



ALCOHOL INTERLOCKS: MANAGING RISK AND BEHAVIOUR CHANGE

PROCEEDINGS OF THE 14TH
INTERNATIONAL ALCOHOL INTERLOCK SYMPOSIUM



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 research 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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Traffic Injury Research Foundation

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- > Alcohol Countermeasure Systems Corp;
- > Dräger Safety Diagnostics;
- > Smart Start, Inc.;
- > Lifesafer Interlock; and,
- > Coalition of Ignition Interlock Manufacturers (CIIM).



The continued commitment of these sponsors and the many exhibitors encourages the pursuit of innovative ideas, the sharing of perspectives and the strengthening of initiatives to advance interlock programs.

TIRF also acknowledges the participation of the many presenters and moderators for their cooperation and support in this year's event. Their contributions made it possible to exchange ideas and practices, and create new opportunities to advance the field of alcohol interlocks. Lastly, TIRF extends its appreciation to all of the attendees who offered their insights and engaged in discussion throughout the event.

The content of this report is based on the summary of the ideas and perspectives emerging from the symposium and does not necessarily reflect the views of individual presenters, participants, or sponsors.

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INTRODUCTION

The 14th International Alcohol Interlock Symposium held in Washington, D.C. attracted more than 150 attendees representing 13 countries¹ from six different continents. The North American presence was strong with more than 15 jurisdictions having representation at this event in the US capital, and approximately 25 participants in the Introductory Session for Newcomers. This participation is illustrative of the continued interest in the Symposium and growth in the field.

In the two years since the 2012 [Symposium in Helsinki](http://www.tirf.ca/publications/PDF_publications/13th_Annual_Interlock_Symposium_Proceedings_4.pdf) http://www.tirf.ca/publications/PDF_publications/13th_Annual_Interlock_Symposium_Proceedings_4.pdf the interlock field has grown and much progress has been achieved. Most notably, technological features of interlock devices have continued to advance, and the demand for these features is rapidly growing in the marketplace. More jurisdictions are moving to require cameras including European Union (EU) countries and several jurisdictions in North America, including New York, Minnesota, Washington, Hawaii, West Virginia, and Tennessee. In Australia, the state of Victoria will make cameras a mandatory component of its program which has expanded to include repeat, high-BAC, and also first offenders. There is also increasing interest in the use of facial recognition to streamline the process of sorting through photos to identify violators. Real-time monitoring and GPS tracking are other features that are generating interest.

Recently, a number of tools have been released in the US to help guide and strengthen the implementation of interlock programs. Most notably, the National Highway Traffic Safety Administration (NHTSA) released the new Model Specifications in May 2013 in conjunction with a set of program guidelines. As a consequence, there has been a strong emphasis in many jurisdictions in North America and in other countries to strengthen quality assurance processes.

In EU countries, where interlocks are more frequently used in commercial programs, we are beginning to see increased vehicle connectivity of alcohol interlocks where they are being integrated in fleet telematics systems to facilitate alerts of failed tests with an SMS notification, and to provide GPS location information as well. In addition, complete data logs are submitted using Wi-Fi when the vehicle returns to the service centre.

There is also increasing interest in Latin American countries with a focus on using alcohol interlocks as an effective tool to catch drinking drivers as opposed to using it as a proactive safety measure as is the case in the EU. This difference has important implications for the development of a technology that is more oriented towards effectiveness than user-convenience, and that also includes demand for real-time notification in the event of failed tests.

¹ These countries included: Australia, Canada, Chile, Germany, Japan, Norway, Philippines, Russia, South Africa, Sweden, Wales, United Kingdom, and the US.

The focus on implementation and operational practices has become a top priority in many jurisdictions around the world. In the US, TIRF has supplied training and technical assistance to more than 25 jurisdictions in the past few years and reviews of administrative rules to adopt stronger practices are increasing. The Association of Ignition Interlock Program Administrators (AIIPA) has played a leading role in developing usable tools and best practices documents to help support program staff. The application of alcohol interlocks in DWI Courts has been an important strategy to strengthen interlock delivery which has been supported by the National Center for DWI Courts (NCDC). We have witnessed US jurisdictions such as Missouri and Michigan expand the use of interlocks and camera features with the support of the NCDC while such cameras are being used on a discretionary basis in 21 DWI courts in Texas.

The American Association of Motor Vehicle Administrators (AAMVA) has an initiative underway to encourage stronger program implementation with a focus on administrative programs, and a new NHTSA report highlights common challenges associated with interlock programs, the consequences associated with them, and a variety of solutions.

It is well-recognized that the continued pursuit of research is critical to advance the field. To this end, work is being done in the areas of risk assessment of impaired drivers, tailoring interlocks to manage offender risk, and identifying effective program features and optimal strategies to increase program participation. Important interlock program evaluations are underway in jurisdictions such as Nova Scotia, Minnesota, and Colorado. Some of these studies not only examine the effectiveness of the interlock program but also how interlocks can be combined with DWI courts to reduce recidivism. In addition to the results of a Finnish study released last year that reported significant reductions in recidivism, an evaluation of Michigan DWI Courts was recently released. Lastly, research about the behavioural patterns of interlocked offenders has further informed program administrators by identifying important implications for program management.

Perhaps most importantly, there have been increased calls for legislation and action to expand interlock programs and better manage the heterogeneous impaired driving offender population. Earlier this year the US Government Accountability Office (GAO) released a report on alcohol interlocks that discusses what is known about the effectiveness of interlocks, and ways that NHTSA has assisted states with program implementation in an effort to further encourage increased usage of these devices.

In British Columbia, ignition interlocks have been applied to low-BAC offenders, and similar legislation has been proposed in Victoria, Australia. Under the pending Victorian legislation, low-BAC offenders between .05 and .07 would be required to install an interlock for a minimum of six months beginning in 2015 or 2016. It is estimated that another 3,000-4,000 offenders would be included in the interlock program as a result. This legislation further includes recommendations for immediate impoundment of vehicles driven by offenders with a BAC in excess of .10, and expanded minimum licence cancellation periods.

Finally, in the EU, two important research studies were released. The first study was carried out by a Dutch Consortium for the European Commission (EC) and the second study was undertaken by an Italian Consulting firm (TRT) for the European Parliament. The issue of cost is a major theme of both reports, although the EC report notes that innovation could be the key to mass adoption of the technology. In particular, if future devices were less intrusive and costs were reduced through economies of scale, or if it

was possible to install interlocks on all new vehicles, the benefits for society would be substantial. The latter report goes further in recommending legislation to ensure the statutory use of interlocks with convicted drunk drivers in the next five years and this could be an important step to substantially reduce road deaths in the EU, in line with the 2020 target to reduce road deaths by half.

In the US, new legislation is being pursued in Michigan, New Jersey, Ohio, Pennsylvania, South Carolina, and Mississippi. Mothers Against Drunk Driving (MADD) and the Coalition of Ignition Interlock Manufacturers (CIIM) have continued their efforts in working with traffic safety partners and stakeholders to support the passage of first offender laws, and close loopholes that enable offenders to avoid program participation. At the same time, key stakeholders have worked cooperatively to encourage the use of incentive funding to support the passage of first offender laws and sensible strategies for repeat offenders.

The culmination of these efforts has resulted in increases in program participation in countries around the world including more than 300,000 interlocks in the US, 30,000 in Canada, 100,000 in Europe, and 15,000 in Australia.

In recognition of this progress and the growing interest in using interlocks within court and treatment contexts, the theme of this year's Symposium was "Alcohol Interlocks: Managing Risk and Behaviour Change." The focus of the event was on the use of interlocks to respond to varying levels of offender risk in a tailored fashion with the long-term goal of changing drinking and driving behaviour. The objective of the agenda was to broaden perceptions related to the purpose of interlock use through the identification of benefits associated with the integration of monitoring, assessment, and treatment components within interlock program frameworks.

