ÁREA DE EDUCACIÓN, PREVENCIÓN Y SERVICIOS ASISTENCIALES

Control y supervisión de conducir bajo los efectos del alcohol utilizando el alcolock

Alcohol compliance monitoring and control with an ignition interlock

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ABSTRACT: *Objective:* This paper describes alcohol ignition interlock devices and programs and gives a summary overview of their benefits, limitations and barriers in the control of alcohol impaired driving. The extent of the worldwide alcohol impaired driving problem is discussed along with some information about the current status of ignition interlock programs in developed nations.

***Material and methods:* Published ignition interlock research studies are summarized in a table. Certification standards are introduced. An adjunctive motivational counseling intervention for ignition interlock users is described and internet links provided to English and Spanish language counseling program materials. The uses of ignition interlock data records is summarized as a means to predict which of the interlock users are more likely to have future repeated alcohol driving convictions.**

***Results:* Evidence shows the alcohol interlock is an effective means of controlling alcohol impaired driving during the time it is installed, but the effect does not endure for much time after the device is removed. Evidence from over 7,000 DWI offenders in Canada is used to demonstrate that the interlock data record is a useful tool for scaling driver risk. Despite the potential benefits of widespread interlock use they are still underutilized by the courts.**

***Conclusions:* Ignition interlocks are promising because they are relatively affordable and offer a method of both prediction and control of convicted drunk drivers. Until there are more interlock programs operating there will not be substantial reductions in overall rates of impaired driving so it is premature to speculate about the full extent of their potential contribution to public road safety.**

KEY WORDS: Alcohol. Ignition interlocks. Recidivism. Driving while impaired.

RESUMEN: *Objetivo:* Este artículo describe los dispositivos y programas que utilizan alcolock o interlock y, brevemente, sus beneficios, limitaciones y problemas en el control de conducir bajo los efectos del alcohol. Se analiza la dimensión de este problema en todo el mundo y se ofrece información acerca del estado actual de los programas del alcolock en los países desarrollados.

***Material y métodos:* Se hace un resumen de las investigaciones publicadas sobre este tema. Se hace una introducción a las normas de certificación. Se describe un programa de intervención motivacional para los usuarios del alcolock y, además, se señalan las páginas de Internet donde se puede encontrar estos materiales para un programa de intervención motivacional en los idiomas inglés y español. Se hace un resumen de los datos conocidos acerca del alcolock como manera de predecir qué usuarios tendrán más posibilidades de reincidir una convicción en el futuro en cuanto a conducir bajo los efectos del alcohol.**

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Resultados: **Los datos muestran que el alcolock es una manera efectiva de controlar la conducción bajo el efecto del alcohol durante el tiempo que esté instalado, si bien el efecto no perdura mucho tiempo después de que se retira. Los resultados obtenidos a partir de más de 7.000 infractores DWI (sancionados por conducir bajo la influencia del alcohol) en Canadá se utilizan para demostrar que los datos del alcolock son una herramienta útil para clasificar el riesgo de los conductores. A pesar de los potenciales beneficios del uso masivo del alcolock, sigue siendo poco utilizado por los jueces.**

Conclusiones: **Las posibles consecuencias de la implementación del alcolock son prometedoras, porque son relativamente baratas y ofrecen un método tanto para predecir como para controlar a los conductores ebrios convictos (es decir, sancionados por conducir bajo los efectos del alcohol y a los que generalmente se les retira el carné de circulación). Hasta que no haya más alcolocks en funcionamiento no habrá reducciones sustanciales en los niveles de conducción bajo el efecto del alcohol. Es por ello que es prematuro especular sobre el potencial efecto global del alcolock y su contribución a la seguridad vial.**

Palabras clave: Alcohol. Alcolocks. Reincidencia. Conducir bajo los efectos del alcohol.

Introduction

In the past 25 years, there has been a large reduction in the proportion of all roadway deaths that are caused by alcohol. The evidence supporting this claim has recently been reviewed by a multinational panel[1]. Most understand these improvements to have been consequent to better laws, better enforcement, and more public demand for safer roads throughout the industrialized world. Nonetheless, in the majority of developed nations, the proportion of roadway deaths that involve alcohol still ranges between 20-40% of all fatal crashes.

