/pdf/PaulMarques_2008.pdf.

It is important to recognize that change is needed to effectively incorporate alcohol interlocks into the treatment system and vice versa. First, treatment professionals must believe that addressing road safety risk is a priority. Second, payers and professionals must apply pressure to each other to address road safety as part of the drug/alcohol treatment system. Finally, the entire national health care system must feel pressure to elevate the importance of road safety as a priority public safety risk.

In conclusion, while jurisdictions can and should target high risk people, the alcohol interlock will indeed miss its goal if the focus in only on high-risk offenders. Road safety and public health interests must work more closely to resolve problems of binge and heavy drinkers. Technology can play a much larger role in identifying, monitoring, and controlling the drivers who pose the most persistent risk.

Expert Perspective on the Role of Treatment

At the conclusion of the presentations on the role of treatment in alcohol interlock programs, symposium attendees participated in discussion groups. These groups were facilitated by experienced discussion leaders and designed to further explore ideas and share experiences regarding what other efforts are needed to encourage and support partnerships among criminal justice, licensing and health professionals and facilitate treatment services as an integral part of alcohol interlock programs. This section contains the highlights from those discussions and summarizes other strategies that may improve the delivery of treatment in conjunction with alcohol interlocks .

Understanding the cost-benefits of employing treatment as part of an alcohol interlock program. Including a treatment component in an alcohol interlock program brings additional costs. Historically, this has been a barrier to combining these two effective interventions. There is a need to consider these costs in the context of the costs of alcohol-related fatalities and the costs of alcohol dependence in general. In this regard, it should be noted that the calculation of the costs and benefits that make a program more or less acceptable to the public and policy makers is a function of who pays the costs and who gets the benefits. Also, costs are immediate and benefits are longer term.

Screening of offenders in alcohol interlock programs for substance abuse issues. It is important that offenders who are entering the alcohol interlock program are screened early on in the process to determine their level of substance abuse and their needs. In jurisdictions where a licensing agency is the program authority, these assessments may be costly and such costs are often borne by the offender. However, courts may be better positioned to accomplish this given that many offenders are automatically screened for such problems in relation to sentencing. As such, with this arrangement there may not be additional costs. Specialized impaired driving courts may be particularly well-suited to apply alcohol interlocks given that providing intensive supervision, treatment, and support are key elements of these courts.

Screening is important because it helps agencies identify the highest risk offenders and target interventions and limited resources accordingly. A treatment component should not be applied in a one-size-fits-all approach as there are offenders who may not benefit from such interventions and who, more importantly, may be negatively impacted. If intensive treatment is automatically mandated it can have a negative effect, and educational initiatives may be more appropriate for low risk offenders. Treatment interventions in conjunction with the alcohol interlock may be most beneficial for those offenders who demonstrate persistent non-compliance. Instead of excluding such offenders from the program, it may be more effective to retain them and to require them to participate in an appropriate treatment intervention.

As a final note, it may be important to ensure that the agency that conducts the screening and makes recommendations for treatment is separate from the agency that will actually deliver the treatment in order to avoid a conflict of interest. Treatment providers that are selected should have some sort of accreditation to indicate the quality of services that are provided.

Using existing community treatment services. Jurisdictions may be able to minimize the costs of treatment by encouraging offenders to seek treatment on their own. Some jurisdictions, are required to treat those with substance abuse issues (e.g., in Germany). In Nova Scotia, offenders receive support to motivate those offenders who need treatment to seek it and these costs are covered by health insurance. It is important to consider the current status of publicly funded

treatment services in your jurisdiction before pursuing this strategy. Some jurisdictions report that publicly available treatment services are underfunded; and rural communities in particular may lack a network of appropriately targeted treatment services.

Engaging the treatment community. In more countries, treatment professionals and health workers are becoming more engaged in the issue of road safety. To further encourage this trend, it is important to make the impact of road safety issues, and in particular impaired driving, tangible to these professionals to demonstrate the benefits of becoming involved. It may be effective to encourage emergency room physicians to speak to health workers about the road traffic fatalities and injuries that are common in hospitals, and the number of victims that are impacted by these crashes. This may make a compelling case to encourage health workers to focus on this issue.

In addition, it is important to convey the road safety message and the value of alcohol interlocks in a treatment language. For example, the alcohol interlock is not a road safety device but a relapse prevention tool that health care workers can use to identify offenders who are at risk of a drinking relapse.

It is also important that health professionals have access to the data from the device, are able to interpret the data, and understand how it can be used in treatment. For example, treatment providers should be made aware that data from the device has been proven a reliable indicator of future drinking and driving behaviour.

One other issue to be addressed is the role of the treatment provider in the alcohol interlock program. Generally speaking, health professionals are not keen to be part of the punishment system. This may be linked to the goals of the interlock program and whether the emphasis is on punishment or rehabilitation.

Encouraging offenders to seek treatment. It is important that barriers that impede offenders from seeking treatment are removed. For example, many offenders will not seek treatment because of negative consequences such as increased insurance costs, impact on employment, or impact on licensing. In Germany, the use of a fitness to drive assessment may be a barrier. In these cases, people seeking treatment run the risk of being deemed unfit to drive and losing their licence. As a result, people are discouraged from seeking help.

Creating accountability among offenders. It is important that alcohol interlock programs incorporate some degree of accountability among offenders for their drinking behaviour. For example, in Victoria, Australia offenders must appear before a judge or magistrate in order to have the alcohol interlock device removed. At this time, the judge is provided with a summary of the offender's performance on and compliance with the requirements of alcohol interlock

supervision. Essentially, if the offender performs poorly and is non-compliant or demonstrates persistent attempts to drink and drive then the judge can order that the offender continue to be supervised with an alcohol interlock device. It is believed that the accountability that this procedure creates among offenders is beneficial.

TECHNOLOGY - FUTURE NEEDS AND POLICY ISSUES

The development of an effective, viable, user-friendly technology is essential to the success of any alcohol interlock program. Historically, the technological challenges or limitations associated with earlier alcohol interlock devices substantially impeded the growth and development of these programs. The ease with which offenders could circumvent the devices, and the issues created by high numbers of "false positives" associated with semiconductor sensors created perceptions that alcohol interlock programs "did not work". However, advances in technology have enabled the development of a sophisticated device with a range of anti-circumvention features that have overcome many of these earlier concerns. Now, with the potential for the use of alcohol interlocks in all vehicles, manufacturers are once again returning to the drawing board to develop a new technology that would be passive, unobtrusive and acceptable to a much broader population of users.

Driver Alcohol Detection System for Safety

By: Dr. Susan Ferguson, Program Manager, Development of Advanced Alcohol Detection Technology; Dr. Bud Zaouk, Senior Engineer, Foster-Miller's Structure and Transportation Group, a QinetiQ North America Company

Frequent and highly publicized enforcement can be effective in reducing drunk driving if people perceive there is a credible threat of being caught. For example, sobriety checkpoints can reduce alcohol-related crashes by 20%. However, such enforcement efforts will not eliminate drunk driving because it is resource intensive and may not be maintained at effective levels. Given this, and the devastating consequences of drunk driving – e.g., it has been estimated that up to several thousands of lives could be saved if all drivers were prevented from driving with a blood alcohol concentration (BAC) of 0.08% and greater — there is a need for a widespread implementation of a technology to reduce this problem. Such a technology should be non-invasive, seamless and intended to support a non-regulatory, market-based approach to preventing drunk driving.

The Automotive Coalition for Traffic Safety (ACTS) and the National Highway Traffic Safety Administration (NHTSA) have entered into a cooperative research agreement to explore the feasibility, the potential benefits of, and the public policy challenges associated with a more widespread use of such in-vehicle technology to prevent drunk driving. A Blue Ribbon Panel appointed by ACTS works in an advisory capacity to provide guidance during a five-year project to develop and test prototypes and subsequent devices that may be installed in vehicles. This paper

summarizes two presentations about the Driver Alcohol Detection System for Safety (DADSS) project and in particular about public policy considerations and challenges with respect to the widespread implementation of a technology to reduce drunk driving.

Acceptance among the public and key leaders is critical for the widespread use of a technology. If a technology is not well designed, non-invasive and seamless, the public will likely not be supportive. This could lead to an intervention of legislators limiting the use of the technology, which happened with seatbelt interlocks in the U.S. — public objections were so strong to the system that was introduced in 1973 that U.S. Congress ordered the seatbelt interlock requirement to be rescinded only about a year later in 1974. Factors that could influence public policy and that need to be considered include:

- Belief that drunk driving is an important public health and safety issue;
- Belief that drunk driving should be addressed by society collectively, not only by those who drive drunk;
- People's personal experiences regarding drunk drivers;
- People's personal alcohol use;
- People's personal drinking and driving behaviour;
- Reliability and seamlessness of the technology.