The agenda featured a broad range of speakers who shared their perspectives, experience, and expertise on a variety of topics. In the opening plenary session, NHTSA Deputy Administrator David Friedman emphasized the agency's commitment to further reducing impaired driving fatalities and highlighted the initiatives and countermeasures that have proven effective over the years. Dr. Doug Marlowe from the National Association of Drug Court Professionals (NADCP) stressed the need for quality risk assessment to target offender risks and needs in an effort to produce long-term behaviour change.

Other panel sessions discussed the latest research and practice to inform strategies to manage interlock offenders as well as how to effectively use these devices within a court, supervision, and treatment context. Additional information about the potential for combining various alcohol monitoring technologies for offenders of different risk levels was provided. Plenary speaker Robert Maccarone from the New York State Division of Criminal Justice Services summarized the lessons learned from the offender monitoring market and provided insight into how these lessons can be applied to strengthen the delivery of interlocks. In addition, the development of connected and automated vehicles and the potential associated implications for impaired driving interventions in the future was a focus of discussion.

Also of interest on this year's agenda was the theme of future directions and how we can learn to strengthen interlock programs through the enhancement of laws, the development of partnerships, the implementation of technical standards, and program evaluation. MADD CEO Debbie Weir provided an

overview of the organization's past and present initiatives with respect to interlocks as well as future goals for the reduction of impaired driving in the US. She emphasized the importance of developing and maintaining partnerships among various stakeholder entities to improve collaboration and to pass strong DWI laws. A panel of technical experts spoke to several different aspects of the new NHTSA Model Specifications and shared their insights into testing and implementation issues to help inform state practice. Of particular interest was a discussion of data elements and data management considerations as they relate to privacy and security concerns. Lastly, the importance of program evaluation was shared as panelists provided examples of current interlock program evaluation initiatives, identified challenges they encountered, and discussed important components to include in any evaluation effort.

Updates on progress at both the Federal level and internationally were included as a component of this year's agenda. Representatives from NHTSA and the Centers for Disease Control and Prevention (CDC) discussed ongoing impaired driving research and initiatives, and provided thoughts on why interlock technology is an effective intervention at the Federal level. Speakers from the International Center for Alcohol Policies (ICAP) and MADD Canada identified opportunities for expanding the use of interlocks abroad in both developed nations and low and middle income countries (LMICs). Similarly, our closing plenary speaker, Jonathon Passmore from the World Health Organization (WHO) discussed the magnitude of road safety problems, particularly alcohol-impaired driving, in LMICs. He identified current practices in these nations and opportunities for prevention, notably in relation to the use of interlocks. His session established a call to action and the start of dialogue about how best to address impaired driving internationally as this truly is a global problem.

Overall, the event produced insight into opportunities to learn from the past and look forward to the next decade in road safety. It will now be important to build upon existing program structures, to evaluate programs for effectiveness, and to tailor programs and technology to different offender profiles in order to achieve long-term behaviour change and reduce recidivism. There are also opportunities to reduce the occurrence of impaired driving in LMICs and stakeholders are encouraged to work collaboratively to develop solutions to reduce impaired driving fatalities in these nations.

The symposium and these proceedings demonstrate the importance of building upon existing programs to improve interlock delivery and increase participation rates, tailoring programs and technology to different offender profiles, and evaluating strategies for effectiveness.

Sincerely,
Robyn D. Robertson
President & CEO
Traffic Injury REsearch Foundation

NEW RESEARCH: PROGRAM IMPLICATIONS

Introduction

Alcohol ignition interlocks have been used as a road safety measure to reduce instances of impaired driving for almost four decades. During this time, evaluation research has been produced culminating in a large body of literature that demonstrates interlocks can reduce recidivism by approximately 60 to 90 percent (see Willis et al. 2005 & Elder et al. 2011 for two systematic reviews of the literature). It is no surprise then, that there is an increasing demand for the use of alcohol ignition interlocks to reduce impaired driving in jurisdictions around the world. In light of this increasing demand, it is important that program administrators and practitioners have access to evidence-based knowledge to inform decision-making regarding the use of this device. Such insight can guide administrators with regard to program development, implementation, and the use of program features. So while it can be argued that it has been clearly established that interlocks work well in terms of reducing drink driving recidivism, more research is needed to better understand how interlock programs work best, especially considering that the implementation of programs is diverse across jurisdictions and around the world. In light of this need, the first session of the symposium was devoted to research that can help guide the application of program features.

Risks and needs of DWI offenders

Based on a presentation by Dr. Douglas B. Marlowe

Research shows that it is possible to differentiate between drunk drivers according to their respective risks and treatment needs. In this regard, it is known that substance abuse treatment for offenders can work, but only if the offender needs treatment and if treatment sessions are regularly attended. Similarly, surveillance (or monitoring) works, but only if the surveillance is commensurate with the level of risk posed by the offender and the offender complies with it. Furthermore, research also suggests that the more offenders need treatment or surveillance, the less likely they are to comply with sentencing conditions or sanctions. It follows that higher risk levels require more intensive supervision and accountability and vice versa. It also follows that higher need levels require more intensive treatment or rehabilitation services and vice versa. In other words, this means it is counterproductive to mix offenders of different risk levels or different need levels and provide the same services to them with the same level of intensity. Keeping this principle in mind, both dimensions of risk and need can be used to inform the delivery of interlock programs and to tailor delivery of such services to best address individual offenders' level of risk and need. For example, it goes without saying that high-risk offenders would benefit most from the use of interlocks with strict monitoring (e.g., visiting service centre once every month rather than once every two months). On the other hand, low-risk offenders may be sufficiently deterred simply by being in the interlock program

and may therefore be better served with a less intensive monitoring scheme (e.g., visiting a service centre only once every two months). High-need offenders will benefit from some form of treatment or rehabilitation, perhaps in combination with interlocks, especially when they are also high-risk, whereas for low-need offenders it may suffice to be in the interlock program without necessarily having to combine it with treatment or rehabilitation. Essentially, using level of risk and need posed by offenders can provide guidance in terms of how to use interlocks with drunk drivers. The matrix below summarizes this.

| | High risk offender | Low risk offender |
|----------------------------|---|--|
| High needs offender | Interlock with intensive monitoring and with treatment/rehabilitation | Interlock with less intensive monitoring with treatment/rehabilitation |
| Low needs offender | Interlock with intensive monitoring | Interlock with less intensive monitoring |

Behavioural patterns of interlocked offenders

Based on a presentation by Dr. Ward G.M. Vanlaar, Traffic Injury Research Foundation

Research has shown that offenders tend to blow fails or violate the conditions of the interlock program at a relatively high rate at the beginning of their participation and this behaviour quickly diminishes after offenders have been on the device for some time. The purpose of this presentation was to discuss such behavioural patterns of offenders using data collected from three states, Florida, Texas and California. The results from this current study corroborate the findings from previous research, i.e., many offenders on an interlock are not compliant at the beginning of their program participation, but the majority of them soon become more compliant. It was found that these behavioural patterns were most pronounced in two States with stronger and more consistent monitoring practices (Texas and Florida) whereas these patterns were less pronounced in the State with less consistent monitoring practices (California). In terms of gender, no substantial differences between males and females were found. With respect to length of participation, it became clear that participants who are only in the program for a maximum of one year become compliant much faster than participants who are in the program for at least one year. These findings speak to the need for consistent monitoring practices for offenders. The findings further suggest that using not only negative reinforcements for bad behaviour but also using positive reinforcements for good behaviour may be beneficial.

Impaired driving assessment among DWI probationers

Based on a presentation by Dr. Nathan Lowe, American Probation and Parole Association

This presentation focused on the development of the Impaired Driving Assessment tool developed by the American Probation and Parole Association (APPA) to screen for risks and needs among DWI probationers. Ultimately, the goals of this project were to provide guidelines for identifying effective interventions and supervision approaches that reduce the risk of negative outcomes in community supervision and treatment;

to provide preliminary guidelines for service needs for DWI clients; to estimate the level of responsivity of offenders to supervision and to DWI education as well as education about alcohol and other drugs and treatment services; and, to identify the degree to which an offender's DWI has jeopardized traffic safety and to address this in the supervision plan. A computerized version of this tool will be developed and further research will be conducted to better assess its predictive value, for example over the long-term as well as with respect to specific demographic populations.