In transitional or developing nations, data quality is poor so while there are often high rates of total road crashes, it is difficult to estimate the role played by alcohol. However, there is little doubt of the vast global public safety consequences of alcohol. Margie Peden of the World Health Organization has estimated that 1.2 million people worldwide die each year from alcohol-related roadway crashes, and another 20-40 million are injured. A great many nations are searching for ways to reduce those numbers.

In the USA, alcohol-impaired driving contributes to the death of 18,000 people annually, and this represents approximately 40% of all fatal crashes. Many approaches to intervention have been attempted. A technological approach that has been shown to have significant success in some populations is use of alcohol ignition interlock programs. The alcohol ignition interlock is a DWI (driving while impaired) control device that when installed in a car will prevent a car's engine from starting until the driver blows into a sensor with a breath alcohol concentration (BAC) less than a set level, usually .02% (20 mg/dl) to .04% (40 mg/dl). Several evaluation studies have determined that ignition interlock programs lead to 40-90% reductions in DWI re-arrest while the devices are installed[2].

It is common to distinguish between the device (the interlock) and the program (a supportive education and counseling adjunct to the interlock). Most all agree that the programmatic support is a necessary element in the success of this approach. The first interlock program was begun as a pilot test in California in 1986; today all but a few U.S. states and Canadian provinces have laws that support interlock programs. In virtually all the North American programs, the interlocks are used with convicted DWI offenders.

Sweden has recently implemented a nationwide interlock program that includes a primary prevention effort with commercial fleets such as buses or trucks (whose drivers have not been selected for the interlock on the basis of prior alcohol problems). Other nations of the European Union and as well as several Australian States are testing interlock programs on a small scale or through pilot research. All of the nations that have ongoing ignition interlock programs are affluent democracies, although the costs of the interlock programs are generally very low compared to the cost of alcohol. In all the places where interlocks are used because of a DWI arrest, the cost of the interlock program is borne by the person convicted of DWI. In U.S. dollars the cost is about $2.20/day in addition to a one-time charge of approximately $125 to install the devices. In North America, Australia, and Western Europe, the economics of interlock programs make sense because the driver pays, and the daily cost of a lease fee is about the price of one alcohol drink per day. In some places, such as the state of New Mexico in the United States,

everyone who installs an interlock pays a 10% fee that supports a fund used to offset the interlock costs of people with little money.

Even so, adoption of interlock programs has been slow in most states. The devices have been available for almost 20 years now and the overall usage rate is only about 5% of those arrested for DWI in the United States. Some areas such as New Mexico and Quebec in Canada have installation rates higher than 25%, but these are the exceptions. Whether interlock programs can help public policymakers achieve the goals of substantially reducing alcohol crashes will remain uncertain until procedural barriers and slowly changing judicial practices allow for more routine use of the interlock. Despite strong effectiveness evidence in all studies to date, the real potential of this technology to reduce the road toll still cannot be estimated with certainty until there is more widespread adoption. Many people see the judiciary as the primary barrier because change is adopted very slowly by the courts. For example, in a sample of California DWI offenders, DeYoung[3] reported that just 10% of eligible offenders were ordered by the courts to install an interlock and only 22% of those complied, a net yield of about 2.2%. To gain participation in voluntary programs, offenders must be encouraged to elect the interlock through incentives such as a reduction in the period of license suspension. However, the courts do seem to be slowly adopting interlock as an option, and in some areas, interest is growing. It is most frequently selected when the alternative is more restrictive.

The usual length of sentences required by courts or motor vehicle authorities is 6-12 months. Increasingly, very high-risk drivers are being required to use the interlock for 2 or more years, or even indefinitely. Some safety researchers believe that it is better to have a high-risk drinking driver controlled by an alcohol interlock than for them to be unlicensed, uninsured, and unrestrained. Simply taking away the driver's license does not prevent driving, or drinking. With a legal ignition interlock device, a driver also becomes eligible for liability insurance. The practical meaning of this is that if a car crash does occur, there is a much better chance that a victim of the crash can be compensated and any injury costs paid by the person at fault. There is no solid evidence yet that alcohol interlock programs lower crash risk overall, but with the interlock, there is a much lower likelihood that alcohol will have been a causal factor if a crash does occur.