Factors that will affect driver acceptance include:

- Perceived intrusiveness of the technology;
- Speed, accuracy, durability and reliability of the technology;
- Understanding of how the system works and its user-friendliness;
- Trust that the system will work as designed, each and every time;
- Costs versus perceived benefits.

Consumer buy-in will be critical but such design considerations will likely only influence consumer acceptance and mitigate concerns to a certain degree. Other important considerations include:

- Social norms regarding drunk driving, which likely vary among countries and cultures;
- Knowledge about the effects of alcohol on driving;
- How consumers view the autonomy of the passenger vehicle, i.e., the perception that driving is a right, rather than a privilege;
- Attitudes in general toward in-vehicle technology;
- Philosophical concerns regarding "big brother" and "freedom of choice".

There are also some international considerations that will have to be kept in mind, such as:

- Many countries have lower per se BAC thresholds than the U.S.;
- Drinking driving laws may be more easily enforced in other countries, keeping alcohol related fatality rates lower;
- In some countries a greater percentage of passenger vehicles are fleet owned, making non-regulatory implementation easier to accomplish;
- More people in the U.S. are alcohol abstainers and they may not view drunk driving as an issue that concerns them.

The challenges for the widespread use of a technology that can reduce drunk driving include difficulties to develop a reliable device that has to work each and every time, over the life of the vehicle, and in a variety of challenging environments; anticipating and addressing circumvention strategies by drivers; and unintended consequences, especially in the long term, that could negatively impact safety in the future.

Strategies needed to address consumer acceptance include more widespread use of breathalysers by convicted drunk drivers; an assessment of current levels of understanding of DADSS and levels of acceptance; the monitoring of acceptance levels over time and willingness to adopt the technology; an assessment of what technology solutions might prove the most acceptable and how they might best be implemented; educating the public about the alcohol-impaired driving problem and potential technological solutions; and, working with advocates to build broad public and institutional acceptance.

Communication with the public is needed to accomplish this. As such, a website has been developed (www.dadss.org) to provide project details and answer key questions about technology development and drinking and driving. It also serves as a way to communicate with developers interested in responding to requests for information and requests for proposals regarding the development of technologies.

In conclusion, many issues have to be considered when implementing a technology such as DADSS. Even if technology goals can be met, there will be no significant progress unless the public is on board. The public must be knowledgeable about the system and see its benefits. Therefore, a communications plan will be implemented to address issues uncovered in ongoing discussions with the public in the framework of the DADSS project. There is also a need for an ongoing dialogue with policy makers and other key stakeholders to ensure their support.

Following the symposium, contracts to develop a prototype technology for DADSS were awarded to TruTouch Technologies, Autoliv Inc. and Alcohol Countermeasure Systems.

Infrared Technology for Alcolocks

By: Bertil Hök and Håkan Pettersson, Sweden

In search for an enhanced technology, suitable for in-vehicle integration and with a reduced life-cycle cost, the KAIA (Kompatibel Alkoholsensor med Inbyggd Absolutmätning) project studies infrared technology for alcolocks. This project is co-financed by government and industry and industrialization of the product was initiated in 2008. Goals of this project are to develop a technology that:

- is user-friendly;
- functions fast;
- is self-explanatory;
- is difficult to circumvent;
- minimizes false positive measurements;
- uses a passive sensor technology, based on infrared measurements.

Expert Perspective on Technology

At the conclusion of the presentations on technology there was a brief discussion to explore ideas and share experiences regarding what other efforts are needed to advance and improve technology and to provide insight into future directions. This section contains the highlights from that discussion and summarizes other ideas with regard to technology.

Educating the public. Experts agree that the public does not understand how the human body can be affected by alcohol and what alcohol impairment means or entails. This is a major challenge when trying to increase acceptance levels for new technologies to reduce drunk driving. It also makes it difficult to mobilize politicians. It was suggested that involving the media could help overcome this obstacle. It was acknowledged that the Driver Alcohol Detection System for Safety (DADSS) project is also looking at public acceptance and not just at technical issues, which is very positive.

Managing expectations. Some caution is warranted regarding expectations toward car manufacturers and manufacturers of technologies to reduce drunk driving. If expectations are too ambitious, this could trigger strong opposition from these industries. This means an inclusive process toward the implementation of such technologies is needed as well as an ongoing dialogue with all parties involved, including manufacturers. In this regard, it was suggested that collaboration between government and industry is key as government involvement and support may serve as an incentive for private industry to invest in the development of these technologies.

The issue of detecting other substances besides alcohol or other kinds of impairments such as fatigue impairment was raised. Perhaps there is a need for a large-scale effort to design such technologies. It warrants mentioning, however, that is was acknowledged that simply detecting alcohol use poses huge challenges. From that perspective a more successful strategy is to narrow the focus and avoid 'feature creep' rather than trying to design an all-encompassing technology.

LEGISLATION AND POLICY NEEDS

The passage of legislation relating to alcohol interlock devices and programs can be a challenging process. To achieve this goal there is a need to build a coalition of supporters who are knowledgeable about the technology and who are able to address questions, concerns, and barriers that may arise in a variety of settings. However, many jurisdictions have managed to pass legislation that continues to be improved and enhanced over time. The development of policy to support existing legislation, however, has been slow to follow and many jurisdictions still struggle to operationalize practices and to create accountability for implementation. Efforts to develop much-needed policy are ongoing in many jurisdictions, and practitioners involved in the day-to-day delivery of alcohol interlocks continue to be an important part of the process. These individuals have the greatest experience with the system as a whole and are in a strong position to be able to identify effective practices such that the program achieves its intended goals.

Implementation of Ignition Interlocks in Germany: Legislative Achievements & Challenges

By: Simone Klipp, Federal Highway Research Institute (BASt, Germany)

Introduction

Germany does not have experience with legislative changes concerning the use of alcohol ignition interlock devices and there are no plans for changing regulations in this regard in the near future. The reasons for this are explained in this paper with an emphasis on economic, legal and road safety issues. Special attention is given to political concerns and policy needs that currently exist in Germany. As such, the basic requirements concerning the quality and costs of the interlock devices are discussed, as well as the demands for quality management, particularly concerning quality assurance in alcohol ignition interlock programmes for driving under the influence (DUI) offenders in Germany. Also, current legal regulations which enable the use of interlocks in combination with additional rehabilitation programmes for DUI offenders to become re-licensed again are illustrated.

The information presented in this paper reflects the current status of the national discussion about interlock devices in Germany (e.g., Deutsche Akademie für Verkehrswissenschaft, 2007) and can be useful to contribute to the international dialogue about the implementation of legislation and regulations. In addition, it is hoped that this paper can help encourage manufacturers with product development as well as researchers in order to find common solutions which facilitate the introduction of alcohol interlock-related regulations.

Potential road safety impact of alcohol interlocks

A basic requirement for the implementation of laws and regulations concerning interlock devices is the added value of the product and the impact the technology can have on traffic safety. In this regard, according to official accident statistics 2.26 million accidents were registered by the police in 2004. In 55,951 cases, at least one of the drivers involved tested positive for alcohol with a blood alcohol concentration equal to or higher than 0.03% (or 0.3‰), corresponding to about 2.5% of all accidents. However, looking at the consequences of these accidents, it becomes clear that they cause more harm than other non-alcohol related accidents as they more often result in injuries or fatalities (table 1).

Table 1: Ratio of severely injured or killed persons in all accidents compared to alcohol-related accidents in 2004

	All Accidents	Alcohol-Related Accidents
Severe injuries in 1.000 accidents	238	379
Fatalities in 1.000 accidents	17	31

As a consequence, the impact of alcohol interlocks on road safety could be considerable. However, such an impact would only be achieved if all motor vehicles would be equipped with alcohol interlocks because the majority of accidents due to alcohol are caused by so-called first offenders. Therefore, an interlock sentence for drivers already caught for DUI as a secondary preventive measure would likely only lead to a small decrease in the accident rates.

Economic and legislative issues related to alcohol interlock obligations for all motor vehicles

On behalf of the Federal Ministry of Transport, Building and Urban Affairs (BMVBS), the Federal Highway Research Institute (BASt) conducted cost/benefit estimates based on its regularly conducted accident-cost analysis and the official accident statistics (BASt, 2006). According to these estimates, the total cost of all alcohol-related accidents in 2005 was €1,356 billion. With over 48 million registered motor vehicles, the annual costs per vehicle should not exceed approximately €30. Due to the fact that the actual costs of the interlock device, i.e., purchase and regular calibration, are currently much higher than that, a mandatory obligation for all motor vehicles would make all motor vehicles owners subject to the financial burden while only a small fraction of them actually commit DUI offences. Following the Basic Constitutional Law of the Federal Republic of Germany, a mandatory obligation would breach the Principle of Proportionality and is regarded as a disproportionate restriction of Article 2 (basic freedom of action) and Article 14 (basic property right). On the other hand, forcing manufacturers to offer interlocked vehicles to the public at no additional cost would likely be detrimental for other vehicle safety features and may lead to abandoning the development of these features.