Increased use of interlocks

Based on a presentation by Ms. Casanova-Powell, Preusser Research Group

This presentation used results from an evaluation of interlock programs in 28 US States to better understand how interlock usage can be increased, currently one of the most important research questions to answer. Given that interlocks are a proven countermeasure to reduce impaired driving, it was argued that increasing the number of DWI offenders who install interlocks is an effective and straightforward strategy to further reduce impaired driving. As such, the objectives of the evaluation project were to answer the following questions:

- > How can states increase interlock use among DWI offenders who are required or eligible to install one?
- > What changes to interlock programs have led to increases in ignition interlock use?
- > What are key program features of ignition interlock programs?
- > What key program features are related to higher ignition interlock use rates?

The results from this project suggested there are two program features in particular which may be related to increased interlock use. The first one is high interlock use-requirements (e.g., interlocks mandatory for all offenders) or incentives (e.g., permit offenders to relicense early), especially for first offenders. The second one is strong monitoring. However, neither of these program features necessarily guarantees high interlock use rates, especially since a lack of good performance in any one aspect of a program can affect performance in other areas.

Association of Ignition Interlock Program Administrators

Based on a presentation by Mr. Tom Liberatore, Association of Ignition Interlock Program Administrators

This presentation elaborated on the Association of Interlock Program Administrators (AIIPA), who they are and what they do. This non-profit organization, founded in 2011 is composed primarily of state/ jurisdictional interlock program managers and represents approximately 21 member jurisdictions in the US and Canada. Its purpose is:

- > to develop and improve interlock program administration;
- > to identify and research issues associated with interlock programs;
- > to develop and promote training programs;

- > to assist persons/organizations addressing interlock program issues; and,
- > to organize conferences, reports and other projects.

Ultimately, AIIPA is playing a leading role in developing tools for program administrators to strengthen interlock program delivery and increase uniformity across jurisdictions.

Conclusion

There is a consensus in the field among researchers that interlock programs work. However, no consensus has been reached yet regarding how interlock programs work best. It is clear that more progress can be made, notably in terms of increasing participation rates among eligible offenders as well as in terms of increasing compliance with program rules among participating offenders. The research presented during this session provides insights that can provide guidance regarding both of these issues, in an effort to improve how interlock programs are implemented and delivered. First, better matching offenders to appropriate sanctions and rehabilitation programs can help improve outcomes in terms of lower recidivism rates. This can be achieved by taking into account an individual offender's level of risk and treatment need, as was discussed in the first presentation. Another presentation focused on the importance of using proper tools to assess such levels, and elaborated on APPA's Impaired Driving Assessment tool. Two presentations focused on features of programs that are key to success and concluded that good monitoring is crucial. One of these presentations came to that conclusion by studying behavioural patterns of offenders on the interlock to inform program administrators while the other presentation focused more directly on trying to find ways to increase participation rates. Finally, an overview of AIIPA was provided, an organization whose main focus is on improving the delivery of interlock programs and resources available from AIIPA were shared.

INTEGRATION OF SUPERVISION AND TREATMENT

Introduction

The previous section underscored that there is no consensus as of yet in terms of how best to deliver interlock programs and focused on research that can help establish evidence-based practices in this regard. This is especially pertinent in light of the fact that no two interlock programs in the world are alike. Acknowledging this diversity and that different offenders may need different solutions to best reduce recidivism, this section looks at ways that can help tailor solutions by integrating supervision with possible treatment options.

Integrating interlocks with other technologies

Based on a presentation by Honorable Mark D. Atkinson, Texas Center for the Judiciary

This presentation focused on solutions used in a criminal court in Harris County, Texas, where every year anywhere between two and four thousand DWI second-offender cases go to court. Courts in Harris County have high volumes of cases and dispose of them at rather fast pace. To illustrate, 50% of cases are disposed of in 30 days from arrest and 80% of cases in 90 days from arrest. There are at least four circumstances where alcohol interlock devices can be ordered judicially in Harris County:

- > as a condition of bail;
- > as a condition of community supervision;
- > as a condition of an occupational driver's license; and,
- > following conviction of a second or subsequent DWI within five years, even if the defendant is no longer on community supervision.

This legislative framework enables the use of interlocks, either alone or in combination with other measures. The integration of interlocks with other measures is facilitated by S.O.B.E.R. courts in this county, which stands for "Saving Ourselves by Education and Recovery". In these courts, the following technologies can be used in an escalated fashion:

- > continuous alcohol monitoring for one month;
- > portable in-house monitoring (4-5 times/day);
- > detected violations confirmed by ethyl glucuronide (ETG) testing (48-72 hours);
- > interlock;

- > offenders may be returned to continuous alcohol monitoring for a specified time following an interlock violation.

Alcohol ignition interlocks in DWI courts

Based on a presentation by Honorable J. Michael Kavanaugh, National Center for DWI Courts

DWI Courts are specialized, comprehensive court programs, modeled after drug courts, which provide a structure of appropriate treatment, supervision, and accountability, targeting high-risk/ high-need, repeat offenders, designed to change behaviour, and reduce recidivism, with long-lasting results, thus saving lives in the process. The Campbell Collaboration conducted a meta-analysis of 28 evaluations of DWI Courts and concluded that DWI Courts reduced both DWI recidivism and general criminal recidivism by an average of more than 12 percent. Furthermore, it was found that the best DWI Courts reduced recidivism by as much as 50-60 percent.

The key to success of DWI courts is the structured approach adopted by these courts with a high level of accountability, ensuring that proven measures such as treatment where appropriate are actually delivered to, and received by, offenders in need. This is very different from the traditional court processing of DWI offenders where there are fewer guarantees that offenders will be held accountable, for example when treatment is ordered but not attended.

There are ten guiding principles for DWI courts (available at www.dwicourts.org).

Research has shown that DWI courts are very conducive to the delivery of interlocks. To illustrate, state agency administered and judicially administered interlock programs as well as hybrid forms can suffer from a variety of challenges such as unfunded mandates, lack of timely reporting and lack of accountability. Often, once the interlock is removed, re-arrest rates return. On the other hand, DWI Courts can dramatically improve installation rates up to near 100% and the DWI Court recidivism rates show continued effectiveness once device is removed.

Michigan DWI Court ignition interlock research project

Based on a presentation by Honorable Harvey J. Hoffman, Eaton County, Michigan

This presentation focused on a research project that looked at the potential benefits of delivering interlocks in a DWI court setting in Michigan. Three different study groups were included:

- > five DWI courts with ignition interlocks,
- > the same 5 DWI courts without ignition interlocks (prior to the implementation of interlock study; and,
- > standard probation.

These three study groups were further divided into subgroups, in particular to distinguish between participants who were studied for up to two years who were generally still on probation and participants who were studied for more than two years who were off probation for at least a year.

The results show that after two years there was 95.4% compliance with the interlock order and in the third year of the study there was 98% compliance with the interlock order. The findings of the study further demonstrated that those offenders in the DWI court interlock group had lower recidivism rates than the other two groups. To illustrate, there are widening differences between the DWI court interlock groups and standard probation as to new DWI convictions after the completion of probation: 1.72% of DWI court interlock offenders had new DWI convictions versus 5.16% of the standard probation offenders. Also, program completion rates were 90% for the DWI court interlock group and 66% for the DWI court non-interlock group. Finally, there was a reduction in the number of positive urine screen tests, which may show that participants' lives are becoming more manageable and that participation in the DWI court is not just affecting their drinking behaviour. It appears that the motivation to keep and maintain restricted licenses is helpful to improve quality of life in other areas.

The study has been extended to a five year period and results will be reported as they become available. In conclusion, DWI Courts and ignition interlock programs hold great promise by themselves. However, they also have limitations. Essentially, the results of this study suggest that combining these two highway safety programs can make them both better.

