

## Five levels of interlock program monitoring

Voas, R., Kelley-Baker, T., & Taylor, E.

Pacific Institute for Research and Evaluation

### Abstract

Numerous studies have demonstrated that vehicle alcohol ignition interlocks while installed on the cars of impaired-driving offenders reduce recidivism by approximately two-thirds in comparison to similar offenders whose licenses have been suspended. An unresolved issue is the extent to which the effectiveness of interlock programs can be improved by close monitoring of the offenders performance while in the program. This paper describes five types of monitoring currently being used in interlock programs in the United States. The programs reviewed vary from those that simply ensure that the interlock is on the offender's vehicle and functioning, to those that use the interlock log data to extend the length of time the offender is required to be in the interlock program, and those that use the interlock data to initiate special monitoring and treatment programs that must be completed before removal of the interlock device. The strengths and limitations of each type of program are described. Also reviewed are current technological developments that appear to be leading to the development of fully automated interlock-monitoring systems. Initial evidence shows that more intensive monitoring provides benefits in improved performance on the interlock as indicated by fewer high BAC breath tests when attempting to drive. More intensive supervision, although effective, increases government program costs. The relative cost effectiveness of the differing types of monitoring requires investigation. Treatment programs need to be integrated with the interlock installation period. New technologies can potentially reduce interlock offender monitoring costs and effectiveness. Integrating treatment with interlock could have post interlock benefits.

### Introduction

The arrest and conviction of an impaired driver places the responsibility on the government to take two key actions: protect the driving public from the high risk presented by an offender's impaired driving and take action to modify the offender's behavior to reduce that risk. In the past, controlling the risks to other motorists presented by the convicted drinking driver has generally taken two forms: the suspension of driving privileges by motor vehicle departments (MVDs) and/or the placement of the offender on some type of probation supervision by the courts. Neither of these has been fully satisfactory. Although inexpensive to administer, license suspension has not been fully effective in the United States because up to three quarters of suspended drivers continue to operate their vehicles illicitly to some extent (McCartt, Geary, & Nissen, 2002; Ross & Gonzales, 1988). Further, many courts lack the number of probation officers required to provide intensive supervision of DWI offenders on probation. Beginning with the advent of electronic home confinement along with blood alcohol concentration (BAC) monitoring in the 1980s, the technology for intensive monitoring of offenders in community corrections programs has been growing rapidly. In the last decade, GPS (Global Positioning System) monitoring of the location of an interlock-equipped vehicle and the ability to monitor BAC levels from the surface of the skin have been added to the technologies available to the government to manage driving-while-impaired (DWI) offenders.

### *Handling the Extensive Data*

A feature of these technologies is that they generate a massive amount of data, much of which is unnecessary to the primary purpose of incapacitating the offender from high-risk behaviors but may be of some value in education and treatment efforts to modify offender behavior to prevent future offenses. To date, relatively little use has been made of this auxiliary information in treatment and

education programs for DWI offenders. Interlock devices typically document five to six breath tests a day, a rich source for following the adaptation of offenders to being unable to start their vehicles following drinking. Among the drinking-problem measures provided by the interlock record system are early-morning positive breath-tests that indicate heavy late-night drinking; information potentially useful to the therapist in treatment programs. Monthly or bi-monthly log reports from such systems allow therapists to break through denial and assist the patient in confronting his or her drinking patterns and problems. Similarly, such information is potentially useful to probation officers in gauging the status of the offenders they are supervising and the possible need for a treatment intervention.

Although the data required for monitoring DWI offenders can be easily summarized and delivered with relatively simple algorithms, examining the auxiliary details likely to be relevant in treatment programs requires more subtle analysis, potentially consuming substantial time from the monitoring officer or treatment specialist. This raises the issue of the costs and benefits of various approaches to monitoring offenders and has led to a substantial variation in the level of monitoring currently used by courts and MVDs in the United States. This paper attempts to describe the major types of monitoring being applied to interlock programs in the USA and assesses their advantages and limitations for managing DWI offenders.