Economic and legislative issues related to alcohol interlock obligations for all heavy vehicles

According to the above mentioned cost/benefit estimates, the total costs of alcohol-related accidents of heavy vehicles (>3.5 tonnes) in 2005 were €18.2 million. With a vehicle park of 871.000 registered heavy vehicles, the annual costs per vehicle should not exceed approximately €20 (BASt, 2006). Furthermore, it warrants mentioning that there is less to gain with heavy vehicles as only 600 accidents happened where a heavy vehicle was involved. Moreover, as an alcohol interlock obligation for all heavy vehicles would mainly affect professional drivers, these drivers would be illegally restrained from working in case of a false positive breath tests, because the freedom of exercise of profession is considered a basic personal right, defined in Article 12 of the Basic Constitutional Law. Another economic issue that needs to be considered is the potential loss of economic activities due to higher costs of services as a result of the obligation to have interlocks in all heavy vehicles.

Legal issues concerning mandatory interlock obligations as sanctions for DUI offenders (court-based implementation)

Generally speaking, an interlock obligation as a sanction for DUI offenders would only affect repeat offenders and, as a result, only avoid accidents caused by these offenders. Accurate cost/benefit estimates are difficult to obtain as it remains unclear how many accidents are caused by this group of DUI offenders.

Furthermore, when discussing interlock obligations as a potential court-based sanction, the following principles of the German criminal system need to be borne in mind: general crime prevention and special crime prevention. General crime prevention is based on general deterrence while special crime prevention focuses both on punishment of an offender to avoid subsequent misbehaviour and also rehabilitation of the offender. This is particularly obvious for DUI sanctions as defined by the German Criminal Code (StGB). The Criminal Code allows for a fine or imprisonment as main sanctions (§§ 315c, 316 StGB). Additionally, a driving licence revocation (§ 69 StGB) in connection with a suspension period (69a StGB) is defined as a measure of safety and improvement (§61 StGB) as the offender proved to be unfit to drive by committing the DUI offence.

The Criminal Code, however, currently does not allow imposing an interlock restriction (or other obligations) and monitoring compliance or sanctions in case of non-compliance are not regulated. In this context the issue of whether an interlock restriction can serve as a substitute for licence revocation and suspension as a measure of safety and improvement needs to be considered. Two aspects in particular – safety and improvement – are important. First, the aspect of safety

pertains to protecting the public. Protecting the public is possible with an interlock obligation as the results of international research have shown that re-offence rates are low during the period of installation. Second, the aspect of improvement pertains to the offender's future behaviour. To date, no research is available suggesting that interlocks lead to long term sustained behavioural changes. Therefore, an interlock cannot be considered a measure that changes the offender's drink drive behaviour after de-installation. In order to achieve sustained behavioural change, an interlock needs to be combined with treatment (e.g., psychological counselling, strict medical supervision with brief interventions). However, making a decision about treatment is not the court's responsibility; at least as far as DUI offenders are concerned.

Finally, it warrants mentioning that mandatory use of interlocks could precipitate negative reactions and lead to an increased likelihood of circumvention attempts. Therefore, voluntary use of ignition interlock devices is considered to have a greater chance of succeeding. In the following section, voluntary use of interlocks for a specific group of DUI offenders is presented.

Current options for ignition interlock use in combination with driver improvement measures in the framework of re-licensing procedures (administrative-based implementation)

In Germany the administrative driving licensing authority decides whether to re-issue a driving licence or not. To help make an informed decision, the authorities instruct the offender to undergo a medical-psychological assessment (MPA). The MPA is mandatory for:

- DUI offences with a BAC equal or above 0.16% or (1.6‰);
- repeated DUI offences regardless of BAC;
- any other incidents that indicate an alcohol problem or alcohol abuse consumption pattern.

Approximately 64,000 DUI offenders participate in such a MPA per year because their fitness to drive is being questioned due to an underlying alcohol problem (BASt, 2007). As part of the assessment, a medical expert and a psychological expert evaluate the offender's previous alcohol consumption patterns as well as any attitudinal and behavioural changes related to it. For a recommendation in favour of the offender, the offender has to demonstrate stable changes in his/her drinking behaviour and sufficient strategies to prevent relapse. If the offender fulfils all criteria (this is the case in 44% of alcohol-related MPAs) the licensing authority re-issues the driving licence immediately. The medical and psychological experts can also recommend that the offender should participate in a course if:

- behavioural change has occurred, but needs to be structured or stabilized;
- behavioural change has been initiated, but still needs to be supported, structured or stabilized;
- behavioural change has not yet been initiated, but seems achievable due to the given results, particularly due to the individual's awareness of the necessity of a behavioural change as well as the ability and readiness for self-criticism and self-control.

After successful completion of the course supplied by an accredited provider the offender is deemed fit to drive. As such, successful participation has legal consequences: if the offender submits the certificate of successful attendance, the driving licence is reinstated without any new assessment or additional obligations. This happens to 16% of alcohol-related cases. About 40% of DUI offenders, however, will still be considered unfit to drive due to the lack of initiating sufficient changes. Those cases have to undergo a new MPA as often as necessary before the driving licence is reinstated.

A group of drivers for whom the interlock would be useful could be identified among these cases, namely the group of offenders who failed marginally to fulfil the criteria for a course recommendation. In these instances, the MPA assessors would evaluate them as "conditionally fit to drive" and recommend an interlock-restricted licence in combination with an appropriate rehabilitation measure. Participation in the programme would be voluntary and the offender could choose between no licence at all or a restricted licence with an interlock, a supervised rehabilitation measure. For a full re-instatement of their driving licence, a subsequent MPA would be required. This would also serve as outcome quality control without any additional costs, because the offender would have had to undergo the MPA again anyway.

Matters of special importance prior to implementation

Before this approach can be implemented in Germany, some issues need to be considered. From an administrative point of view, the driver licensing authority can issue a conditional licence with an interlock restriction. The restriction would have to be indicated on the licence. In practice, this will have to be done according to European regulations, i.e., following the Commission Directive 2000/56/EC which refers to the list of harmonised Community codes in Annexes I and Ia of Directive 91/439/EEC. According to these regulations, the harmonised Community code 51 provides the option to issue driving licences restricted to a specific vehicle using its registration plate. Thus, the vehicle registration number (VRN) of the interlock-equipped car can be marked on the licence. This ensures circumvention by using another vehicle would be detected. Any use of a different vehicle would be a criminal offence (unlicensed driving according to § 21 StVG) and liable to prosecution.

From a psychological perspective, the suggested approach implies that experienced MPA experts describe the target group in detail and define criteria for programme inclusion or exclusion. In addition, appropriate programme manuals need to be developed. It can be expected that it would be practical and useful for the psychological counsellor to have breath test data from the interlock recorder as evidence of individual drink driving behaviour. The objective data could serve as a diagnostic and key counselling tool in order to shape the therapeutic intervention and can provide useful feedback about the rehabilitation progress.

One main problem that may occur relates to interferences with legal regulations in cases of failed breath tests because the attempt alone to start a vehicle in an impaired condition is sufficient for prosecution (§ 315c StGB) and the driving licence has to be withdrawn immediately in this case. This scenario results in a therapeutic dilemma: if the offender has to fear negative consequences, no trustworthy relationship can be established between offender and counsellor. Hence, solutions to this problem need to be discussed in detail and clearly defined prior to implementation.

Summary and conclusions – future needs and scientific tasks

With respect to any kind of mandatory alcohol interlock programme, general constitutional issues related to personal rights, basic property rights and the freedom of exercise of profession have to be discussed, as well as the impact on the free movement of goods and economics within the European Union.

Basic product requirements include lower costs for equipment and support, complete elimination of false positives and full protection against circumvention, including possibilities to identify the person providing the breath test sample.