San Joaquin County two-track DUI program

Based on a presentation by Honorable Richard A. Vlavianos, San Joaquin County, California

This program is used for all repeat offenders and consists of two tracks. Track 1 is designed for high-risk/low-treatment needs offenders and focuses on monitoring. Track 2 is designed for high-risk/high-treatment needs offenders and also focuses on treatment. Its approach is based on practices associated with DWI courts. Interlock devices are required for all repeat offenders. The original court order will stipulate that an interlock has to be installed on any vehicle owned or operated by the offender. A modified order can further add alternative alcohol monitoring as directed if the offender does not have access to a vehicle. Graduated responses are used in case of non-compliance with program rules, including:

- > continuous alcohol monitoring;
- > in-home alcohol monitoring;
- > mobile alcohol monitoring;
- > assessment; or,
- > jail (2-5 days maximum and used as a last resort).

Conclusion

This section shared an overview of presentations that focused on ways to integrate supervision and treatment. In light of the fact that solutions for offenders must be tailored to individual offenders, notably in relation to their level of risk and treatment needs, the integration of supervision and treatment is crucial. Best practice examples were presented from different jurisdictions, including S.O.B.E.R. courts in Harris County, Texas; DWI courts across the US; and, the San Joaquin County two track DUI program. Results from an evaluation study of a DWI Court Ignition Interlock program in Michigan were also described.

TECHNOLOGY: DEVICE TESTING, CERTIFICATION AND QUALITY ASSURANCE, PRIVACY AND AUTOMATED VEHICLES

Introduction

Interlock technology continues to evolve and, as in many other fields, plays a quintessential role in the delivery of high-quality services, in this case, high-quality programs. It is therefore appropriate to focus on these developments along with developments in relation to device testing, certification and quality assurance. This section focuses on this aspect of interlock programs. Emerging topics such as privacy of data captured by interlocks and the role of interlocks in relation to automated vehicles are also discussed.

Comparison of NHTSA's 2013 Model Specifications with the 1992 Model Specifications

Based on a presentation by Mr. William Stegeman, Element Materials Technology

This presentation provided an overview of Element Materials Technology's interpretation of the new NHTSA Model Specifications for interlocks as published in the Federal Register Vol. 78, No 89, Wednesday, May 8, 2013 compared to the 1992 NHTSA Model Specifications as well as Canadian and other technical standards. Element began in 1938 as Twin City Testing and is now part of a worldwide network of independent laboratories experienced in testing interlock devices to the NHTSA protocol since the mid-1990's. This comparison is based upon Element's years of testing experience, although it warrants mentioning that any and all interpretations are those of Element, while NHTSA remains the ultimate authority in regards to their Model Specifications.

Some obvious differences between the 2013 and the 1992 Model specifications include:

- > **The number of units to be tested:** the 1992 Specifications specified one while the 2013 Specifications do not specify a number;
- > **The breath samples given:** the 2013 Specifications call for three alcohol concentrations, two below the set point and one above. The set point is specifically stated. The 1992 Specifications, with only one exception, only required alcohol concentrations above the set point. Additionally, the set point was recommended but not specified.

Other aspects highlighted include ambient temperature for testing; standard volume and flow; warm-up time; calibration stability; vibration; etc. In sum, this presentation compared pertinent aspects of the 2013 and 1992 NHTSA Model Specifications and described how they differ.

Quality Assurance Plans

Based on a presentation by Sgt. Ken Denton, Washington State Patrol

The new 2013 NHTSA Model Specifications state that manufacturers must submit a Quality Assurance Plan (QAP). Page 26863 in the Federal Register Vol. 78, No 89, Wednesday, May 8, 2013 provides a large statement of what is covered later in detail within the QAP template in Appendix A (page 26866). In this presentation some recommendations were formulated to streamline the completion of these QAPs. It was argued that:

- > Each jurisdiction should develop a rule regarding the QAP;
- > The QAP should be a transparent step-by-step explanation that the manufacturer can follow and use to submit their device, if qualified;
- > Jurisdictions should consider the use of a standardized form that they can provide to manufacturers to complete and submit, as this should make comparisons between vendors during RFP processes much easier.

Below is an illustration of how such a standardized form could look.

QUALITY ASSURANCE PLAN

Manufacturer: Drunk Detectors Inc.

Model Number: Drunk Detector 2000 (DD2000)

Submission Date: January 1, 2015

Application or RFP: Jurisdiction

Language from Model Specifications below

This Quality Assurance Plan (QAP) and the operating instructions for the Drunk Detector 2000 (DD2000) provide step-by-step instructions for checking the accuracy of the calibration of a BAIID and the maintenance of the BAIID. (As noted in the Model Specifications, BAIIDs must hold calibration for at least 37 days [30 days +7 day lockout countdown] and must prominently display the service interval and provide for a 7 day lockout countdown).

INSTRUCTIONS FOR CHECKING CALIBRATION OF BAIID

| Instruction per Jurisdiction rule | Manufacturer Response to Instruction |
|---|--|
| Time BAIID can hold calibration must be at least ____ days. | The Drunk Detector 2000 (DD2000) is capable of maintaining calibration for 37 days as required by the NHTSA Model Specifications. In addition, the DD2000 has been tested by Eliminate Labs and found to hold its calibration for 90 days. |
| The calibrating unit(s) that are utilized must be on NHTSA's Conforming Products List of Calibrating Units for Breath Alcohol Testers) and instructions for using the calibrating unit(s) must be included. | Drunk Detectors Incorporated uses wet bath calibration systems and uses only _____ NHTSA approved simulators for this testing. We require that our simulator solutions be changed at least daily or every 20 tests as documented at each service center on form ____ found in appendix ____. |
| | Our simulators have thermometers which will be certified using the following protocols: |

Finally, it was argued that no QAP will be successful unless a proper working relationship with all stakeholders is formed. This includes all legal entities, manufacturers, program personnel and government regulators.

Virginia Alcohol Safety Action Program (VASAP)

Based on a presentation by Mr. Richard Foy and Mr. Chris Morris

In this presentation an overview was provided of Virginia's approach with respect to interlock programs in light of the new 2013 NHTSA Model Specifications. The following aspects were discussed:

- > **Conformance tests.** Virginia is proposing that all ignition interlocks pass the performance tests as recommended in the current Model Specifications;
- > **Sensor technology.** Virginia ignition interlock regulations currently require that the interlock device contain a fuel cell that tests only for the presence of alcohol;
- > **Removable heads and fixed control boxes.** The current Virginia ignition interlock regulations do not prohibit removal of the sensor head and do not require that data memory be included in a fixed control box. Removal of the sensor head reduces the ability of someone to intentionally cause a violation for the probationer and reduces the chance of damage due to humidity;
- > **Retests.** Virginia ignition interlock regulations allow drivers a six minute period to pull to the side of the road and give a running retest breath sample. Most probationers have no problems (unless operating a motorcycle) in providing the breath sample while the vehicle is in motion;
- > **Alerts.** Virginia ignition interlock regulations require the sounding of horn and flashing of lights when a running breath retest is not administered in six minutes of the initial prompt to test or when a BAC of .02% or higher is registered during a running retest;
- > **Emergency overrides.** Virginia's new regulations propose that vendors have a code, smart key, or similar feature that can be made available to offenders (or other authorized personnel such as repair shop employees) to unlock interlocks that are in a permanent lock-out status. The code shall unlock the device for a period not to exceed three hours, and it shall not disable any other interlock features. Authorization must first be obtained from the Commission on VASAP prior to issuance of an override code that disables any ignition interlock features;
- > **Restart of a stalled vehicle.** Virginia currently permits a two-minute "free restart" period during which the operator may start a vehicle engine again without completion of another breath test, regardless of the reason for the engine stopping;
- > **Extreme temperature testing.** Virginia proposes to conform to the Model Specifications;
- > **Calibration stability and service intervals.** Virginia requires that the manufacturer or vendor provide certification from an independent laboratory or NHTSA testing lab that its ignition interlock device has been tested in accordance with the most current Model Specifications published by NHTSA in the Federal Register, and meets or exceeds NHTSA standards;

- > **Set point.** Virginia's set point (or "fail point") is currently 0.02 g/dL;
- > **Breath sample size and flow rate.** Virginia's current sampling size is 1.5 L, however authorization can be given to lower the sampling size to 1.2 L or 1.0 L to accommodate medical conditions, provided that written documentation is obtained from a physician. Virginia plans to continue to require a 1.5 L sample in most situations;
- > **Readiness.** Virginia agrees that the ignition interlock should have this capability and requires devices to meet an even stricter standard of being ready for use within two minutes of being turned on. If an offender has a BAC exceeding 0.02 g/dL on the initial test, however, they must wait five minutes before they are permitted to retest; and,
- > **Tampering and circumvention.** Due to the rapid changes in technology that are occurring, Virginia supports NHTSA's limited minimum performance standards for this area of performance. Nevertheless, Virginia encourages its service providers' innovative efforts to incorporate anti-circumvention blow patterns into their devices. Virginia's new regulations propose that there be cameras on all ignition interlocks and that vendor-unique, tamper proof seals, wire connections and wraps be used.