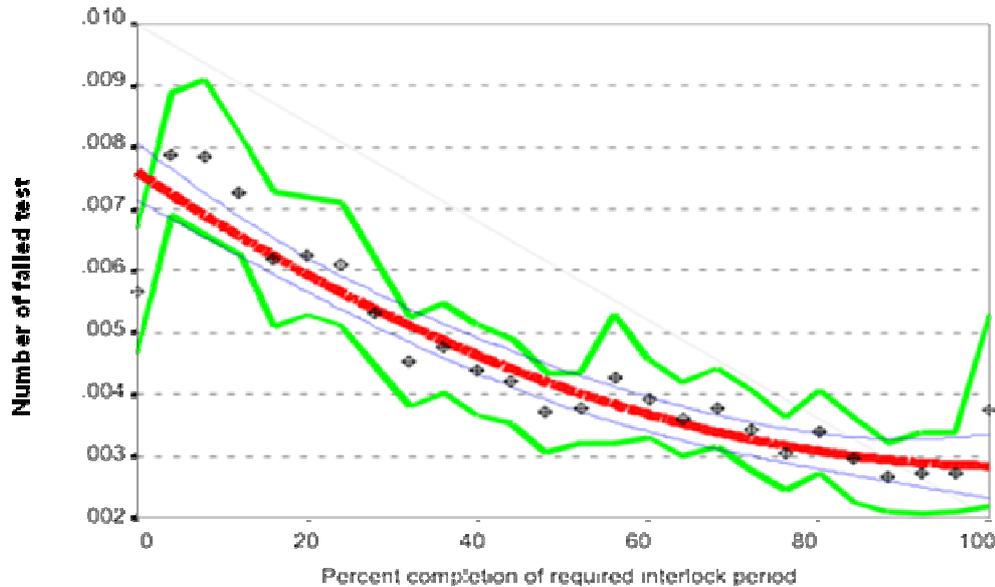
### ***Use of Interlocks Growing Rapidly***

Extensive evidence shows that interlocks while on the vehicle reduce recidivism by approximately two-thirds (Elder et al., 2011; Willis, Lybrand, & Bellamy, 2004), and interlocks have been shown to be cost-effective, providing \$7 in benefits for each dollar invested in the program (Miller & Levy, 2000). Consequently, their use has been expanding rapidly with the number in use in the USA approaching 300,000 (Marques & Voas, 2013), about one-third of the 1 million drivers convicted (out of the 1.4 million arrested) each year for impaired driving in the United States. All 50 states have some legislation providing for the use of interlocks (<http://www.ncsl.org/issues-research/transport/state-ignition-interlock-laws.aspx>). A substantial effort is being made in the USA to promote policies aimed at requiring all DWI offenders to install interlocks. That policy is being supported by the National Highway Traffic Safety Administration, and it is a major objective of Mothers Against Drunk Driving (MADD).

In addition to increasing the number of DWI offenders covered by interlock laws, there are three basic opportunities for increasing the effectiveness of interlocks: (a) increase the effectiveness of the interlock for reducing recidivism while installed on the offender's vehicle, (b) extend the time that the offender is required to drive with the interlock, and (c) increase the effectiveness of the interlock in reducing recidivism following removal of the device. All of these can be influenced by the amount of time the user is monitored. Currently, the greatest limitation on the effectiveness of interlocks is that their incapacitation effect is present only while the interlock device is on the vehicle. As interlock sanction programs generally provide for only relatively short periods (generally from 6 months for first offenders to 2 years for multiple offenders) on an interlock, they limit the offender's risk for only a small portion of a lifetime of driving that follows conviction. It is this lack of carryover that most suggests the need for developing more effective monitoring, education, and treatment programs to produce lasting behavioral change.

### ***Significance of Learning***

There is evidence that most interlock users reduce the frequency of lockouts over the time period the interlock is installed on their vehicles (see Figure 1). This does not appear to be due to a reduction in total driving, as the number of vehicle starts and breath tests remain relatively constant through the interlock period (Marques et al., 2010; Marques, Voas, Tippetts, & Beirness, 1999).