Basic requirements that have to be met in case of programme implementation within the re-licensing process of DUI offenders include the development of interim criteria for programme assignment, an agreement on how to deal with elevated breath test data and quality control prior to the cancellation of the interlock restriction. If these preconditions are satisfactorily fulfilled, the suggested approach to use interlocks for a selected group of DUI offenders can be considered useful to expand the German DUI countermeasure system. A field trial in one or two Federal States is conceivable. It would provide the option to study the added value of using interlocks within rehabilitation programmes, but also to examine the effects on secondary delinquency like unlicensed driving. As such, the following avenues could be pursued:

> Assessing the added benefit of rehabilitation programs by combining behavioural and innovative technical measures;

- Evaluating the feasibility and usefulness of breath test data from the interlock recorder as behavioural evidence for an adaptive diagnostic and key counselling tool in order to shape the therapeutic intervention;
- Definition of target groups for inclusion and exclusion in interlock programmes and development of criteria and guidelines for the assignment of DUI offenders to a combination of rehabilitation and the interlock;
- Analysis of the impact of the programme on DUI recidivism, accident rates and secondary delinquency.

Such research results may serve to support and expand the use of alcohol interlocks in Germany.

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Expert Perspective on Legislation and Policy Needs

At the conclusion of the presentations on legislation and policy needs, symposium attendees participated in discussion groups. These groups were facilitated by experienced discussion leaders and designed to further explore ideas and share experiences regarding what other efforts are needed to advance and improve the development of legislation and policy and to provide

insight into future directions. This section contains the highlights from those discussions and summarizes other strategies that may improve alcohol interlock legislation and policy in a range of environments.

Building a coalition of stakeholders. It is important that a strong coalition of stakeholders and supporters is built to help support, promote and encourage the implementation of an alcohol interlock program and to provide practical input into legislation to ensure it is achievable. A broad coalition brings credibility to the initiative and makes it more challenging for politicians to ignore or dismiss it. In particular, grassroots organizations with advocacy experience and large memberships can be effective in communicating a message that may be challenging for other stakeholders (e.g., representatives of the justice system) to convey given the positions that they hold and restrictions regarding advocacy. In particular, medical professionals can be very effective in carrying the message given their credibility and ability to leverage media attention. Placing a special emphasis on cost-benefits and the human aspects may be effective to influence and encourage politicians.

Choosing a champion. Choosing an influential leader as a champion can be effective. For example, they can point to progress in other jurisdictions and lack of activity in your own. Caution is warranted when choosing a champion as this can backfire if the champion engages in unacceptable behaviour.

Using an iterative approach. Despite the best intentions, legislation begins as ideal and optimal and gradually is weakened as it moves through the legislative process in order to accommodate political demands. In some jurisdictions, such as France, it is believed that it is more feasible to begin with a simple piece of legislation. While such an approach may not deliver all that is required the first time around, it does have the advantage of getting something in place more quickly and that is less susceptible to potential weaknesses at a political level. Time and effort is required over the longer time to refine legislation and close existing gaps and loopholes. Of some importance, it is critical that any piece of legislation that is proposed be considered in the context of the larger impaired driving system to ensure that laws are not contradictory.

Providing guidance on essential program features. Effort is needed to articulate to legislators and policymakers the key features of programs (e.g., short licence suspension) and why they are important as well as how they contribute to effectiveness in order to prevent legislation from being watered down. Some essential policy features that programs require include: device standards, testing protocols, vendor/service provider standards to promote high quality service, short licence suspension periods to facilitate early installation of the device, a system for monitoring compliance that includes graduated responses and incentives, and a strategy to manage information flow and reporting from service providers to program authorities.

Focusing on execution. It is important that legislation is developed with some practical input regarding how it will be executed. Too often legislation is passed in a policy vacuum that leaves practitioners struggling with implementation issues. There is a need to start with a framework and determine what outcomes are desired and can be practically achieved. Legal and policy confusion often leads to low implementation rates as well as a lack of follow through for dealing with offenders who have interlocks.

Creating reciprocity across jurisdictions. Given the nature of an increasingly mobile society, it is imperative that jurisdictions consider the implications of cross-border travel on an alcohol interlock program and how this will be managed. For example, many people live in one jurisdiction and work in another. In these instances, how will a driving suspension be managed and what steps are needed to ensure that licensing authorities in other jurisdictions have the ability to determine a driver's licensing status. Enforcement of the alcohol interlock restriction must be given consideration as well as the sharing of information across licensing agencies, courts and police.

Another important consideration is what happens to the alcohol interlock when an offender moves to another jurisdiction. Program authorities must be prepared to handle the transfer of the alcohol interlock and must have strategies in place that will determine how service providers respond to these situations and what responsibilities are assigned to the offender, the service provider and the program authority.

BUILDING PUBLIC AWARENESS AND SUPPORT

Public awareness and support are critical areas that will impact the enhancement and expansion of alcohol interlock programs in the coming years. This section contains insight into the experiences of two jurisdictions in addressing these issues and provides guidance for future initiatives.

Toward a Global Vaccine for Drunk Driving

By: Chuck Hurley, Executive Director, Mothers Against Drunk Drivers, United States

In 2007, Mothers Against Drunk Drivers (MADD), a U.S-based grass roots organization, launched a National Campaign to Eliminate Drunk Driving, in partnership with a number traffic safety and other organizations with a vested interest in reducing this issue. One of the key features of this campaign involved a long-term goal to make alcohol interlocks a standard safety feature that is installed in all new vehicles, much like the implementation of seatbelts and airbags.

As part of this campaign, efforts have been initiated to research and develop a passive technology that is unobtrusive to the driver and that would not result in an unacceptable number of driver lockouts. However, beyond the development of an acceptable technology, in order to achieve this goal it will be essential to develop public support for the application of this technology in all vehicles. This means that a shift in perspective in the long-term is needed to successfully transition the use of alcohol interlocks from a public safety to a public health approach.

To achieve this goal, the strategy must focus on four main activities. First, it is important to gain the attention of the public on the drunk driving issue and raise awareness. Second, strong public interest in the issue must be created. Third, the public must be instilled with a desire to change, and finally, the public must be motivated to take action.

There is much to be learned from other public health initiatives such as the introduction of mandatory recycling. Research on this issue reveals that once behaviour has changed, attitudes change quickly. For example, in July 1987 there was only a 16% difference between those who recycled and those who did not. However, by 1989, this difference had grown to 68% with some 84% of respondents who reported recycling. At the same time there was a 43% difference

between those people supporting mandatory recycling and those who did not (July 1989), however by October 1990 this difference had increased to 64% with some 81% of respondents indicating support for mandatory recycling.

Similarly, in the traffic safety field, change in support for mandatory air bags and primary seat belt laws[1] has occurred, albeit more slowly. In this regard, the difference between those who support mandatory airbags and those who do not, the difference has grown from 7% to 80% over the past 25 years. And, between those who support primary seatbelt laws and those who do not has also grown in the past decade, but less significantly. However, this has been followed by growing support for sanctions for non-use of seatbelts. There has also been some growth in support for alcohol check points.

For MADD, first-offenders are an important part of the drunk driving problem that must be targeted in order to achieve reductions in reducing impaired driving. However, to be successful in its goals, it was important that MADD gauge public opinion regarding the use of alcohol interlocks with both first and repeat offenders using a public opinion poll. As part of the poll, MADD explored public reaction to a variety of sanctions, including the use of licence suspensions as well as alcohol interlocks with both groups of offenders.

The poll revealed that there was public support for tougher enforcement for first offenders with approximately 75% supporting a 45-day licence suspension followed by a one year driving permit for work purposes. There was slightly less support (65%) for a mandatory interlock restriction for six months for first offenders. The poll also revealed that there was support for continued strong action for repeat offenders with 84% supporting the 45 day licence suspension followed by a driving permit for work purposes, and 83% supported a mandatory alcohol interlock sanction for one year. A further breakdown of those individuals supporting these penalties revealed that those who were less supportive included those who reported drinking and driving and other drivers within certain demographics.

The poll further revealed that those who support interlocks did so for the following reasons:

> saves lives;
> make our road safer;
> get drunk drivers off the road;
> stop repeat offenders;

[1] Primary seat belt laws enable law enforcement officers to stop vehicles when the driver or passengers are not wearing a seatbelt when the law requires them to do so.

- drunk drivers should be punished severely the first time because it only takes one trip to kill someone and it is a good deterrent; and,
- possibly reduce the cost of insurance.

However, those who opposed tougher sanctions did so because:

- too harsh for a first offence;
- the device is not foolproof;
- too restrictive/too intrusive; and,
- an expensive solution/who pays?

MADD also tested a variety of sanctioning strategies based on the use of alcohol interlocks in combination with licence suspension and differing lengths of hard suspensions. Overall, more than half of respondents supported both measures with approximately 63% supporting those sanctions proposed for first offenders and 85% supporting those sanctions proposed for repeat offenders. Strongest support for these measures came from women, younger drivers and those with a close connection to the drunk driving issue. Of interest, when respondents were informed that "studies show two-thirds of drunk driving offenders continue to drive even when their licence is suspended" there was a further increase in support for stiffer penalties for first offenders.