New York State's ignition interlock program & approaches to Quality Assurance

Based on a presentation by Mr. Robert M. Maccarone, NYS Divisions of Criminal Justice Services, Office of Probation and Correctional Alternatives

On November 18, 2009 the Governor of New York signed Chapter 496 of the Laws of 2009 or the "Child Passenger Protection Act" also known as "Leandra's Law". This law was passed in response to a young girl, Leandra, dying in a vehicle that was operated by her mother who was impaired by alcohol. This law included a new Class E Felony Offense with enhanced penalties for persons who operate a motor vehicle while intoxicated with a child passenger under 16 years of age. This law also enhanced penalties for driving while intoxicated and causing the death or serious injury to any passenger under 16 years of age.

Further enhancements required that persons convicted of New York State Vehicle and Traffic Law Section 1192 Misdemeanor or Felony DWI committed on or after the date of enactment, November 18, 2009 and sentenced on or after August 15, 2010, must be sentenced to a term of probation supervision or conditional discharge, in addition to any sentence of imprisonment, and/or penalty or fine imposed, and must have an Ignition Interlock Device installed in any motor vehicle they "own or operate". As of November 1st, 2013, Leandra's law extends the period of ignition interlock restriction from six months to a minimum of 12 months.

Quality assurance aspects are covered in New York's state regulations on the "Handling of Ignition Interlock Cases Involving Certain Criminal Offenders in NYS (Title 9 NYCRR Part 358)". For example, in one subsection of Part 358, the following regulations are stipulated:

- > New York State is divided into four service regions;
- > Interlocks installation sites are required within 50 mile radius of operators; this is confirmed by the production of maps produced quarterly;

- > New York State classifies certified interlock devices into three categories (Classes I, II, and III) to match the risk of the offender to the device and features.

Another subsection stipulates that Probation Departments and Corrections Departments monitors must notify the Court and District Attorney within three business days of the following:

- > operator failure to install an interlock on the vehicle(s) he/she owns or operates;
- > operator has not complied with service visit requirements;
- > report of alleged or attempted tampering or circumvention;
- > report of failed or missed start-up retest;
- > report of failed or missed rolling retest;
- > report of vehicle entering lock-out mode; and,
- > any report of a failed test or re-test where BAC is .05% or higher.

New York State has taken the following steps to promote the quality assurance practices among manufacturers, and their devices and services:

- > conduct quarterly conference calls with manufacturers;
- > convene an annual manufacturers conference;
- > conduct an annual installer/service provider Quality Assurance audit;
- > conduct field visit audit and Quality Assurance measures; and,
- > standardize format for probation/CD monitors to report issues.

Interlock data: privacy and security

Based on a presentation by Ms. Christina Abernathy, Institute for Intergovernmental Research

In this presentation it is discussed that data captured by the interlock device are confidential, and, as such, these data need to be treated accordingly. This is true, even when offenders explicitly provide consent to the collection of such data, given that providing consent to collection of data is not the same as providing consent to a reduced level of privacy. It is further proposed that interlock data should have the same level of privacy as other sensitive criminal justice information including written and implemented privacy policies and that clients retain their right to data protection so that it is not:

- > disclosed without limitation;
- > sold to third parties;
- > accessed inappropriately; or,
- > breached.

In light of the sensitive nature of the data collected by the interlock, and within the scope of an interlock program, a comprehensive privacy policy is highly recommended. Such a policy should include the following elements:

- > Purpose statement
- > Policy applicability and legal compliance
- > Governance and oversight
- > Definitions
- > Information
- > Acquiring and Receiving Information
- > Information Quality Assurance
- > Program Evaluation and Research
- > Merging Records
- > Use and Disclosure
- > Redress
- > Information Security Safeguards (including breach notification)
- > Information Retention and Destruction
- > Accountability and Enforcement
- > Training

Concrete examples of issues to address in such a privacy policy include:

- > If vendors can send printed reports containing data of individual offenders, the following questions need to be addressed:
 - » What is the chain of custody for printed reports, given the level of personal information they contain?
 - » If provided by fax, who is authorized to collect the faxed documents from the machine, and potentially view the reports?
 - » If sent by postal mail, who is authorized to open and view the mail?
- > If vendors can send emails containing data of individual offenders, is the e-mail only secured by one layer of protection (username/password) or is it also encrypted? For example:
 - » Electronic envelope technique: Encrypting the message using a secure encryption standard requiring the exchange of encryption keys. If intercepted, contents are meaningless without the decryption key.
 - » Online message portal: An open message is sent to the recipient without any sensitive information in it, announcing that a message is available on the sender's secure website where the recipient must log in to view the message.

Many resources are available that have been developed for the protection of data in other fields such as criminal intelligence information, terrorism-related information, terrorism-related suspicious activity report information, medical and mental health information and substance abuse information. Such resources can be used as examples to inform the development of a privacy policy for interlock data.

The state and future implication of automated vehicles on impaired driving

Based on a presentation by Dr. Greg Fitch, Virginia Tech. Transportation Institute

Researchers currently distinguish between four levels of automation, the first level for function-specific automation and the fourth level for full self-driving automation. Going from one level to the next implies less and less operator control while at the same time assigning more and more control to the vehicle. According to some sources, experts forecast automated freeway driving in 2018, automated freeway driving with fail safe in 2019, high automation with fail safe in 2025 and full automation (e.g., for taxis) in 2030. Problems may arise due to automation misuse (i.e., unintentional improper use) or automation abuse (i.e., intentional improper use). Such misuse or abuse is especially concerning given that the available levels of automation today still require the driver's input and control over the vehicle. For example, the interaction between impaired driving and partial automation could be the ingredients for a perfect storm. The implication for automation is that highly automated vehicles would have to be designed to identify intoxicated drivers and to enter into a fail safe mode to prevent abuse of the technology. Essentially, automated vehicles cannot serve as a designated – “sober” – driver until full automation is achieved.

Conclusion

It is often argued that a good interlock program is about more than just using a good device. Nevertheless, it goes without saying that a good device is at the basis of a good program. In other words, a good device is not a sufficient condition for a good program, but it is certainly a necessary one. In light of the importance of good-quality technology, the focus of this section was on technology, in particular NHTSA's new 2013 Model Specifications, which provide guidance in terms of selecting good-quality devices as well as Quality Assurance Plans. Other presentations focused on QA in relation to program delivery in New York and Virginia. With the increased use of devices and their increased capacity to capture sensitive data about individual offenders, some attention was devoted to the importance of a privacy impact policy and the need for technology solutions to protect the confidentiality of these data. Finally, in light of the ongoing trend of automating more and more driving functions, and potentially the introduction of semi or fully automated vehicles in the unforeseeable future, one presentation looked at the implications of automation in relation to impaired driving. It was concluded that automated vehicles cannot serve as a designated driver until full automation is achieved. At this point, nobody knows if and when entire fleets of jurisdictions will indeed become completely automated, meaning that the growth of, and need for, high-quality interlock technology remains important as ever.