**Figure 3. The reduction in the number of failed tests provides evidence of learning during interlock program (Source: Marques, et al., 1999)**

This evidence of offenders gaining better control of lockouts as time goes on without reducing driving frequency is particularly interesting given that there is also evidence that offenders on interlocks do not reduce their drinking. Marques et al. (2010) measured biomarkers produced by alcohol metabolism at the beginning and the end of the interlock period for 300 first and multiple DWI offenders in Canada and found that, although the offenders controlled their drinking to avoid lockouts, their total alcohol consumption measured by alcohol biomarkers, did not change while they were on the interlock. This suggests that they were successful in rearranging drinking in relation to their driving to accommodate the interlock without reducing their total consumption. Thus, the evidence shows that offenders can accommodate to the interlock both in their driving and in their drinking without reducing either activity. However, this behavior does not continue into the postinterlock period, as recidivism rises markedly once the device is removed (Voas & Tippetts, 2012).

### **Five Classes of Interlock-Monitoring Programs**

Based on evidence that the number of lockouts is related to recidivism risk (Marques et al., 2001), some interlock-monitoring programs are designed to speed the learning process by increasing the severity of the sanction for failed BAC tests (lockouts). However, it remains to be determined whether forcing avoidance of lockouts reduces long-term recidivism; therefore, it is important to examine the effect of the various monitoring methods on offenders' progress in learning to live with the interlock. Thus, the key issue for interlock monitoring is the significance of this learning process to future recidivism, and if significant, how speedier and more complete learning can be encouraged while the interlock is installed on offenders' vehicles and how the learned behavior can be extended into the postinterlock period. Little information is available on these questions. With these caveats in mind, we describe five monitoring systems.

#### ***Programs Based on Minimal Integrity Monitoring***

The minimal level of monitoring interlock programs is to ensure that the device is on the offender's vehicle and is functioning correctly. Because the interlock has a built-in enforcement system, the lockout that prevents engine ignition has three basic features required for behavior modification based on deterrence theory (Ross, 1982): (a) a significant penalty—being unable to start the car, though relatively mild, is sufficiently annoying to motivate avoidance; (b) a high (essentially 100%)

probability of being imposed; and (c) a high celerity (immediate application of the penalty). Thus, it is self-enforcing as long as it is in place and functioning. Courts and states vary in the extent to which they require information beyond evidence that the unit is operating appropriately. In New Mexico, for instance, while some courts intensively monitor offenders on interlocks, the motor vehicle department administrative program provides that any DWI offender whose driver's license has been suspended can install an interlock and receive a limited license to operate the interlock-equipped vehicle. Other than ensuring that the interlock is installed on the vehicle for the appropriate time period and requiring notification of tampering by interlock service providers, no effort is made by the program staff to monitor interlock log data and the offender's performance. The interlock device monitors offender behavior in a sense as it is set to trigger an early recall (earlier than every 30 days) for service after a certain number of failed tests, missed or failed retests, and/or a missed service appointment. A significant limitation, as in any interlock program, is that there is currently no effective way to detect the driving of non-interlock-equipped vehicles other than apprehension for a traffic violation, which results in the detection of illicit driving. Roth, Marques, and Voas (2007) found in a sample of New Mexico drivers on interlocks that 1.9% were rearrested for DWI while driving vehicles without an interlock. That was 76% of all the interlocked offenders rearrested. Efforts to detect the use of a non-interlock-equipped vehicle have been limited to flagging low mileage based on odometer readings taken during service visits or a low number of vehicle starts each month. Recently, as described below, some DWI courts have required interlock users to take a daily breath test even if not driving in an effort to ensure the offender's drinking is limited. While this does not prevent the driving of a non-interlock car, it could prevent driving while impaired in a non-interlocked car. To limit the availability of non-interlock-equipped cars, the NHTSA requires that programs receiving federal interlock grant funds mandate that all vehicles registered by an offender have an interlock. Some jurisdictions have gone beyond this requirement to require statements from other household members. In Massachusetts, interlock users are required to get signed affidavits from other household residents acknowledging that allowing the interlock user to use their vehicle and/or blowing into the device for the interlock user is punishable by fines, jail, and loss of license and registration.