Based on these results, MADD further tested nine messages to identify the most powerful and convincing messages that lead to support for first-offenders being subjected to a mandatory alcohol interlock for six months. While all messages tested well[2], the two that were most convincing were:

1) "Half of the drivers killed with alcohol in their system are two times over the illegal limit. Ignition interlock devices make sure an engine simply would not start at these types of dangerous blood alcohol levels. Making them mandatory would help take the most dangerous drivers off the road."
2) "Up to 70% of all drunk driving related fatalities and injuries are caused by repeat offenders. Ignition interlock devices would keep us all significantly safer. It is a technology that has been tested, works, and can be implemented quickly in every state in the country".

The poll revealed that these messages do move those people initially opposed to making it mandatory for an alcohol interlock device to be installed for first offenders towards greater support.

[2] To see all 9 messages tested by MADD please visit http://www.interlocksymposium.com/site/ywd_acs_corporation/assets/pdf/ChuckHurley_2008.pdf

Data 2006	Total	By Recidivists	Alcolocks in All Punished (65%)
Fatalities	4.104	164	-106
Seriously Injured	21.382	855	-555
Slightly Injured	4.882	-3.173	122.068

Data 2005	Total	By Recidivists	Alcolocks in All Punished (65%)
Fatalities	4.442	177	-115
Seriously Injured	21.859	874	-586
Slightly Injured	110.950	4.438	-2.885

The poll also revealed that the term used to describe the alcohol interlock device is also important in conveying these messages. In addition, the MADD poll showed that people were generally unfamiliar with the alcohol interlock and had difficulty describing the device and its function.

Among those respondents who were familiar with the alcohol interlock device, some 61% had positive feelings about the technology, although this represents just 29% of all drivers. Respondents to the poll were also presented with positive statements about alcohol interlocks that focused on the benefits and capabilities along with critiques about the device. Overall, a majority (72%) of those who heard positive statements only continued to support the use of the device with first offenders. In addition, a majority (57%) of those who heard both positive statements and critiques about the device also continued to support the use of the device with first offenders. The poll also indicated that there will be support for smart vehicle technology in the future with some 58% of respondents reporting a positive attitude towards future smart vehicle technologies. A significant portion further indicated they would be willing to pay up to $100 to purchase a smart tehchnology for their vehicle which increased further in the event such a purchase would reduce auto premiums.

Past experiences with other traffic safety improvements, and well as recent experience with alcohol interlocks demonstrates that it is possible to affect public opinion and increase support for the use of alcohol interlocks among impaired drivers. As part of this process, it is clear that educational efforts to provide the public with accurate, easily understood, and digestible information, and well-crafted messages are an important factor.

Linchpins to Public Support and Awareness

By: José Rodriguez, Fundación Instituto Tecnológico para la Seguridad del Automóvil (FITSA), Spain

In Spain, it has been challenging to create public support and awareness regarding the use of alcohol interlock devices. One of the main challenges is related to the inability to measure the magnitude of the drink driving problem. For example, there is a lack of official data about the impact of alcohol on traffic accidents. However, there are some measures available that provide insight into the magnitude of the problem. For example, the National Institute of Toxicology estimates that some 30% of fatally injured drivers in traffic crashes were over the legal limit of .05%. In 2006, the Ministry of Health and Consumption, as part of a national drug plan, determined that alcohol was the most consumed psychoactive substance in Spain. Finally, the Social Attitudes to Road Traffic Risk in Europe 3 (SATRE 3) revealed that 62% of Spanish drivers drink alcohol usually and 42% drink and drive sometimes.

More generally, based on the experiences in other countries, there is strong evidence to support the need for alcohol interlock devices. In a certain percentage of alcohol-related fatal crashes in many countries, the driver had been previously sanctioned for driving over the legal BAC limit. And, in the United States, between 50-75% of drivers who have had their driver's licence suspended or revoked continue driving anyway. In Sweden this number is just 30%. Of greater importance, there is research to demonstrate that drunk driving recidivism is reduced 65% when an alcohol interlock is installed.

In Spain, the legal BAC is .05% whereas it is much lower (.25%) for inexperienced or professional drivers of commercial vehicles. To date, the alcohol interlock is not available as a sanction in Spain for impaired driving. However, in the past two years, there has been a notable increase in penalties for impaired drivers who exceed the legal BAC limit. A point system has been applied to the driver's licence in Spain. Drivers have a total of 12 points and points are deducted for various offences. For example, if the driver has a BAC over .05% a total of 6 points are deducted from the licence (the limit is .03% for inexperienced and professional drivers). A driver with a BAC over .06% can also be subject to a jail term ranging between 3-6 months.

To begin to build public support and awareness for the use of alcohol interlock devices in Spain, the FITSA facilitated the creation of a Group of Interest that involved participation from the Road Safety Authorities (DGT), the Road Safety General Prosecutor, the Council of the Judiciary (CGPJ), experts and device manufacturers in order to investigate and evaluate strategies to deliver an alcohol interlock program in Spain. The Group also produced a study to summarize available information and research about alcohol interlock programs in other jurisdictions including Australia, Canada, the United States and Europe. Based on this research, the summary includes

recommendations regarding best practices and experiences with regard to alcohol interlock programs, and also contained estimates involving a cost-benefit analysis involving different scenarios in which alcohol interlocks could be introduced in Spain.

This summary was printed and widely disseminated for public use. As part of the release of this report, a press conference was organized to announce the recommendations from the study. This event attracted representatives from leading print, radio and television media and also involved representatives of interlock manufacturers. And, following the release, the initiative has continued to pursue input from Congress, victim organizations and members of the various political parties in Spain.

The cost-benefit analysis with regard to the alcohol interlock program that was part of the study was quite detailed. It examined three different scenarios. In the first scenario, all convicted drunk drivers would be required to participate in the alcohol interlock program. In the second scenario, only those drivers with a BAC in excess of .05 would be required to participate, and in the third scenario, participation in the alcohol interlock program would be voluntary. In this last scenario, it was estimated that between 10% and 20% of eligible drivers would participate.

The characteristics of the proposed alcohol interlock program for the purposes of the cost-benefit analysis included an estimated duration of between six months and one year. The cost of the program was estimated at €1,200 per year and these costs include the installation of the alcohol interlock device support, maintenance, monitoring and de installation. It was further suggested that the costs of the program would increase to €2,000 annually if it also included a medical component that resulted in prolonged separation of drinking and driving. Finally, it was estimated that the cost of a fatality was €1,265,000; the cost of a serious injury was €125,000, and a minor injury was €2,720.

Based on these calculations, the results of the analysis were as follows:

- Scenario 1. All punished drivers by driving at least one time over the legal alcohol limits
  - Ratio (Only with alcolock device): 2,34
  - Ratio (including medical actions): 1,40
- Scenario 2. Drivers with levels of 0.5 mg/l of alcohol in expired air.
  - *Represent 27% of punished drivers.*
  - Ratio (Only with alcolock device): 6,14
  - Ratio (including medical actions): 3,38
- Scenario 3. Sanctioned drivers who participate voluntary in the program (10%)
  - Ratio (Only with alcolock device): 2,27

    - » Ratio (including medical actions): 1,36
- > Scenario 3. Sanctioned drivers who participate voluntary in the program (20%)
    - » Ratio (Only with alcolock device): 2,34
    - » Ratio (including medical actions): 1,4

FITSA was also asked to evaluate the possibility of requiring the mandatory installation of alochol interlocks on school buses. As part of this process, FITSA conducted interviews with managers of bus transport companies and transport trade unions. From the point of view of the bus companies, the voluntary installation of the device was not perceived as offering a competitive advantage if the device was not recognized and valued by its customers. It was believed that the Transport Sector would also be unhappy with this arrangement as it will require the same level of control for other professionals with responsibility over human lives, such as like doctors, pilots of trains or aircrafts. Perhaps the most important barrier was that the percentage of professional drivers that drink alcohol when they have to drive is much lower than that of regular drivers, so it was felt that this application would not be appropriate.

From the point of view of the trade unions it was suggested that there are other problems that were of greater importance than alcohol consumption, i.e., self medication among drivers. Similarly, fatigue was viewed as a more pressing concern because of the many hours driving in a not very comfortable seat and a larger contributor to crashes.