FUTURE DIRECTIONS: RESEARCH AND EVALUATION

Introduction

As explained in the section on program implications of new research, the research field continues to expand and the main focus has shifted from program effectiveness to strengthening program delivery and identifying optimal or best practice program features. In this section, a brief overview is given of research and evaluation initiatives indicative of this trend. This includes an overview of NHTSA's interlock research, CDC's interlock research, challenges encountered with interlock research in Minnesota and Colorado and results from these programs from which important lessons can be learned for the future, and the potential role of meta-analysis in interlock research.

National Highway Traffic Safety Administration interlock research

Based on a presentation by Ms. Heidi Coleman

In this presentation an overview was provided of findings and implications of recently completed interlock studies as well as research in progress. In particular, eight studies were completed as part of an evaluation of New Mexico's interlock program, conducted by the Pacific Institute for Research and Evaluation (PIRE). These studies focused on the following topics:

- > Recidivism of multiple offenders: findings suggested installing more interlocks for a longer period would be beneficial; and that interventions during the interlock period to extend the impact after removal of the interlock should be considered;
- > Recidivism of first offenders: findings similar to those of previous study;
- > Voluntary interlock use after third DWI: findings suggest programs should be mandatory;
- > Alternative sentence of house arrest: findings suggest stricter sentence alternatives like house arrest can increase interlock use, but it has to be supported by State law;
- > Pattern of interlocks failures by day/time: findings suggest compliance-based removal should be considered using interlock data to inform decisions;
- > Predictors of recidivism: findings similar to previous study;
- > Discussions with representatives of interlock systems: findings suggest their concerns include issues regarding low income offenders and the need to close loopholes as well as concerns regarding workload;
- > Discussions with offenders: findings suggest offenders may be embarrassed about having to use interlocks, although the fact that it enables them to drive legally can act as an incentive. Offenders

also report receiving support from their family in regards to the use of the device and express concern about the accuracy of the device.

Some information was also shared about research on the use of interlocks with motorcycles. Results from these studies were not published yet at the time of the symposium.

Ignition interlock research from Center for Disease Control and Prevention

Based on a presentation by Dr. Gwen Bergen

Similar to the previous presentation, this presentation provided an overview of current and future interlock research projects by CDC. Some information was provided also about challenges in relation to interlock research.

CDC's research objectives are to provide assistance to states in improving programs so as to increase the public health impact of ignition interlocks and reduce alcohol-impaired injuries and deaths. The following two research questions guide CDC's research:

- > How can states increase the number/proportion of convicted offenders who install interlocks on their vehicles?
- > Is there a way to design state interlock programs so that the effects of the ignition interlock remain after it is removed from the vehicle?

Two research projects addressing these questions were described. The table below provides a summary of the findings from the first project. The second project concluded that the policy of requiring treatment for convicted offenders who accumulate three violations while on an interlock results in lowering their recidivism rate by approximately a third.

| Examples of Program Keys and Strength of Correlation with Interlock Rates | | |
|--|-----------------|---|
| Program Key | Strength | Example of a Good Practice |
| Requirements | Strong | Law that covers all offenders |
| Penalties | Moderate | Jail time or home monitoring for refusal to install |
| Monitoring | Strong | Random physical checks of offenders' vehicles to ensure interlock installed |
| Uniformity | Moderate | All agencies across state report data in the same format, on the same timeframe |
| Coordination | Moderate | Regular task force meetings to address preprogram problems |
| Education | Weak | Meetings between all agencies to understand the program |
| Resources | Weak | Having a designated program manager and staff |
| Data | None | Data system that coordinates information from all agencies and creates relevant reports |

In terms of future directions, CDC notes that traditional evaluation approaches are difficult with interlock programs because interlock programs can be considered “complex systems”. In this regard, CDC is looking into other techniques such as “developmental evaluation” to overcome challenges associated with the evaluation of interlock programs. This type of evaluation supports innovation development to guide adaptation to emerging and changing realities in complex environments by asking evaluative questions, applying evaluation logic and gathering real-time data to inform ongoing decision making and adaptation. In this approach, the evaluation is often imbedded in the development of the program.

Finally, CDC also maintains conversations with ignition interlock stakeholders to obtain information to define its research agenda.

The challenges of program evaluation

Based on a presentation by Ms. Jody Oscarson, Minnesota Office of Traffic Safety

In this presentation an overview is provided of the preparatory steps that the Minnesota Office of Traffic Safety went through for the evaluation of their interlock program.

Planning for this evaluation began prior to 2010 and the contract started in November 2011. Originally the contract called for five process and outcome evaluations and two cost benefit studies. The evaluation was due by September 30, 2013. It was later amended to include nine process and outcome evaluations and seven cost benefit studies and the contract was amended for additional cost and time (due date by December 31, 2013). Several stakeholders were identified from whom data was needed to conduct the evaluation, including:

- > State Court Administrators Office
- > Department of Corrections
- > Local Supervision
- > DWI Courts
- > Driver and Vehicle Services
- > Department of Human Services

The processes involved to obtain the data were complicated and took a long time. To reach formal agreements, lawyers had to be involved due to the sensitive nature of the data and to ensure due diligence. Furthermore, not all involved parties used the same data system or were connected to a particular data system, which caused further delays. In the end, seven different data use agreements had to be in place between the different departments involved. These agreements covered the use of 110 databases in total.

These experiences speak to the need of careful and strategic planning of any evaluation initiatives. Given the sensitive nature of the data required to evaluate the program, reaching agreements will take time, so planning has to take place accordingly.

Evaluation of the Colorado interlock enhancement counseling program

Paper authored by Ms. Anjali Nandi and Dr. David Timken, Center for Impaired Driving Research and Evaluation

Background

Ignition interlock devices are widely used in the US with current rates exceeding 318,000. Colorado has nearly 21,000 Interlocks installed (R. Roth, 2014). These devices prevent a car from starting until the driver blows a clean breath sample into the device. The breath sample has to have an alcohol content of less than a pre-set amount, most commonly .02g/dL. While ignition interlocks provide between a 45% and 90% reduction in recidivism while installed, once removed, recidivism returns to pre-interlock levels (Marques et al., 2001). Pilot programs have demonstrated some success in keeping these recidivism rates low when the interlock sanction is paired with a counseling program specific to the interlock (Marques et al., 2007). It was with this evidence in mind that the authors developed the Interlock Enhancement Counseling (Timken, Nandi, Marques, 2012) curriculum.

Interlock Enhancement Counseling (IEC) is a manualized brief intervention program designed for people convicted of driving while impaired (DWI) offenses and who have alcohol ignition interlocks on their vehicle(s). It combines the evidence based approaches of cognitive behavioural treatment, motivational interviewing/enhancement, contingency management and harm reduction, and is derived from the Support Interlock Planning program which showed preliminary evidence at reducing failed starts. IEC is a 10 hour program comprised of individual and group sessions and is conducted over a five month period. It may be used as an adjunct to a DWI treatment program or as a stand-alone intervention.

The IEC program links treatment with the interlock in order to reduce the number of failed starts due to alcohol ingestion, reduce and eliminate driving non-interlock equipped vehicles, and prevent DWI recidivism post-interlock.

Methods

Once the IEC manuals were developed, the implementation process began in Colorado with the support of the Office of Behavioural Health and the Division of Motor Vehicles, training of counselors commenced across the state. In order to examine the impact of the program as well as the training and program delivery, a comprehensive set of questions were developed to examine these process and outcome measures (a list of these questions is available upon request). Sample process questions included development, dissemination and training of the participant workbook and provider's manual, translation of the workbook into Spanish, training of qualified counselors in the delivery of the curriculum and coordination of implementation with the Office of Behavioural Health, Persistent Drunk Driver committee, Division of Motor Vehicles, interlock providers, treatment community and judicial representatives. Sample outcome measures included rates of recidivism, failed starts, and successful treatment completion, with the independent variable being completion of the IEC program. We are currently in the early implementation process of training counselors and gathering data. Main effects tests and latent growth curve models will be used to analyze the data gathered.