### ***Programs Based on Abstinence Monitoring***

The interlock maintains a log record of all breath tests provided by the driver to start their vehicle and to comply with the rolling retest breath-test requirements. These tests indicate the extent of an offender's drinking. For example, positive early-morning tests may reveal late-night heavy drinking and only positive weekend tests may indicate binge drinking. However, the interlock only records the drinking that occurs in association with driving and, therefore, is not a reliable method for determining overall alcohol consumption. Nevertheless, some judges who make abstinence a condition of probation compliance, may use the interlock data as evidence of a failure to comply and remove the offender from the interlock or apply other sanctions (Marques & Voas, 2010). Florida's administrative program provides an example where abstinence is a requirement for multiple DWI offenders on interlock in its Special Supervision Services (SSS) program. Any verified use of alcohol can be the basis for revoking the interlock permit. The use of the interlock recorder data as a basis for expulsion has been limited, however, by the refusal of the courts to accept the BAC measure provided by the interlock as evidential. Consequently, supervisors must require offenders to report to a lab for an evidential test.

Photo-identification systems, recently added to some interlock units, provide an opportunity to use the vehicle interlock for additional breath tests not related to driving as a method of enforcing abstinence. The state of Michigan has been testing a program that requires offenders to use their interlock device to provide three extra breath tests per day at specified times to monitor drinking, in addition to the breath tests required for driving. A preliminary test found that 70% of the offenders provided and passed all the required extra breath tests. Because of the project's success, the Michigan legislature passed a law expanding the program to all 30 DWI courts in the state

(*Michigan Public Act 154* of 2010). Three tests a day does not guarantee abstinence; however, when combined with an interlock, the use of such additional testing probably minimizes alcohol consumption and the risk of impaired driving in a non-interlock-equipped car.

### ***Programs Providing Intensified Feedback to Users***

In contrast to the programs that provide for minimal integrity monitoring are those that provide intensified feedback to users beyond that involved in response to program violations. One example of this increased feedback occurs in special DWI courts that manage serious multiple offenders facing extended jail terms. DWI courts offer those offenders an opportunity to participate in a 1- to 2-year intensive monitoring program in lieu of serving time in jail. Such programs involve intensive supervision of the offender's alcohol consumption, job status, and attendance at treatment programs with bi-weekly meetings of the DWI Court team (usually the judge, the probation officer, and the treatment specialist) and court hearings before the judge to assess progress in rehabilitation. In a limited number of these programs, the interlock is a feature in the supervision, and the interlock information is examined as part of the assessment of progress and additional sanctions or treatment if warranted.

Outside of the DWI court programs, the standard courts and the MVDs managing administrative interlock programs vary substantially in the extent of their supervision and feedback to interlock users. Recently, Zador et al. (2011) reported on their study of 2,168 DWI offenders randomly assigned to either a special close-monitoring group or a control group receiving the standard management provided by the MVD in the state of Maryland. The close-monitoring group was subject to a series of sanctions based on their interlock performance, ascending from being required to return for provider checks of their interlock to special reviews by MVD monitors that could result in additional treatment requirements or an extension of time on the interlock. Based on the log reports from interlock service providers, the offenders received a series of monthly e-mails initially warning them about sanctions for lockouts and later admonishing them for lockout occurrences. Offenders who avoided lockouts received congratulatory e-mails urging continued safe driving. In comparison to the control group, the closely monitored offenders had fewer lockouts, fewer failures to respond to the rolling retest requirement, and fewer attempts to circumvent the interlock. Although the Zador study did not include a recidivism measure, lockout frequency has been shown to be related to recidivism (Marques, Tippetts, Voas, & Beirness, 2001). The state of Florida regularly provides feedback and intensive monitoring based on interlock performance (Voas, Tippetts, & Grosz, 2013, in press). The first occurrence of a lockout results in a 1-hour interview with a case manager focused on ensuring that the offender understands how the interlock functions and how their bodies absorb and eliminate alcohol. A second lockout leads to being placed in a monitoring program involving monthly meetings with a case manager, including a review of the log data and a plan to prevent further lockouts. The impact of this close-monitoring effort is under evaluation.

### ***Programs with Provider Feedback***

Although offenders pay the cost ( $\approx$ \$70 per month) of the interlock through fees paid to the interlock service provider, local courts or state MVDs that monitor the offender's interlock performance incur costs related to receiving and acting on providers' interlock data reports. The cost to MVDs of monitoring DWI offenders in interlock programs is substantially higher than the cost of managing the records of DWI offenders whose licenses have been suspended. Although the extra expense to the government may be justified by reductions in recidivism (in some cases, the costs are passed on to the offender), the added requirements for administering interlock programs have strained the limited staff available to the courts and the MVDs, resulting in substantial limitations in the quality of the monitoring for some offenders (Zador, et al., 2011). An alternative to having the government

cover the entire cost of a close monitoring effort is to move some elements of the monitoring to the interlock provider so that the offender's fees pay for the service.