At the conclusion of this exercise, the positions of the various groups involved in the development of alcohol interlocks were diverse. The perspective of the Traffic General Directorate (DGT) was to continue to evaluate the possibility of gradually introducing an alcolock program for offenders or the use of alcohol interlock devices in school buses. The position of the Road Safety General Prosecutor was to support the use of the technology (alcohol interlock) as an alternative to re-education than jail. However, they suggested that the administrative laws should be changed before a judicial law modification. With regard to the Council of the Judiciary (CGPJ), they agreed with the introduction of this technology, however they felt it could not be achieved without a modification to the judicial law. Finally, the Parliament of Deputies has made the proposal to study the implementation of alcolocks in bus school transport.

This experience clearly demonstrates the importance of building coalitions with partners that will be involved in or affected by the implementation of an alcohol interlock program. It also suggests that making available research findings and experiences from other countries are also essential to building support. Most importantly, it is important that implementation be flexible in order to accommodate the needs of different agencies and organizations.

Expert Perspective on Building Public Support

At the conclusion of the presentations on building public support and awareness symposium attendees participated in discussion groups. These groups were facilitated by experienced discussion leaders and designed to further explore ideas and share experiences regarding what other efforts are needed to advance and expand public support and awareness and to provide insight into future directions. This section contains the highlights from those discussions and summarizes other strategies that may increase support for the use of alcohol interlocks in a range of environments.

Shifting from a public safety to a public health perspective. In the past, the implementation of alcohol interlocks has largely been predicated on a public safety perspective. These programs were targeted towards offenders in particular as a sanction for impaired driving offences. Similarly, these devices have also been targeted towards commercial drivers because when such vehicles are involved in crashes, the results are devastating and the damage is much greater. This perspective has evolved in the past decade and alcohol interlocks are now being considered as a public health strategy, much in the same ways as seat belts and airbags. Given the substantial risk that an alcohol impaired driver poses on the roadways, the alcohol interlock is an essential safety feature.

This emphasis on the public health perspective has been more pronounced in EU countries, Sweden in particular. This has been largely due to the awareness and educational efforts of grassroots organization such as the Swedish Abstaining Motorists Association (MHF). Support of active interest groups can help promote the issue and encourage policy change at a political level. This may perhaps be more easily achieved by applying alcohol interlocks to an ever growing list of road users, from heavy transport vehicles, to taxis and busses and encouraging a gradual shift. The use of the alcohol interlock can also be a competitive advantage as companies can say their vehicles are safer than other companies because they use alcohol interlocks. This can create a pull for demand.

Legislators must be educated that alcohol interlocks are a prevention tool because they are most frequently perceived as punishment for offenders. Basic elements of an effective educational campaign include positive messages and the use of positive feedback from offenders and their support.

Cultural differences have a major impact and can affect people's willingness to accept restrictions, inconvenience and government intrusion. In certain cultures, campaigns can be based on "the right to drive on roads without drunk drivers" — e.g., "freedom from drunk drivers in Norway".

Focusing on the next generation of drivers. Some jurisdictions are also targeting youth given the high risk of crash that is due to age, and inexperience in combination with alcohol. Youth present a good opportunity for intervention because they will likely start to perceive the interlock as standard technology if they are exposed to it early on. Some argue an interlock is a good tool for parents to protect their children and the interlock should be integrated into everyday life.

Promoting the cost issue. Cost/benefit estimates are needed and such information should be used to promote interlocks. Issues to consider include costs associated with not using interlocks such as lost employee time, business delays resulting from crashes, increased health care costs, costs of the interlock, etc.

Victims as spokespeople. It is important to personalize the issue for the public to create demand and build support. Victims can be effective spokespersons who can keep the impaired driving issue in the media and can become a well known figure. They can comment on drunk driving crashes and continually reinforce the importance of the issue.

Leveraging the media. Every crash is an opportunity to discuss alcohol interlocks. The message should be sent that these crashes could have been avoided and that the involved victims would still be alive if the vehicle had had an alcohol interlock installed.

Making alcohol interlocks a real experience. There needs to be regular opportunities for the public to have contact with and learn about alcohol interlocks on a hands on basis. Alcohol interlocks have to be understandable, simple and normal. As such, there should be opportunities for people to be exposed to interlocks. For example, MHF did demonstrations at schools, in malls, at rotary clubs and community events, even car dealerships and these are also good press events.

FUTURE RESEARCH NEEDS

Much progress has been made in the field of alcohol interlock research in the past two decades. However, a number of questions remain. The following section discusses future research needs and raises questions that need to be addressed in the coming years.

Does the use of alcohol interlocks result in a reduction in fatal and serious injury crashes?

This question has yet to be answered by the research. Given the large number of impaired driving trips that are prevented, researchers believe the use of interlocks does result in a reduction in fatal and serious injury crashes, but it has never been proven. To date, evaluation projects have used samples that have been too small. Crashes are relatively rare events so a large sample is needed to see any effect. This has been particularly challenging given the low participation rates in most programs. Growth of interlock programs should make it possible to answer this question.

What is the optimal length of the alcohol interlock supervision period?

Research is needed to answer questions about the optimal length of the alcohol interlock supervision period. For example, how long should offenders be retained on the alcohol interlock device?; what is the optimal period for first offenders and repeat offenders? Research on the return of executive cognitive functioning and the evidence-based practices put out by the National Institute of Corrections (NIC) in the U.S. suggests a minimum of six months. If the supervision period is too short, this may result in no effect. On the other hand, if it is too long, this can be damaging and is likely a drain on resources.

What does the information from the data recording device tell us about implementation strategies?

It is important to consider what can be learned from the program data. Such information can inform supervision, monitoring, resources, staffing and infrastructure. For example, how behaviour changes over time during a program can have implications for delivery and program administrators. Typically there is a learning curve among offenders. At the beginning of their participation there will be more failed breath tests and attempts to circumvent the technology, but as offenders begin to realize that they are being monitored compliance increases. Staff should be adjusted accordingly as it can be expected that fewer resources will be needed when offenders have been in the program for a while.

What is the impact of the quality of monitoring on program outcomes?

Another important question pertains to the impact of the quality of monitoring on program outcomes. It would be useful to know if there is a difference in outcomes between programs who actively monitor and work with offenders as compared to those programs in which monitoring is nominal.

Is there a difference in outcomes between those offenders who immediately enter the alcohol interlock program versus those who delay entry?

This question is related to issues concerning hard suspension. Based on a punitive view, some would argue that a certain period of being prohibited to drive is required before becoming eligible to participate in an interlock program. Others argue that offenders are at risk of becoming part of the unlicensed driver population because offenders learn during the hard suspension period that they can get away with driving while unlicensed. It is not clear how length of this hard suspension period affects performance during participation in the interlock program and afterwards.

What are the cost-benefits associated with alcohol interlocks?

Policymakers need this information on costs and benefits of interlock programs to inform decision making and to encourage support for programs and legislation. Some estimates are available, for example from Norway, Spain, Germany and New Mexico but they are not being widely distributed. Issues to consider when calculating costs and benefits include reduced jail costs, reduced health care costs, reductions from lost employment, etc. Comparable information should be used to convince employers that equipping their fleet of vehicles with interlocks can be beneficial to them.

SWEDEN'S ALCOHOL INTERLOCK EXPERIENCE

Sweden has traditionally been a pioneer in the field of alcohol interlocks in particular and traffic safety in general. A special session was dedicated to Swedish experiences with alcohol interlocks from a variety of perspectives, including employers' and unions' perspective, a business perspective and the government's perspective, both at a national and local level.

Experiences with Commercial Programs

By: Liza Jakobsson, Society, Swedish Road Administration (SRA), Sweden

Aside from protecting the public against drunk drivers, alcohol ignition interlocks can also be used to assure the quality of transport. This is the rationale for using interlocks in commercial programs: interlocks can be considered a tool to achieve a more economical, environmentally sound and secure transport system.

In Sweden a national large-scale demonstration project first took place in 2000-2002 and involved three companies and approximately 300 installed interlocks. Following this demonstration project, several smaller projects began in collaboration with bus, taxi and truck companies. Based on the positive results of these projects, since 2004 the Swedish Road Administration (SRA) began stipulating interlock requirements toward suppliers in construction and maintenance contracts. These requirements first targeted heavy trucks over seven tonnes and since 2006 it included all trucks over 3.5 tonnes that were used for at least 100 hours per year. Also, by the end of 2004 the SRA together with seven other public authorities started to use interlocks with their own trucks and since 2005 in all vehicles. In the spring of 2008, the SRA evaluated interlock use in municipalities and county councils across Sweden and it was found that 36% of municipalities and 45% of county councils use interlocks. Also, 23% of municipalities and 18% of county councils require interlocks be installed when purchasing new vehicles.