Barriers

We identified several barriers in the implementation of this program. Some of these barriers have been resolved and we continue to address others. There was initially a lack of written policy and regulations from the Office of Behavioural Health (OBH). OBH licenses and regulates treatment providers in Colorado and, historically, treatment providers only respond to programmatic changes when mandated by OBH. OBH took great strides to provide these regulations and clarify rules to treatment programs to increase the salience of attending to the needs of DWI offenders on an interlock sanction.

We continue to receive limited support from probation and the judiciary. In conversations with them, it appears that this hesitancy comes from not wanting to further burden the client with additional mandated treatment. Perhaps until we have evidence of the efficacy of the program as well as the potential cost-savings for the client themselves, we will continue to face this resistance.

Lastly, Colorado had restrictive statutes directing who and when interlocks could be obtained. However, in January 2014, legislation went into effect changing these statutes. In particular, clients who fall in the persistent drunk driver category only have to wait a 30-day period instead of a 12-month period to obtain an interlock restricted license.

Conclusion

Thus far, we have made great gains in the implementation of this program. Both manuals have been finished and approximately 500 therapists providing statewide coverage have been trained. Full implementation has taken longer than anticipated. Recent implementation of both rules and regulations along with statutory changes effective January 1, 2014 that require IEC and ease restrictive statutes that direct who may obtain interlocks and when, will help the full implementation of the program and make comprehensive evaluation possible.

References

Marques, P.R., Tippetts, A.S., Voas, R.B. & Beirness, D.J. (2001). Predicting repeat DUI offenses with the alcohol interlock recorder. *Accident Analysis and Prevention*, 33(5), 609-619.

Marques, P., Voas, R., Tippetts, S., Blackman, K., Timken, D., & Field, C. (2007). Motivational Intervention Keyed to Interlock Use Reduces the Rate of Positive BAC Tests. In B. K. Logan, D. S. Isenschmid, J. M. Walsh, D. Beirness, & J. Morland (Eds.), *Proceedings of the T2007 Joint International Meeting of TIAFT/ICADTS/IIS*, August 26-30. Seattle, WA: ICADTS. (Available online: <http://www.icadts2007.org/print/iis23motivational.pdf>).

Roth, R. (2014). Roth Interlock Research Data, Impact DWI, Santa Fe, NM. Accessed Feb. 7, 2015

Timken, D., Nandi, A., & Marques, P. (2012). Interlock Enhancement Counseling: Enhancing motivation for responsible driving. Center for Impaired Driving Research and Evaluation, CO

Meta-analysis: research opportunities for the future

Based on a presentation by Dr. Ward Vanlaar, TIRF

This presentation focused on potential future research initiatives building on the line of research on behavioural patterns of interlocked offenders. It argues that if more research is needed to better understand how interlock programs work best, studying the relationship between monitoring and compliance by means of a meta-analysis using data from many jurisdictions would be a promising way to proceed. In other words, instead of using data from three jurisdictions to study behavioural patterns of interlocked offenders, as was reported in one of the previous sections, data from as many jurisdictions as possible could be analyzed by means of a meta-regression to formally test this important relationship between monitoring and compliance.

This methodology would also enable to describe in detail different aspects of monitoring and formally test the impact of each on compliance. For example, intensity of monitoring is one obvious way to operationalize this into a measurable variable, but other aspects are important too, such as distinguishing between monitoring schemes that rely more on punishing in case of non-compliance versus those that rely on positive reinforcement in case of compliance. Other possibilities include a focus on jurisdictions that rely on risk and treatment needs of offenders versus jurisdictions that do not.

Essentially, adopting such a sophisticated analysis technique would enable researchers to tease out the influence of a variety of characteristics of programs on compliance levels and behavioral patterns of interlocked offenders, ultimately providing knowledge to develop high-quality programs.

Note that one of the main weaknesses of meta-analysis, i.e., publication bias, would not be an issue at all if raw interlock data from the different jurisdictions can be used.

Conclusion

It is clear that despite the availability of a large and robust body of research on interlocks, there are many opportunities to further study a variety of aspects regarding how to implement and deliver an interlock program. This section provided an overview of the many research initiatives that have recently been completed, are ongoing, or are planned for the future. A clear trend is that these initiatives are mostly focused on finding ways to increase participation in programs, and to improve the quality of programs.

INTERNATIONAL PROGRESS

Introduction

In this section an overview is provided of the different presentations regarding international progress. This includes presentations about NHTSA's initiatives as well as initiatives by, and information from, Mothers Against Drunk Driving (MADD) in the US and Canada. It also describes presentations about opportunities for the use of interlocks in Low and Middle Income Countries (LMICs).

NHTSA ignition interlock initiatives

Based on a presentation by Ms. Maureen Perkins

NHTSA is involved in many interlock initiatives focusing on all relevant aspects of interlock programs. This includes initiatives in the following areas:

- > **Educational resources** – includes a toolkit, model guidelines for State interlock programs and an online interlock curriculum;
- > **Technical assistance** – provided by TIRF through a cooperative agreement with NHTSA when agencies apply for it;
- > **AIIPA** – NHTSA works with AIIPA on a standardized vocabulary and best practices;
- > **Legislative initiatives** – for example, working toward the elimination of barriers for eligible offenders to enroll;
- > **Program administration** – for example, working toward establishing rules on offender monitoring and program violation;
- > **Devices** – NHTSA recently published its new Model Specifications (see Federal Register, Vol. 78, No 89, Wednesday, May 8, 2013);
- > **Vendors** – for example, establishing standards for licensing and operation of service providers;
- > **Data** – for example, contributing toward clarification of roles and responsibilities of agencies;
- > **Licensing** – for example, contributing toward establishing reciprocity among States;
- > **Grants** – for example, States who have received their final Technical Assistance report from TIRF with their recommendations can apply for funding to implement the recommendations.

Mothers Against Drunk Driving, United States

Based on a presentation by Ms. Debbie Weir

In 2006, MADD launched the Campaign to Eliminate Drunk Driving, based on proven research and effective DUI Countermeasures. There are three tenets to this campaign:

- > Sobriety checkpoints coupled with high visibility law enforcement;
- > Ignition interlocks for all DUI offenders;
- > Advanced alcohol detection technology.

Currently in the US, there are 24 states with an all offender ignition interlock law and California has a four county pilot program protecting over 14 million people. All states now use interlocks in one form or another (five did not in 2006) with an estimated 305,000 interlocks installed nationwide

MADD is supportive of a minimum of six months installed and believes manufacturers can play a role in supporting legislative efforts. It is also important to rely on influential advocates to pass interlock legislation and of leveraging media proactively to pitch a story and generate interlock interest. As a grassroots organization, legwork is done community by community and MADD believes in building on small wins. Partnerships are crucial and the needs of different stakeholders involved need to be understood.

Mothers Against Drunk Driving, Canada

Based on a presentation by Mr. Andrew Murie

This presentation provided an overview of the use of interlock programs in Canada. The table below contains estimated numbers of interlock usage in the different jurisdictions from 2007 through 2013. Highlighted in yellow are jurisdictions with notable trends, such as an increase in Prince Edward Island from 80 installed devices in 2012 to 186 in 2013. Especially Quebec, Ontario and Alberta have a high number of estimated installations. British Columbia showed a promising trend since 2010 but lost momentum in 2012 after the administrative program was challenged in court.

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------|--------|--------|--------|--------|--------|-----------------|-----------------|
| NL | 34 | 43 | 78 | 80 | 89 | 100 | 107 |
| PE | 32 | 41 | 57 | 73 | 85 | 80 | 186 |
| NS | - | 27 | 330 | 491 | 599 | 594 | 621 |
| NB | - | - | 116 | 120 | 137 | 140 | 166 |
| QC | 7,083 | 7,555 | 8,224 | 9,114 | 9,533 | 10,583 | 13,857 |
| ON | 2,345 | 2,823 | 2,732 | 4,017 | 6,209 | 5,068 | 4,992 |
| MB | 100 | 108 | 127 | 133 | 155 | 165 | 162 |
| SK | 320 | 323 | 369 | 376 | 400 | 477 | 522 |
| AB | 1,168 | 1,289 | 1,449 | 1,762 | 2,180 | 2,229 | 3,092 |
| BC | 206 | 336 | 633 | 1,248 | 8,041 | 7,391 | 1,582 |
| YK | 17 | 15 | 17 | 21 | 24 | 26 | 33 |
| NWT | - | - | - | - | - | - | - |
| CANADA | 11,305 | 12,560 | 14,132 | 17,435 | 27,452 | 26,853 (-2%) | 25,327 (-6%) |

Based on a comparison of impaired driving convictions to the number of interlocks installed in each jurisdiction, it can be determined that the installation rate in Canada, on average, is approximately 40% when not including Quebec's numbers. Quebec has an installation rate well over 100% when using the number of impaired driving convictions as the denominator and therefore seriously biases the estimate for Canada as a whole. To illustrate, when including Quebec data, the average Canadian installation rate is approximately 72% rather than 40%.