The critical and most sensitive monitoring decisions are those that involve increases or reductions in criminal and administrative sanctions that must remain the prerogative of the government. However, much of the information that flows to monitoring authorities is not directly related to such decisions but can be used to educate interlock users, as shown in the Zador et al. study. When, as is already done in some states, the data systems of interlock providers are tasked to filter data to provide only the information specifically needed for formal sanctioning decisions, the burden on the government monitor is reduced. As part of that process, providers can feed information to their clients and to treatment providers. This activity could be expanded to include computer-generated, evidence-based education and prevention materials. This would reduce the burden on government monitors and potentially improve offender performance on the interlock. The technology to conduct such user educational programs exists, but it is not being fully exploited.

Arizona's administrative interlock program is particularly suited to the provision of educational materials based on interlock performance, because only attempts to circumvent the interlock and BAC test failures at or above the .08 illegal limit must be reported to the DMV. This leaves a large area for action by the interlock providers to potentially initiate education and motivational programs to reduce lockouts, and ultimately, the probability of a "recidivist" BAC that must be reported to the state. One interlock provider—Safe Harbor in Scottsdale, Arizona (<http://www.azsafeharbor.net/>)—has been experimenting with fee reductions for months without lockouts or other violations, combined with charging additional fees for lockouts. This approach uses a Web-based "dashboard" system to keep offenders informed of their status, including BAC warnings below .08. Expanding on this type of low-cost incentive and educational system to the government offers the possibility of reducing recidivism while on the interlock and potentially following interlock removal. There may be some increase in the fee to users; however, the cost should be limited because the technology is already in place with most current providers and the benefits to the offender in avoiding additional sanctions and extensions of interlock time may more than balance the increased fees.

### ***Programs Integrated with Treatment***

The failure of the interlock to produce a long-term benefit in recidivism suggests that this incapacitation system does not deal with the underlying drinking problem exhibited by many DWI offenders (Marques & Voas, 2013). Alcohol education and assessment for treatment are standard features of DWI sanctioning programs in all the States. The impact on recidivism is modest, amounting to a reduction of about 9% (Wells-parker, 1994). This limited effectiveness may partly result from the traditional separation of treatment providers from direct participation in management of offenders by most courts and almost all DMVs, which reduces the information monitors receive on the offender's status. The separation also reduces the information treatment providers provide to the court for use in sentencing offenders (Voas & Fisher, 2001). The emergence of DWI courts has tended to break down this barrier, which has resulted in fuller participation of treatment providers in the management of the rehabilitation of DWI offenders. However, this historic separation of treatment providers from court decisions has impeded the integration of treatment programs with community sanction programs. For example, some states require the completion of treatment before installing an interlock, whereas others leave the timing of the treatment up to the offender, in which case it may occur after the interlock requirement has been satisfied. Further, long hard license suspension periods are not conducive to the timing of treatment requirements to coincide with the interlock installation period (Voas, Tippetts, Fisher, & Grosz, 2010). Finally, the limited information required from interlock providers by the courts and MVDs to manage their offenders may not include the details from breath-test results that would be useful to treatment providers and, when provided, may not include timely data in a format that is most useful to treatment specialists.

Several states have had some experience in linking interlock users to treatment programs. In Texas, a pilot joint interlock and motivational intervention program was undertaken between 2000 and 2003 (Timken & Marques, 2001a; 2001b) that provided group and individual counseling built around service provider interlock reports. Participants were presented with their monthly interlock records and were guided to finding actions that would avoid future failed BAC tests. That program has been manualized and as of 2011 is available to DWI offenders on interlock in Colorado (Timken, Nandi, & Marques, 2012a; 2012b). In Virginia, case managers for the State's 24 Alcohol Safety Action Programs (ASAP) supervise all interlocked offenders for the courts and the DMV. They monitor interlock violation data and notify the court of extension actions. When patterns of abuse are evident, ASAP case managers have the authority to require additional education and treatment classes for offenders in interlock programs. In West Virginia, all participants in the interlock program must also enroll in the Alcohol Safety Treatment Program. High BAC readings from the interlock can be reported to the treatment provider. In Maryland, the Medical Review Board can order multiple offenders onto interlocks and set additional treatment requirements for re-licensure.