With that introduction, the following reviews some of the background and evidence that warrants interest in alcohol ignition interlock devices, or «alcolocks» as they are referred to in some European nations.

Operation, standards and equipment

The current alcohol interlock systems consist of a small breath-testing device linked to the vehicle ignition system that requires the driver to provide a breath sample every time an attempt is made to start the vehicle. The interlock device prevents the vehicle from being started unless the driver provides a breath sample that reveals an alcohol concentration lower than the present threshold value — often .02% (20 mg/dl), but sometimes up to .04% (40 mg/dl); the National Highway Traffic Safety Administration (NHTSA) U.S. Guidelines suggest .025% (25 mg/dl). In the event the breath sample reveals a BAC in excess of the threshold value, the interlock prevents the vehicle from starting and the driver must wait awhile before trying again. After several failed attempts, the interlock goes into an extended lockout period.

At least four government agencies have established standards or guidelines for interlock devices[4-7]. NHTSA guidelines[5] will be revised and updated in 2005. Devices that meet these standards provide assurance to both the public and users that the device performs as expected and desired. For example, the current generation of interlock devices use a fuel-cell sensor that is specific to alcohol (i.e., it eliminates false positive readings due to other organic hydrocarbons as often occurred with the original Taguchi Cell semiconductor devices) and is capable of preventing engine ignition more than 90% of the time when the individual's actual BAC is .01% higher than the threshold BAC. Even under extreme conditions (e.g., temperature of –40ºC), a person with a BAC of .06% would be prevented from starting the vehicle 98% of the time. In such extreme temperatures, the sampling head needs to be heated to within a workable range before the devices are ready for use.

Concern continues to be expressed about the possibility of circumventing the device by tampering with the circuitry, introducing a bogus air sample, or filtering the sample to remove some of the alcohol. Protection against potential circumvention of the device is also required by the standards. To meet these standards and depending on the jurisdiction, interlock devices contain such features as temperature and pressure sensors (to guard against filtered or stored samples or samples introduced by mechanical devices), a data recorder (to log all attempts to start

the vehicle as well as to record the driver's BAC), and a running retest requirement (to limit the benefit if a bystander were to provide a startup breath sample, and to limit the benefit of leaving the car idling for extended periods).

These features have helped to create an interlock device that does exactly what it is intended and expected to do (i.e., prevent drivers impaired by alcohol from operating the vehicle in which it is installed). Most interlocks are quite accurate considering the relatively harsh operating environment to which vehicles are exposed. These are not field forensic test devices; they are simply expected to prevent impaired driving, and they do.

Effectiveness of interlock programs

Since the first interlock program was introduced in California almost 20 years ago, several studies have evaluated the effectiveness of using interlock programs as a means to incapacitate convicted DWI offenders and prevent repeat DWI offenses. Table 1 summarizes the results of the evaluation studies of interlock programs published to date.

All of the evaluation studies of alcohol ignition interlock programs have methodological limitations. Only one study[8] has been a random assignment study, and that one used a somewhat atypical (high severity sample that had been approved for research by a medical review board). In general, the evaluation of road safety policies and programs is often constrained by a variety of factors, including the type and quality of data available, inability to exercise control over and/or account for extraneous events, and the difficulty in obtaining adequate comparison groups. This is a simple reality of applied safety research, and the constraints are not unique to interlock studies.

The generally positive findings from evaluation studies on a variety of interlock programs examining different populations of offenders for various lengths of time suggests that the effect of interlock programs is robust. The magnitude of the effect, however, varies considerably. To some extent, the measured impact may be related to specific operational aspects of the program, the types of offenders who participate in the program, as well as the research design used to evaluate the program.

It is equally apparent that there is very little residual effect that prevents impaired driving after the device is removed. This latter finding has been disappointing to those who imagined the interlock device would change behavior without further supportive intervention services. The existing studies clearly indicate that the reduction in recidivism among interlock participants is limited to the period of interlock installation, or at best, for a limited time thereafter.