Further contextual information was provided during this presentation to help explain some of these trends. It was found that the involvement of a committed senior policy person can make a difference, although turn-over in staff, for example due to elections, can serve as a setback in the process. The fact that not all jurisdictions in Canada have government insurance but rather private insurance can also create challenges, the difference being that surcharges for caught drink drivers with government insurance are smaller than those in private insurance, making it much more expensive for drivers in jurisdictions with private insurance to continue to drive, and hence participate in an interlock program.

Finally, some preliminary results were shared from Ontario's evaluation of their interlock program.

Integrating interlocks in low & middle income nations: A roadmap and a stakeholder's role

Based on a presentation by Mr. Brett Bivans, International Center on Alcohol Policies

This presentation discussed potential roadblocks to the use of interlocks in Low and Middle Income Countries (LMICs) based on experiences in China, Colombia, Mexico, Nigeria, Russia and Vietnam. Roadblocks in these countries include cost of interlocks, lack of codified laws regarding drinking driving, lack of capacity and monitoring systems and the fact that many households only have one vehicle at their disposal.

To be able to move forward there is a need for a legal framework including codifying drinking and driving in law with a BAC limit. The building of police capacity with training for conducting sobriety checkpoints is needed as well as legal purchase ages and underage drinking laws. Furthermore, social services need to be enhanced, for example by using public awareness programs to change social norms around drinking and driving and targeting educational programs to high-risk individuals as well as community action opportunities by educating parents and teachers to set parameters for future legislative change. Building capacity through increasing the number of road safety experts available for consultation is also important.

In this regard, it appears that stakeholders can pave the way for the use of interlock programs by improving current drink driving standards in LMICs. Momentum could ideally be gained by incorporating interlock devices where a framework is already in place. Where no such framework exists another possible avenue could be the introduction of interlocks for commercial use.

Opportunities to combat impaired driving in low and middle income countries

based on a presentation by Mr. Jonathan Passmore, World Health Organization

The closing plenary session of the symposium elaborated on opportunities of using interlocks in LMICs,

notably countries in the Western Pacific Region of the World Health Organization (WHO). There are 37 countries and areas in this region, six of which are high income countries (Australia, New Zealand, Japan, South Korea, Singapore and Brunei). A total of 1.8 billion people live in this region, and the road safety indicators available for this region are as follows:

- > A total of 337,00 people are killed in this region each year which corresponds to 921 each day and 38 each hour;
- > The mortality rate from traffic injuries is estimated to 2.5 times greater in LMICs;
- > One person dies on Asia's roads every 46 seconds which is 54% of the global total and 59% of vulnerable road users.

Due to these highly concerning numbers it can be argued that the success or failure of the UN Decade of Action will depend on progress in the greater Asia-Pacific region. Alcohol impaired driving is an important cause of this high mortality rate.

Several high income countries in this region already have interlock programs (e.g., Australia, New Zealand; Japan is in the process of implementing a commercial program) but no LMICs have interlock use laws. One particular challenge with LMICs is that national road safety legislation is updated only once every ten years, making it difficult to change laws. Nevertheless, opportunities exist to use interlock programs that can supplement enforcement or in a commercial setting. Such opportunities exist in the following countries:

- > China
 - » Drinking and driving was first criminalized in China in 2008;
 - » Opportunities exist for the introduction of offender and commercial programs;
 - » In addition to prison time, fines and vehicle impoundment road safety laws provide license suspensions for varying lengths, which could be used as way to incorporate interlock sanctions;
 - » There are existing technology requirements for commercial vehicles under national standards, which could be used as a starting point for the development of a commercial program.
- > Viet Nam
 - » This country recently identified drunk driving as a priority;
 - » A legal framework exists with a BAC threshold of .05 for motorcycles and .0 for all other vehicles;
 - » An estimated 34% of all road traffic fatalities had a BAC of at least .08;
 - » Criminal/administrative sanctions exist but they are rarely implemented – opportunities exist to implement an interlock program building on this legal framework;
 - » All transport companies are now required to establish a road safety unit and implement a road safety work plan and new guidelines formally adopt elements from ISO 39001 including the prevention of drinking and driving – opportunities exist for a commercial program, complementing in-home breath testing.

> Korea

- » Korea has the highest road traffic mortality rate among high income countries in the region (three times higher than Japan and two times higher than Australia; it is 24% higher than the US);
- » Korea's objective is to have one of the lowest rates by 2020;
- » Approximately 17% of road traffic deaths are associated with alcohol;
- » Currently there is no offender or commercial interlock program.

Possible next steps in the region would be to conduct an interlock pilot program and/or technical demonstration. It is likely easier to commence with a commercial program although this choice would ultimately depend on the country's requirements. It would also be beneficial to begin such a project with a thorough baseline and needs assessment and an intermediate and outcome evaluation.

Conclusion

Information available about the use of interlocks and interlock-related initiatives suggests that the field as a whole continues to grow in North America. Leading organizations such as NHTSA and MADD continue to support growth through a variety of activities.

What is particularly exciting is that there are now also opportunities for the delivery of commercial and/or offender interlock programs in Low and Middle Income Countries. Some of these opportunities exist in countries that need proven solutions the most in light of their road death toll that is often considerably higher compared to high income countries, notably the leading countries in the world in terms of road safety.

The field of interlocks continues to grow, both from a quantitative point of view as well as a qualitative one. With respect to the former, estimates of interlock usage around the world suggest that over 300,000 devices are in use in the US, 30,000 in Canada, 100,000 in Europe, and 15,000 in Australia. Furthermore, it appears that new markets begin to emerge where opportunities for interlocks may exist, notably in Low and Middle Income Countries. Several countries have been identified by symposium speakers where offenders programs and/or commercial programs would be highly beneficial to help reduce the death toll due to alcohol-impaired driving. It is acknowledged that moving into new markets can be challenging for a variety of reasons, so a call to action should focus on the delivery of a pilot or demonstration project first.

Regarding qualitative growth, especially new research into program implications as well as developments in technology are important. It appears that the focus of research has shifted from generating evidence regarding the effectiveness of interlock programs in terms of reducing recidivism to improving the quality of programs. This is not surprising in light of the fact that a large body of evidence exists confirming that interlocks work in terms of reducing recidivism. Now that this has been clearly established, it is timely to focus more on the question how the delivery of interlock programs can be improved to achieve the best possible outcome in terms of overall reductions in recidivism and rehabilitation of offenders to ensure lasting behavioural changes.

Progress made in terms of technology also contributes immensely to the quality of interlock programs. An interesting observation in this regard is that standards for technology clearly specify expectations in relation to performance of technology, rather than the actual functioning of technology. Given the continued improvement of technology and the fast pace with which new technologies become available, for example with respect to anti-circumvention features, this is certainly desirable. Future developments with respect to technology will likely include higher expectations about privacy of data and data protection. And while semi-automated and automated vehicles are slowly, but surely penetrating the market, it is clear that the need for interlock technology and programs will not diminish in the foreseeable future given that this technology will serve an important role as long as entire fleets of vehicles have not become fully automated.

In conclusion, jurisdictions around the world acknowledge the continued need to fight the issue of alcohol-impaired driving and interlocks are a proven solution in this regard. As such, further growth, in terms of the number of interlocks installed, and perhaps more importantly, in terms of the quality of programs, is needed.

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