The State of Florida's administrative program, in conjunction with privately operated DUI schools and treatment providers, has experience with integrating treatment with its interlock program dating back to 2008. It has set an objectively defined condition: the occurrence of a third failed breath test (lockout) triggers a mandatory assignment to a treatment program. The offender's time on the interlock is extended until the treatment program is deemed to be successfully completed by the treatment provider. Therapists, who are certified by the state's mental health department, participate in an interlock orientation workshop and their client's interlock records are made available to them. The extent to which these records are used varies considerably among the therapists, however offenders also see a case manager on a monthly basis to review the interlock logs. The effectiveness of the Florida program is currently under evaluation by the Centers for Disease Control and Prevention.

## **Discussion**

Early interlock programs in the 1990s generally provided for minimum integrity monitoring. It was in such programs that the evidence of offenders learning to avoid lockouts while the device was installed and the evidence for the relationship between lockouts and future recidivism was developed. These phenomena were measured in programs where the sanction—inability to start the vehicle—was modest and where the occurrence of a lockout was not influenced by monitoring activities directed at other objectives, such as maintaining abstinence. The extent to which these results are still applicable to the majority of current interlock programs is questionable; many programs have increased the sanction severity for lockouts by making them the basis for an extension of time on the interlock and/or for requiring attendance at treatment programs. Adding sanctions to the occurrence of lockouts can ultimately become so coercive that individual variation becomes too limited to be useful in predicting recidivism. Research is needed on performance indicators for these more punitive interlock programs. It is important to keep in mind that the Marques et al. biomarker measures were indicators of the extent to which offenders cannot control their level of drinking. Where the locus for individual control is constrained by severe penalties, offenders may want to reduce their risk of experiencing a lockout by other means, such as driving a non-interlock-equipped vehicle.

Programs designed to monitor abstinence have strong potential for protecting the public; however, little is known about their value for supporting DWI offender rehabilitation. Controversy continues on the importance of abstinence in the clinical treatment of alcohol use disorders (AUDs). Most of the multiple offenders and at least a third of the first DWI offenders are diagnosed as having an AUD. The extent to which enforcing abstinence for DWI offenders is therapeutic is unknown. The benefit of enforced abstinence without treatment is particularly questionable, and the benefit for the

reduction of future recidivism has yet to be determined. Abstinence monitoring clearly forces the offender to change drinking behavior and “learn” to live without alcohol. The extent to which this modified behavior carries over following the end of the program remains to be demonstrated. It is clear, however, that abstinence programs will prevent the adaptation of drinking to vehicle operation shown in the “learning” curve in Figure 1 because lockouts cannot occur if the driver is abstinent. The importance of offenders’ adaptation of specific methods for controlling drinking related to driving on long-term recidivism requires study. We need to determine the extent to which abstinence continues beyond interlock program completion. Unless abstinence is extended beyond program termination, the ability to manage alcohol consumption to avoid impaired driving developed during a typical interlock program may be important to safe driving.

The Zador et al. study demonstrated that performance on the interlock could be improved through prevention efforts based on intensified communication with the offenders. These intervention programs consisted of four basic elements: (a) added intermediate sanctions (more frequent maintenance checks and a medical review), (b) initial educational materials, (c) warnings regarding the additional sanctions, and (d) congratulatory messages for avoidance of lockouts. The extent to which each of these elements contributed to the improvement in overall interlock performance has not yet been determined. Research is needed to evaluate the relative importance of each of these elements to the effectiveness of an enhanced communication program. A wide range of intermediate sanctions is available for diverting risk behaviors before they produce program violations that result in serious criminal justice and administrative sanctions. Aside from varying the frequency with which users are required to bring their vehicles in for regular service and download of log data, interlock providers are currently charging fees for service such as recalibration of the device following a lockout and road service calls for failure to comply with a notice of early recall for violations or attempting to temporarily disconnect the device. This provides a basis for establishing a sanction-and-rewards system based on interlock performance that providers, such as Safe Harbor, are already applying in their programs.