The fact that most studies show that re-arrest rates return to the expected range following removal of the interlock does not reflect poorly on the efficacy of interlock programs but rather the difficulty of real behavior change, something very familiar to the psychological services community. Even though repeat offense rates climb after the interlock is removed, not all is lost. For example, the 3-year cumulative re-offense rate (minimum 2 years of the interlock program completion) for first-time offenders in the Alberta interlock program was 15.3 offenses per 1,000 drivers, compared to 43.8 for suspended drivers who did not participate in an interlock program[9]. A 5-year cumulative re-offense rate of 63 offenses per 1,000 drivers for repeat offenders who participated in the interlock program was about half that of eligible non-participants who accumulated 130 offenses per 1,000 drivers over a 5-year period.

Second, the interlock device can only prevent impaired driving while it is installed in the vehicle. Long-term behavior change is an elusive goal of many countermeasures and sanctions including license suspension and jail. If the factors that give rise to the drinking-driving behavior do not change during the interlock period, it is likely that the behavior will re-appear once the physical barrier (i.e., the interlock) preventing it is removed. It is important to remember that many DWI offenders, including those who participate in interlock programs, have behavior consistent with clinical diagnoses of alcohol abuse or dependence. The installation of an alcohol ignition interlock does not change this situation; it merely prevents the individual from operating the vehicle after drinking. Interlocks were never intended as a treatment for alcohol abuse; therefore, it should not be expected that installation and use of an interlock device will, by itself, prompt a change in the extent of alcohol consumption. Also, there is some evidence that repeat offenders may be less capable of benefiting from conventional intervention services. Glass et al[10] reported that in an evaluation of 134 second-offender volunteers, 73% tested as having one or more significant cognitive impairments. Special needs treatment services that can work with short attention spans, poor memory, and lack of impulse control may be required to really help this population. There should be ways in which treatment services for alcohol dependence can improve success rates if treatment plans and

Table 1. Summary of Interlock Evaluation Studies

Authors/year	Jurisdiction	Characteristics of population	Findings: recidivism with interlock	Findings: recidivism after interlock	Comparison group
EMT Group (1990)[27]	California	First and multiple	Interlock 3.9% Noninterlocks 5.9%	–	Suspended
Elliot & Morse (1993)[28]	Cincinnati, Ohio	First offenders over .20% BAC plus multiple offenders	Interlock 2.9% Noninterlocks 8.4%	Interlock 6.6% Noninterlocks 6.5%	Suspended
Jones (1993)[29]	Oregon	Multiple offenders	Interlock 5% Noninterlocks 8%	Interlock 10.8% Noninterlocks 11.5%	Restricted
Popkin et al, (1993)[30]	North Carolina	Second offenders	Interlock 2.7% Restricted 7.1% Suspended 9.8%	Interlock same or higher than noninterlock	Restricted license & suspended
Weinrath (1997)[31]	Alberta	Multiple offenders	Interlock 10% Noninterlocks 25%	Interlock 7% Noninterlocks 11%	Suspended
Tippetts & Voas (1997)[32]	West Virginia	First and second offenders	Interlock 1.6% Noninterlocks 6.4%	Interlock 10% Noninterlocks 10%	Licensed & suspended
Beck et al (1999)[8]	Maryland (Random assignment)	Multiple offenders	Interlock 2.4% Noninterlocks 6.7%	Interlock 3.5% Noninterlocks 2.6%	Licensed
Voas et al (1999)[9]	Alberta	First offenders	(12 months) Interlock 0.1% Suspended 2.23% Ineligible 4.61%	Interlock 2.75% Reinstated 2.63% Still Suspended 2.48%	Reinstated & ineligible
		Multiple offenders	(24 months) Interlock 0.85% Suspended 8.08% Ineligible 18.72%	Interlock 7.05% Reinstated 7.32% Still Suspended 3.94% Ineligible 10.52%	Reinstated & ineligible
Vezina (2002)[33]	Quebec	First & repeat offenders	1st (12 months) Interlock <.5% suspended 2% 2nd (24 months) Interlock < 2% Suspended 6%	24 months interlock 4% suspended 5% 36 months interlock 4% suspended 7%	Suspended
Frank et al (2002)[34]	Illinois	Multiple	Interlock 1.3% restricted 6.8%	Interlock 1.7% restricted 2.0%	Restricted
Bjerre (2003)[35]	Sweden	First & Multiple	Interlock 0% Revoked 2.9% Matched 1.6%	–	Revoked & matched

Source: Beirness & Marques (2004)[35].

monitoring are integrated with the alcohol interlock data record to promptly detect and deal with lapses in alcohol control or abstinence.