The Perspective of the Swedish Transport Workers Union

By: Markus Pettersson, Research Official/Political Advisor, Transport Workers Union, Sweden

The Swedish Transport Workers Union has about 68,000 members and represents the transport sector, truck drivers, airport handlers and port workers in Sweden. The Union has traditionally been safety-minded and demands for safe driving practices have come both from customers and union members in the last decade or so. In 1994 the Union conducted a survey and concluded

that no legal framework existed to regulate the use of interlocks. The Union did not oppose the use of interlocks given its vested interest in the safety of its members and the public, but started to look into ways to regulate this with employers through an agreement. An action plan was developed as part of the agreement to regulate issues such as education about the interlock, blood alcohol concentration threshold levels, what to do in case of positive breath test and so on. In case of a positive breath test, the driver participates in a rehabilitation program. Most of these drivers do return to the work force. However, there are other examples of companies that do not have proper procedures and that are not satisfactorily resolved. Overall, the Union's experience has been positive and it seems that drivers who are educated about interlocks are also more willing to accept the use of this device. Furthermore, customers believe it is important that companies take this issue seriously. In conclusion, the Union believes that everybody benefits, from employers to employees, to customers to the public, if alcohol interlocks are regulated and used.

Experiences with Interlocks in Skellefteå Municipality

By: Ola Burström, Skellefteå Municipality, Sweden

Skellefteå is a city situated on the coast of Norrland, which is approximately one hour by plane away from Stockholm. The city is surrounded by a vast countryside with some larger communities and several small villages. The population in the municipality is around 72,000 with half of it living in the city. The total area is 7,217 square kilometres.

The first interlocks in Skellefteå were installed in 2002 after a series of discussions about costs and functionalities of the devices. The cost was considered high and there were some doubts about the functioning of the equipment. Despite these doubts, there was a consensus that too many drivers on the road were under the influence of alcohol and that it was necessary that the municipality take the first step to solve the problem and expedite the use of interlocks as a prevention method.

In 2002 a pilot project started, in cooperation with the Swedish Road Administration (SRA) and the municipality. Seven vehicles were equipped with interlocks. The SRA covered half of the costs of the interlocks and the municipality absorbed the other half as well as the costs for the installation, service and calibration.

Overall the interlocks worked well. However, there were some problems. For example, some people found it difficult to breath with the right pressure and for the correct duration. Some technical problems arose too, such as a drained battery if the device not was disconnected, and longer warm up times in cold weather.

During the study period of two years, two attempts to start with a high breath alcohol concentration were registered. After these discoveries, steps were taken according to the municipality's alcohol- and drug-policy.

Following the pilot project, the municipality decided that all new vehicles have to be equipped with interlocks as a result of the positive results. The municipality also decided to require transport companies that deliver services to the municipality to use vehicles with interlocks.

In conclusion the municipality is very pleased with the use of interlocks. The equipment has evolved and has become better and cheaper. There is a wide acceptance and understanding among staff about interlocks. There is also a political consensus that interlocks are needed and the public strongly supports the use of this technology.

Investing in Safety: A Part of Building Sustainability

By: Henrik Åkerström, Green Cargo Company, Sweden

Green Cargo is a transport company whose core value is sustainable development centered around people. The company believes it is essential to take responsibility for its employees, the public at large, and the planet. One of its goals is to contribute to the opportunities of future generations. And, Green Cargo also desires to be a competitive player on the market.

Given Green Cargo's philosophy and business model, safety is its first priority. As such, it was decided in 2004 to spend approximately €400,000 on alcohol interlocks for Green Cargo's vehicle fleet and staff training. The main reasons and motivation for this decision include:

> The willingness to invest in saving lives;
> The willingness to invest in better management of staff;
> The willingness to provide better services to customers.

Ultimately, improved management and better services will enhance the company's reputation and increase its opportunities for growth.

Green Cargo's initiative received a lot of attention from the media. It was reported on the radio, TV and in newspapers and led to other companies asking Green Cargo for advice about using alcohol interlocks. Customers were also engaged and provided positive feedback. New contracts were signed as a result of all this, for example for the transportation of dangerous goods. Finally, employees were supportive of the initiative because they were involved early on and because Green Cargo's goal is to provide a safe and healthy environment to its staff and because it is committed to help solving its staff's problems.

Green Cargo is further expanding this initiative. In 2008 interlocks were installed on all forklifts and plans are underway to use this technology with all electric train locomotives.

Commercial Program — Volvo Cars Alcolock Strategy

By: John-Fredrik Grönvall, Manager, Traffic Accident Research, Volvo Cars Safety Centre

Since 2002 Volvo Cars has conducted field tests with alcohol ignition interlocks as part of its strategy for a commercial program. The first generation of alcolocks that was used in these tests were manufactured by a third party. As such, Volvo Cars primarily focused on quality control to ensure seamless installation of these devices in their vehicles.

The second generation — the Volvo Alcoguard — was the world's first vehicle integrated alcolock. The Alcoguard was fully integrated in the vehicle's electronics and has become available on the market at car dealerships since 2008. A field test was co-funded by the Swedish Road Administration.

Volvo Cars is currently working on a third generation of alcolocks that will be based on passive measurement of alcohol through ambient air. The driver will no longer be required to deliver a breath sample. This research and development of this generation of alcolocks is part of the KAIA project (see also the paper on infrared technology for alcolocks by Hök and Pettersson).

Finally, Volvo is also working toward its Vision 2020. One of Volvo's goals is to develop a car that will prevent all fatalities and injuries; a system that will support all drivers in all situations in all new Volvo Cars by 2020. The fourth generation of the Alcoguard will be a crucial part of this system.

Volvo Trucks: Driving Progress

By: Stig Boman, Traffic Safety Accident Research Team, Volvo Trucks

One of Volvo's basic design principles is safety. Given that the majority of crashes happen due to human behaviour, whereas fewer crashes can be attributed to technical failures of the vehicle or the environment, Volvo has accepted the challenge to design safe trucks that minimize the risk of human behaviour-related crashes. In 2002 the alcohol interlock became available as an accessory to Volvo trucks. In 2005 installation of interlocks in Volvo trucks was integrated in the production process. In 2006 breathalysers became available on ferries to ensure truck drivers are sober. Currently Volvo trucks is involved in the KAIA project (see also the paper on infrared technology for alcolocks by Hök and Pettersson) to develop a new technology, commensurate with Volvo Trucks' principles and vision.

Unique Applications

By: Tomas Jonsson, Swedish Abstaining Motorists Association (MHF), Sweden

The Swedish Abstaining Motorists' Association (MHF) provides timely information about alcolocks to consumers. MHF also cooperates closely with the car industry on the implementation of alcolocks in cars. One of MHF's activities as part of its gateway function is to organize an exhibition on interlocks. Two such exhibitions tour around Sweden and inform people about alcolocks, how they function, what they do and do not do, and why they are useful. As part of this exhibition, MHF demonstrates unique applications of alcolocks including the use of alcolocks in nuclear plants to ensure only sober people enter the plant's premises, alcolocks on trains, ships and heavy construction equipment.

Swedish Alcolock Strategy

By: Lars Darin, Ministry of Communications, Sweden

Sweden's strategy toward alcolocks in all cars is based on a series of steps that allow for the gradual introduction of such devices and to increase their market penetration. First, alcolocks were only used as a condition to reinstate the driver licence after having been convicted for drinking and driving. Such programs have been used for several years. Starting in 2010, all new buses will be installed in alcolocks and as soon as possible in all professional transport trucks. There will also be a gradual introduction of alcolocks in all public transport vehicles and a continued encouragement of companies to further use alcolocks to enhance the quality of their services. Finally, when a seamless and user-friendly technology will become available, all new cars will be fitted with alcolocks.

PROGRESS IN EUROPE

More interlock programs are underway in Europe and further progress has been made in several jurisdictions. A special session was dedicated to progress in Europe with alcohol interlocks, with presentations from France, Finland, Norway and Slovenia. A presentation from Finland was not available at the time this report was produced.

Interlock Programs for Offenders in France

By: Dr. Charles Mercier-Guyon, Secretary, Medical Council of Prevention Routiere, France.

France has a population of about 60 million people and has approximately 6,000 road fatalities per year. It is estimated that 30% to 35% of these fatalities are related to alcohol. Of approximately seven to eight million alcohol tests that are conducted annually, in 2004, 181,000 were in excess of the legal limit of 0.05%.