Clearly to be effective, preventive interventions need to provide the information needed to carry out safe actions and a clear warning regarding the consequences of failure to meet program requirements. Less clear is the role of verbal encouragement and commendation for positive actions. Presumably, the praise for lockout-free performance, which was a component of the Zador et al. study, played a positive role in the positive results achieved. Praise may assist the offender to perceive the avoidance of lockouts as a personal achievement and increase motivation to continue to separate drinking from driving. It is important for offenders to perceive that they can control the lockout risk and not to externalize the problem by rationalizing that lockouts are produced by instrument failures or lack of support from families and friends. Currently, most communications to the interlock users consist of notices about breath test failures and the resulting extensions of time on interlock. Research is needed to determine whether positive messages can influence lockout involvement.

The explosion of new technologies provides opportunities for more timely communication with interlock users than in the past when most contacts occurred only at monthly or bimonthly service checks or because of official actions. Interlock companies have been moving to install the capability to check the status of the interlock unit remotely so that the user does not need to travel to a maintenance site. The growth in interlock units featuring Wi-Fi systems now provide real-time reporting so that breath-test data and procedural violations can be forwarded to monitors in real time or within 24 hours. This new feature provides not only for more rapid notification to monitoring officials, but also allows for real-time feedback to the user with suggestions for action to solve current problems, recognize problem patterns, and avoid future violations. It opens the possibility of creating algorithms with pre-recorded messages that can respond rapidly to the user via the interlock device, email, website, or cell phone.

The possible benefits of adapting treatment programs to interlock users' needs are only beginning to become evident. Two broad approaches are currently in limited use among States: (a) using interlock performance to determine the need for treatment or additional treatment, and (b) treatment programs developed specifically to support the interlock offender by using interlock record data in counseling or therapy sessions. The Florida administrative interlock program design provides an example of combining both approaches. All those with two or more violations meet monthly with a case manager who reviews the data logs and a collaborative prevention plan is developed and documented. Those with three lockouts also meet regularly with a treatment provider who has some training about the interlock data and can get access to the data but the extent to which they apply that information to their counseling is variable and not documented. This type of program does however represent a major step in integrating treatment with an interlock program in comparison to the complete separation that is typical in most states where, other than possibly being a prerequisite to interlock installation, treatment is unrelated to participation in an interlock program. A Colorado program, Interlock Enhancement Counseling, (Timken, et al., 2012a; 2012b)—is a manualized treatment protocol in which the offender's interlock record is not only readily available to the therapist, but it plays a specific and key role in the therapeutic process—offers the possibility of impacting drinking behavior related to driving. AUDs play an important role in the long-term recidivism of DWI offenders but appear to be relatively unaffected by the interlock experience. These types of treatment programs may have the greatest potential for dealing with the major limitation of current interlock programs: the failure to preserve the recidivism rates exhibited while the unit is installed on the vehicle to the period after its removal.

## References

- Elder, R.W., Voas, R., Beirness, D., Shults, R.A., Sleet, D.A., Nichols, J.L., Compton, R., & Task Force on Community Preventive Services. (2011). Effectiveness of ignition interlocks for preventing alcohol-related crashes: A Community Guide systematic review. *American Journal of Preventive Medicine*, 40(3), 362-376.
- Marques, P., & Voas, R. (2010). *Key Features for Ignition Interlock Programs*. (DOT HS 811 262). Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration. Retrieved from [http://www.nhtsa.gov/staticfiles/nti/impaired\\_driving/pdf/811262.pdf](http://www.nhtsa.gov/staticfiles/nti/impaired_driving/pdf/811262.pdf).
- Marques, P., & Voas, R. (2013). Are we near a limit or can we get more safety from vehicle alcohol interlocks? *Addiction*, 108(4), 657-658. doi: 10.1111/add.12002
- Marques, Paul R., Tippetts, A. Scott, Voas, Robert B., & Beirness, Douglas J. (2001). Predicting repeat DUI offenses with the alcohol interlock recorder. *Accident Analysis and Prevention*, 33(5), 609-619.
- Marques, Paul R., Voas, Robert B., Tippetts, A. Scott, & Beirness, Douglas J. (1999). Behavioral monitoring of DUI offenders with the alcohol ignition interlock recorder. *Addiction*, 94(12), 1861-1870.
- Marques, Paul, Tippetts, Scott, Allen, John, Javors, M., Alling, C., Yegles, M., Pragst, F., & Wurst, F. (2010). Estimating driver risk using alcohol biomarkers, interlock BAC tests, and psychometric assessments: Initial descriptives. *Addiction*, 105(2), 226-239.
- McCartt, A.T., Geary, L.L., & Nissen, W.J. (2002). *Observational study of the extent of driving while suspended for alcohol-impaired driving*. (DOT HS 809 491). Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration.
- Miller, Ted R., & Levy, David T. (2000). Cost-outcome analysis in injury prevention and control: Eighty-four recent estimates for the United States. *Medical Care*, 38(6), 562-582.