Maximizing the benefit

Research studies have taken two approaches to strengthen the interlock experience for long-term benefit. These steps include improving the quality, immediacy, and appropriateness of *counseling intervention services* while an offender is the «captive» of an interlock program, and improving the *predictive models* to the judicial or motor vehicle authority can anticipate which offenders pose the highest risks to the public if they became fully relicensed and no longer controlled by an interlock program. The ability to predict high-risk offenders is greatly improved by using data captured in the interlock's recorder, which logs every start attempt and BAC test result while the interlock is in use.

Counseling intervention services

Marques et al[11] reported results from a two-city comparison in which 610 interlock offenders in Calgary, Alberta, received an adjunctive intervention during each monthly visit to the interlock service center, whereas 747 offenders in the Edmonton area did not. Edmonton, Alberta, is a city of comparable size and approximate demographic makeup. The intervention was a composite of motivational enhancement, pragmatic counseling, and anticipatory planning for life after the interlock[12]. Among those in the intervention site, a 50% reduction in recidivism rates of first offenders relative to the comparison first offenders was found during the first 12 months after the interlock was removed (odds ratio = .46); no comparable effect was documented for multiple offenders. Because intervention and city varied together, it is not possible to confidently attribute the difference to the intervention protocol. However, it brings some suggestion that behavior can be affected at least temporarily to forestall the return to impaired driving after the interlock benefit. The intervention could not be uniformly applied to all interlock clients since they were not ordered by the court to participate. More than 80% agreed to be in the study, but once in, commitment to the program varied widely.

In an effort to deliver a more systematic and fully specified intervention protocol, a motivational enhancement intervention for interlock offenders was devised and built around the motivational model[13]; this project is currently under evaluation in Texas. In this case, the sentencing judges who are complying with the protocol require the offender to install the interlock and to attend the SIP (Support for Interlock Planning) intervention. The intervention combines 12 hours of services delivered in both group and individual session formats. The group component of this study represents the first time interlock offenders have been brought together for group sessions. The protocols are fully specified with Provider Manuals in English and Participant Manuals in English and Spanish[14,15] and can be found at http://www.pire.org/SIPManuals.htm. At this time, it is premature to speculate about the long-term impact, however, intermediate indicators from pre-post survey instruments (Drinkers Inventory of Consequences [DrinC])[16], and the Alcohol Use Disorders Inventory (AUDIT)[17] show significant changes in drinking level and drinking consequences following the intervention (effect size estimates from Cohen's d range from .61 to 1.4). Anecdotal reports suggest this pragmatic model of reconsidering the costs and benefits of drinking and driving appeals to the offenders. It has been very encouraging to learn that the DWI offenders find the program to be a great benefit overall. Whether this translates into a reduction in impaired driving has not yet been determined.

Predictive models

Our group has shown that the rate of elevated interlock BAC tests strongly predicts the likelihood of future impaired driving convictions during the first 2 years after the interlock is removed. This discovery was first documented in Alberta from data of 2,200 offenders who provided 5.5 million BAC tests[2] and subsequently confirmed in Quebec with 7,200 offenders based on 18.8 million breath tests[18]. The rate of interlock BAC tests that are elevated above .02% (20 mg/dl) relative to all tests taken strongly predicts repeat DWI likelihood. An evaluation of the relative potency of this effect relative to other known predictors of repeat offending found it to be the best advance indicator yet identified[19], better than prior DWI offenses, moving violations, driving-while-suspended charges, as well as demographic and questionnaire-based information. An indicator like this has particular merit for first-time DWI offenders on whom there is often little advance indication of whether an individual will pose a public hazard if he or she receives an unrestricted license.