Drink driving constitutes an alcohol-related offence in France and is defined as part of a tiered system consisting of two separate levels. Drink driving with an alcohol concentration of at least 0.05%, but less than 0.08% can be punished with a fine and/or a penalty equal to six driver licence points. An alcohol concentration of at least 0.08% is punishable with a fine up to €4,500, a maximum of two years incarceration, a maximum three year suspension of the driver's licence, and the possible cancellation of the licence for offences involving injuries or fatalities or other designated offences. Penalties may also include a penalty equal to six driver licence points. There is also a range of additional sanctions including suspensions up to three years, community service, an educational training course and an interlock sanction up to five years. The following table shows what sanctions are applied and how frequently.

	First Offender, Simple DWI	Recidivism DWI	injuries	Fatalities
All sanctions	99,636	14,968	2,846	317
Jail	49.9%	83.6%	86.8%	99.1%
Real emprisonnent	3.5%	18.3%	6.4%	12.9%
Partial reprieve	1.1%	12.0%	7.5%	63.7%
Total reprieve	45.3%	53.3%	72.9%	22.4%
Fine	36.1%	5.8%	6.6%	0.0%
Other	13.7%	10.6%	6.6%	0.9%
Including suspension or cancellation of licence	10.8%	3.8%	4.9%	0.9%
Educational program	0.1%	0.0%	0.0%	0.0%
Sanction not applied	0.2%	0.0%	0.0%	0.0%

The current interlock program in France offers offenders the opportunity to drive with an alcohol interlock as an alternative to penal sanctioning. The public prosecutor assumes authority over alternative sanctions and thus decides whether driving with an interlock is an appropriate sanction or not. The project is led by the Road Safety Association of Haute-Savoie. The program is voluntary and offenders must agree to pay €1,260 for their participation. Following two days of training about the prevalence of alcohol in accidents, the effects of alcohol on the body, and traffic safety, the offender enters the six-month program. The two service providers involved in this project are Alcohol Countermeasure Systems and Dräger.

The inclusion criteria for the program include: being a first offender with a breath alcohol concentration of at least 0.08% but less than 0.18%; being able to demonstrate the need to use a vehicle for professional or other reasons; and, having a driver's licence for at least three years. A medical examination prior to entry into the program is also required.

Since the beginning of the program in August 2008 more than 200 drivers have entered the program. No major violations have occurred and nobody has been excluded from the program. One case of recidivism took place (whereas eight happened in a control group of 200 similar cases) and 80% of the failed breath tests happened during the first two months of participation. This program will be extended.

Also, in 2009 interlocks will become mandatory in school buses. Some outstanding issues will have to be discussed such as the management of these programs; length of the offender program; how the interlock will be used, i.e., as a tool to protect society, to punish the offender, or to make offenders abstain from drinking alcohol.

Alcolock Progress in Norway

By: Terje Assum, Institute of Transport Economics, Norway

Since May 2007 there has been a positive attitude toward the use of alcolocks among Norwegian politicians. For example, the Minister of Transport announced that alcolocks should be introduced and encouraged through voluntary participation in a first stage. In a second stage, alcolocks should then become mandatory for professional drivers of buses and taxis. It is believed that the available technology today is not evolved enough for mandatory installation in certain vehicles. Concerning alcolocks as an alternative to licence suspension for drink drivers, a committee should be appointed to study and evaluate the usefulness of alcolocks as part of a rehabilitation program.

Before these developments unfolded, a variety of specific activities took place in Norway. Alcolocks were installed in city buses in Lillehammer in 2004-2005. The devices worked well after some minor technical problems. Another bus company finished an alcolock trial and drivers were found to be positive about the use of alcolocks — they wanted alcolocks in all company buses. The cost, however, was perceived as a problem by the bus company. A transport company voluntarily installed alcolocks in 20 of their vehicles.

In conclusion, progress in Norway is underway. Alcolock programs for offenders are being considered, as well as alcolocks in buses and taxis, but it is felt more knowledge is needed.

Alcolock Progress in Slovenia

By: Majda Zorec Karlovsek, Institute of Forensic Medicine, Faculty of Medicine, University of Ljubljana, Slovenia

Slovenia became an independent republic on June 25th, 1991. In December of the same year the country adopted its constitution. Slovenia has a land mass of about 20,000 square kilometres with a population of approximately two million people as per December 31st, 2006 (population density of 100 inhabitants per square kilometre). On the first of May 2004, Slovenia joined the EU, followed in 2007 by the introduction of the Euro.

According to the Road Traffic Safety Act from 1998, the legal blood alcohol concentration (BAC) limit in Slovenia is 0.05%. Also, according to this act, there is a zero-tolerance toward young drivers and professional drivers with a legal limit for those two categories of drivers of 0.00%.

Slovenia can be considered a "wet culture country" with alcohol consumption ranging from 11.5 litres to 17.7 litres (depending on the statistics) and an estimated 173,000 adult alcohol addicts. More than 10% of drivers are believed to have some alcohol related problem. Each year, about 4,000 to 7,000 driver licenses are suspended because of driving under the influence and 38.4% of all fatalities (135 fatalities per million population) can be attributed to driving under the influence of alcohol. Two groups of drivers are especially at risk, namely young drivers (18-20 year old drivers are involved in over 23% of alcohol related crashes) on the one hand and repeat offenders and alcohol dependent persons on the other.

The use of alcohol ignition interlock devices is part of the strategy laid out in the National Program for Traffic Safety. As such, preparatory activities to support the implementation of an interlock program have been underway since 2007. Such activities include reviewing the literature and reviewing available technical standards. Also, two projects are being conducted, one based on the voluntary installation of interlock devices in private cars and one with interlocks used in

public transport. The main goals of these small scale projects are to emphasize to the public the importance of separating drinking from driving and to provoke a general discussion on the legal implementation of interlock devices in vehicles.

In the second project, the level of acceptance among bus drivers and passengers towards the use of interlocks in public transport were studied using a questionnaire. A small sample of 67 responses was obtained. About 43% of bus drivers thought using the alcolock hindered them when doing their job. As a comparison, fewer commercial drivers thought this to be the case in Germany, Norway and Spain (14%, 8% and 3% respectively). Reasons why bus drivers in Slovenia perceived using interlocks as inconvenient included technical issues such as a long warm up time, having to perform re-tests, low visibility of the display, trouble finding a mouthpiece and social issues such as feeling inspected. With respect to passengers' opinions, 10.5% had a positive attitude, 38.8% had a negative attitude and 30.7% did not comment. About 21% believed using interlocks adds positively to the company's reputation, 55.2% did not believe this to be true and 23.9% had no opinion about this.

Future challenges for the implementation of non-offender interlock programs in Slovenia include creating public awareness about alcohol impairment, creating public acceptance of alcolocks, and creating public support for special target groups such as school bus drivers and commercial transport truck drivers. With respect to offender based programs, there is a need for evidence-based program standards and amending the Road Traffic Safety Act.

CONCLUSIONS

It is evident from these proceedings that there are major, significant differences among jurisdictions (countries, states, regions) that make the challenges and promises of interlocks both diverse and unique. As such, it is not surprising the alcohol interlock programs have developed with distinct approaches and features, and in different ways. The availability and method of impaired driving enforcement strategies can greatly influence the number of offenders who are detected for alcohol-impaired driving and those who eventually become eligible for participation in an alcohol interlock program. The use of administrative systems impacts the level of resources necessary to implement a program, the types of implementation issues that may arise, and the availability and accessibility of companion programs that can support and enhance the effectiveness of these devices.

The legal system may impact the ease or the challenge with which alcohol interlocks are implemented in a jurisdiction. These systems are fraught with competing priorities, complexities and different perspectives among practitioners. At the same time, the legal system is a powerful instrument with the authority, structure and position to manage these initiatives. The political system similarly determines the ease with which such programs are developed and implemented, and also the level of support that is achieved. Political systems can be an important influencer of public opinion, and vice versa.

The economic system applied to support the use of alcohol interlocks varies widely, as does the perspective of individual jurisdictions on this issue. The feasibility of offender-pay systems, the need for indigent funding, the availability of health insurance for citizens as well as the accessibility of various treatment strategies are important issues to consider. At the same time, the overall economic structure will also determine the amount of resources and available infrastructure to support program delivery.

Finally, the culture of the jurisdiction can exert powerful pressure to either support or discourage the use of these safety devices. A society's willingness to accept restrictions on behaviour and government intrusion into certain private life will dictate the acceptability of alcohol interlocks. When moved in the right direction, a culture that values safety can be effective in driving implementation at all levels.

In conclusion, the current diversity of alcohol interlock programs has created a wealth of opportunities for researchers to fully explore the variety of ways that alcohol interlocks are applied and under which conditions they are most effective. At the same time, it provides jurisdictions with insight into the range of challenges that may arise during the course of implementation. But most importantly, this situation has created a broad range of innovative and imaginative alternatives into ways these issues may be addressed.

NOTES

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