- Ross, H., & Gonzales, P. (1988). The effect of license revocation on drunk-driving offenders. *Accident Analysis and Prevention*, 20(5), 379-391.
- Ross, H.L. (1982). Prevention and deterrence: The international experience. *Alcohol Health and Research World*, 7(1), 26-30, 39-43.
- Roth, Richard, Marques, Paul R., & Voas, Robert B. (2007). How do DWI Offenders Circumvent Interlocks? In Barry K Logan, Daniel S Isenschmid, J Michael Walsh, Douglas Beirness & Jørg Morland (Eds.), *T2007, Abstracts of the Joint International Meeting of TIAFT/ICADTS/IIS*. Seattle, WA: ICADTS.
- Timken, D., & Marques, P. R. (2001a). Support for Interlock Planning (SIP): Participants Workbook. Pacific Institute for Research and Evaluation: Calverton, MD. Retrieved April 20, 2009, from [www.pire.org/sip/sipmanuals.htm](http://www.pire.org/sip/sipmanuals.htm)
- Timken, D. S., Nandi, Anjali, & Marques, Paul. (2012a). *Interlock enhancement counseling: Enhancing motivation for responsible driving—a participant's workbook*. Boulder, CO: Center for Impaired Driving Research and Evaluation.
- Timken, D. S., Nandi, Anjali, & Marques, Paul. (2012b). *Interlock enhancement counseling: Enhancing motivation for responsible driving—a provider's guide*. Boulder, CO: Center for Impaired Driving Research and Evaluation.
- Timken, David, & Marques, Paul R. (2001b). Support for Interlock Planning (SIP): Providers Manual. Pacific Institute for Research and Evaluation: Calverton, MD. Retrieved April 20, 2009, from [www.pire.org/sip/sipmanuals.htm](http://www.pire.org/sip/sipmanuals.htm)
- Voas, R. B., & Tippetts, A. S. (2012). Requiring interlocks to reinstate: 50% effective [Abstract 0214] *Alcoholism: Clinical & Experimental Research*, 36[Suppl](6), 64A.
- Voas, R.B., & Fisher, D.A. (2001). Court procedures for handling intoxicated drivers. *Alcohol Research and Health*, 25(1), 32-42.
- Voas, Robert B., Tippetts, A. S., & Grosz, M. (2013, in press). Administrative reinstatement interlock programs: Florida, a 10-year study of success. *Alcoholism: Clinical and Experimental Research*. doi: 10.1111/acer.12078
- Voas, Robert B., Tippetts, A. Scott, Fisher, Deborah A., & Grosz, Milton. (2010). Requiring suspended drunk drivers to install alcohol interlocks to reinstate their licenses: Effective? *Addiction*, 105(8), 1422–1428. doi: <http://dx.doi.org/10.1111/j.1360-0443.2010.02987.x>
- Willis, C. , Lybrand, S., & Bellamy, N. (2004). Alcohol ignition interlock programmes for reducing drink driving recidivism. *Cochran Database of Systematic Reviews*, 18(4), CD004168.
- Zador, P.L., Ahlin, E.M., Rauch, W.J., Howard, J.M., & Duncan, G.D. (2011). The effects of closer monitoring on driver compliance with interlock restrictions. *Accident Analysis and Prevention*, 43(6), 1960-1967. doi: <http://dx.doi.org/10.1016/j.aap.2011.05.014>