Further analyses of both the Alberta and Quebec data confirmed that in these linguistically and culturally distinctive provinces, the occurrence of elevated tests during the morning hours adds substantially to a predictive model for future DWI offenses. While the overall highest number of BAC tests taken occurs in late afternoon around 5 p.m., the highest number of tests with BAC ≥ .02% occurred between 7-8 a.m. on working week mornings (Monday-Friday). These elevated tests reflect the unmetabolized ethanol from a prior night of drinking, and are unobtrusive indicators of level of drinking. Knowing which offenders logged two or more elevated BAC test results during the morning hours strengthened the predictive model by another 45% after accounting for all other factors[19,20], including prior DWI status. The data in Figure 1 demonstrate prediction based on more than 18 million breath tests of 7,200 offenders and shows the relationship between repeat DWI convictions at 24 months after relicensing and the proportion of all BAC tests >.02% (20 mg/dl) while the interlock was still controlling the driving of the individual.

Other advance indicators of drinking problem level will still need to be available. So far, alcohol biomarkers have seen virtually no systematic use in North America but are increasingly used in Europe[21,22] as part of driver fitness decisions. These biomarkers, such as carbohydrate deficient transferrin (CDT) or gamma glutamyltransferase (GGT), are durable indicators of ethanol exposure that can be measured in blood from days to several weeks after drinking. People with high levels of exposure, beginning at 5 drinks per day (60 g ETOH) for a week or more will activate one or more of these indicators. Newer non-oxidative direct ethanol metabolites[23] that are found in blood, urine, or hair are generating much interest as rapid indicators of relapse in patients who are undergoing ethanol dependence treatment. Also, discovery that fatty acid ethyl esters (FAEE), byproducts of ethanol metabolism sequester in the growing hair shaft, provides promising new assessment tools to document exposure[24] and in time may add useful risk indicators to relicensing decisions.

The major difficulty with all of these novel technological approaches to detecting driver risk or intervening to rehabilitate drivers is the importance of finding a way to do so without forcing more high-risk drivers out of compliance, and into the decision that it is simply easier to drive while suspended or revoked. However, it is very clear that the interests of the alcohol treatment community and the public safety community can be more fully joined around the alcohol interlock whether the motive is to rehabilitate the individual, improve road safety by preventing injury of the innocent, or both. Alcohol ignition interlock devices are simply a form of incapacitation (i.e., an elec-

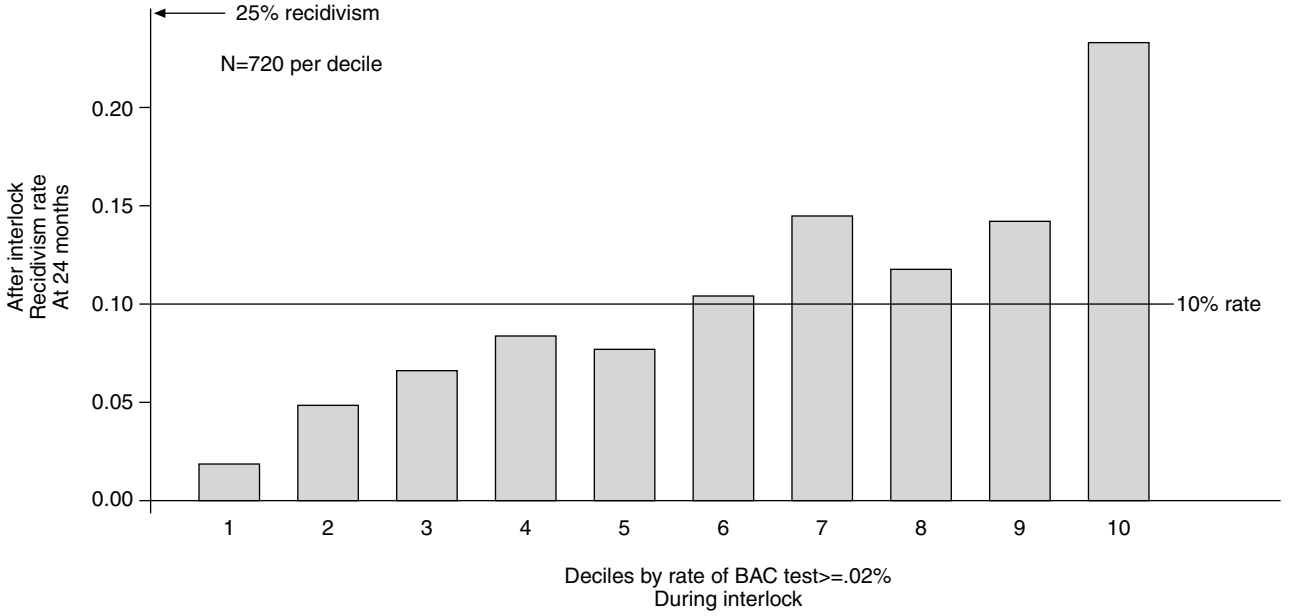

Figure 1. Rate of elevated BAC tests while using interlock of ten groups (720 per group) and their later recidivism 24 months after relicensing.

tronic device intended to prevent a reoccurrence of drinking-driving behavior). But when used as an electronic monitor, it is fully in the traditional of other forms of behavioral monitoring.

Traditional thinking may be a barrier

A significant barrier to more widespread adoption and implementation of interlock programs is the traditional criminal justice perspective on the DWI problem. Over the past two decades, much effort has been devoted to convincing the general public, legislators, administrators, policy-makers, and judges of the seriousness of alcohol impaired driving behavior. The results of these efforts have been numerous legislative amendments increasing the sanctions for a DWI conviction. The association between more severe sanctions and the reductions in the number of deaths and serious injuries in alcohol-involved collisions during the 1980s has helped firmly entrench a criminal justice perspective on the problem and how to deal with offenders. Acceptance of interlock programs requires an adjustment to the mindset of criminal retribution.

This should be no surprise since retribution and punishment are the hallmarks of our criminal justice system. The underlying rationale for sentencing is often simplistic (i.e., the more serious the behavior, the more severe the sanction). This tacitly endorses the idea that if sanctions are strong enough, the offender will be less likely to engage in further instances of the behavior. That formula may work for some problems, but short of jail or electronic house arrest, there are few effective ways to enforce long periods of license suspension. If there were, unlicensed driving would not be among the largest problem confronting the highway safety community. A stark example of this problem comes from California where only 16% of suspended offenders even bothered to reinstate their licenses within a year of their eligibility[25]. The risk of detection or apprehension is very low.

As a historical note, getting the courts and motor vehicle authorities to adopt license suspension following a DWI represented an important achievement of the safety community years ago. Previously, DWI charges were not taken very seriously at all. But now license suspension is embedded as a cornerstone sanction for DWI offenses. An unyielding belief that license suspension is the key effective sanction has fueled a continuous push in the direction of ever-increasing lengths of license suspension. In Ontario, Canada, for example, a third-time DWI offense results in a lifetime suspension that might, if conditions are met, be reducible to a 10-year suspension. There is little evidence that identifies the optimal length of license suspension or the effectiveness of longer versus shorter periods of suspension. On the other hand, it appears that suspended drivers quickly learn that the probability of being caught driving while suspended is exceptionally low. And with the high reconviction rates among the suspended control groups in interlock evaluation studies, many suspended drivers drink as well as drive illegally.

Long suspension periods remain because policymakers and politicians are afraid of being perceived as «going soft» on DWI offenders. The public has come to expect tough sanctions, and it appears that supporting interlock programs is a political risk many are unwilling to take. Few judges or legislators want to be seen as coddling criminals.

The successful adoption of interlock programs requires a change in the traditional criminal justice mindset that views punishment as the ultimate societal response to criminal behavior. Even within the legal community, there is a move to more actively embrace «therapeutic jurisprudence.» This is an approach that grows from the understanding that society is best served when our institutions can improve human behavior. Interlock programs may be able to serve the interests of both the sanctioning and the helping functions of society[26]. Their best use is less as a punishment for past DWI but more as a shield to protect the public. Although there are punitive aspects of participating in an interlock program, the primary goal is incapacitation (i.e., it serves to prevent subsequent offenses by placing a physical barrier between the drinker and the operation of the vehicle). Interlock programs can co-exist with license suspensions. In fact, interlock programs can actually extend the time offenders are under some sort of supervision and control —either by the courts or the licensing authorities. At the same time, however, the interlock allows offenders to drive when they have not been drinking. It is this latter aspect of interlocks that goes beyond traditional notions of crime and punishment.

Interlock programs only provide a limited incapacitation (because offenders can always choose to drive a different car), but it also brings an excellent opportunity for rehabilitation while the offender is under the control of the interlock program. Allowing the DWI offenders the opportunity to drive when they have not been drinking is often perceived as

violating a sacred principle of the punitive approach to such behavior. Acceptance of interlock programs requires that administrators, judges, policy-makers, and others relax their exclusive reliance on the criminal justice perspective for dealing with DWI offenders and focus less on punishing offenders and more on incapacitation, rehabilitation, and public safety. Drinking and driving is a problem that lies at the intersection of the punishing and helping branches of society. Treating DWI as solely a criminal problem squanders an opportunity to bring more of our societal capabilities to resolve it. An interlock program may be the ideal bridge technology.

Conclusion

Almost 20 years beyond their initial field trials in several California counties, interlock devices and programs have reached a high level of maturity. Penetration into state and provincial legislation in the United States and Canada has been thorough, and supporting federal legislation endorsed them in both countries. Following the North American evidence and Sweden's move to embrace a national interlock program, the European Union has moved to implement field trials. In North America, despite supportive legislation, the level of adoption of interlocks by courts continues to be disappointingly low with well under 10% of the DWI offenders using them.

Interlock research has identified promising ways in which a benefit might be extended beyond the period of active installed use, as well as approaches to identify in advance those DWI offenders whose drinking patterns render them unsuited for full relicensing without extended continuation of an interlock restriction. However, the potential social benefits may not accrue if the application of this technology to DWI control is not embraced by more courts, or until more creative legislation is written by governments.

Researchers will need to continue to evaluate interlock effectiveness evidence to determine if interlock program can reduce recidivism systemwide, not just in small programs, and no one has yet documented an overall crash reduction due to interlocks although alcohol-related crashes are almost certainly reduced. Much more needs to be done to enhance the impact of interlock programs through integration with other countermeasure programs, most notably alcohol treatment and rehabilitation.

The widespread adoption of interlock programs may require a fundamental revision of the traditional criminal justice approach to dealing with DWI offenders. There is a need to move beyond the crime and punishment mentality that has been pervasive in this field for many years. Strongly punitive sanctions are not the answer; they make the problem worse by creating an incentive for unlicensed driving. In this context, implementing an interlock program solely as yet another form of punishment squanders an opportunity. The primary function of an interlock is as a means of incapacitation — to prevent repeat occurrences of the drinking-driving behavior. But the interlock also allows for socially responsible behavior such as driving to work and participating in family life. For those who feel it is important to punish DWI offenders, they should know there are significant punitive aspects to interlocks. They are inconvenient and often embarrassing, and they impose a monetary cost on the offender equivalent to about $2/day. In most implementations of the interlock, the driver must blow a running breath sample on an average of about every 30 minutes.

An interlock program also requires some level of administrative control and monitoring. We have found that motivational intervention programs linked to an interlock can make good use of the dual functions of control and monitoring that are part of the interlock program. Alcohol-impaired driving is a problem in nearly all societies of the world. All struggle with different local features of the problem, but ultimately, we all would like to rehabilitate the drinker, whether for humanitarian or pragmatic reasons, because that will help improve the public good.

An approach that incorporates a balance of sanctions, incapacitation, and rehabilitation may help us achieve both safety and humanitarian objectives. Interlocks can play a valuable role in achieving therapeutic jurisprudence, in which the punishment serves the goals of rehabilitation along with improved individual health and improved public safety. DWI is a problem that exists at the intersection of health behavior and criminal behavior; we will benefit if our societal approach recognizes both parts of it and intervenes appropriately.

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