

Electronic Monitoring of Curfew Compliance for Violent Offenders—An Evidence-Based Policing Approach

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Introduction

Offenders who are released on bail may be required to abide by a curfew condition. It is police who are often responsible for checking whether offenders are complying, through a process that can be resource intensive, inefficient, and disruptive to the accused. A potential solution to the difficulties posed by curfew compliance checks may be to monitor offenders electronically. As part of their approach to fostering a more responsive justice system and ending family and domestic violence, the Western Australian Government has indicated their intention to introduce an electronic monitoring trial for violent offenders (WA Labor 2017). For electronic monitoring programs to be successful, it is vital that we learn from the international experience, and adopt an evidence-based approach to policing to determine effectiveness. Electronic monitoring is a form of surveillance which can be used to monitor the location, movements and to some extent, the behaviour of offenders. This technology is used at every level of the criminal justice process worldwide, and is currently employed in over 30 countries. Electronic monitoring is thought to reduce reoffending and absconding rates (Padgett et al. 2006), and decrease the demands placed upon officers (Tennessee Board of Probation and Parole 2007). Despite its current and increasing use in Australia, little is known about its effectiveness. Here we examine the available literature pertaining to the use of electronic monitoring. We follow by proposing an evidence-based policing research program for testing effectiveness, along with a treatment of the potential risks, costs, and benefits.

Curfew Checks and Electronic Monitoring

Evidence-Based Policing

This literature review and research program will take an evidence-based approach. Evidence-based policing is a method of law enforcement decision making that involves using the scientific method to determine what works and what does not work in policing (Sherman 2013, p.379). While employing policing strategies based on empirical evidence may seem like an obvious approach to decision making, police organisations currently rely largely upon opinions, anecdotes, political pressures and best guesses to guide policing policy (Lum 2009). Adopting an evidence-based approach to law enforcement can help to ensure that taxpayer dollars are utilised most efficiently by maximising police efficacy and minimising crime (Sherman & Eck 2002). Sherman (2013) suggests that applying the scientific method to policing procedures involves utilising the triple-T strategy of 'targeting, testing and tracking'. Targeting involves recognising areas of concentrated crime or police effort and allocating resources appropriately, testing refers to empirically evaluating policing practices, and tracking involves determining whether police are operating in accordance with agency policies. It is hoped that taking an evidence-based approach to law enforcement will help to increase police legitimacy by ensuring that strategies are driven by research rather than opinion.

Bail

Bail refers to the conditional release of a suspect following an offence, with the aim of ensuring suspects adhere to certain conditions that

will reduce offending. In Western Australia (WA), for example, The Bail Act (1982) stipulates that following an arrest, the accused must be released unconditionally or brought before an authorised police officer or court for consideration of bail. Where the authorised officer has concerns with respect to possible reoffending or public safety, an accused's bail can be made conditional in accordance with Schedule 1, Part C, clause 1(a)(ii)(iii). Further, where the alleged offence occurred at night, giving rise to similar concerns, the officer in whom authority is vested to consider bail may, in addition to releasing the accused on his bail undertaking, impose any condition to address those concerns. WA police policy (Western Australia Police Bail and Curfew Management n.d.), ascribes such considerations with respect to curfew requirements, which may require the offender to reside at a certain address, between scheduled times, typically 7pm to 7am, as contained within Schedule 1 Part D, clause 2 of the Act.

Curfew Checks

The rationale behind imposing curfews is to deter individuals from participating in criminality. Curfew adherence decreases opportunities for crime and provides individuals with the opportunity to change their antisocial behaviours (Hucklesby 2008). Becker (1968) suggests that criminal behaviour is deterred when the risk of punishment is high. Therefore, when an individual is imposed with a curfew, and expects their adherence to be checked by police, they are discouraged from participating in criminal activity as the risks of getting caught and being subjected to disciplinary actions are high. Despite this theoretical basis, however, there is little evidence to suggest that curfew adherence reduces recidivism (Wong et al. 2010).

The curfew checking process involves a patrol level officer physically attending the accused's residence at any time during the specified curfew period. To ensure the accused is adhering to their bail condition, it is mandatory for the officer to physically see the offender. While physically checking curfews purportedly prevents reoffending and encourages bail compliance (Becker 1968; Hucklesby 2008), Amnesty International (2015) suggests that doing so damages police-community relations and detrimentally disrupts the accused and their family.

The disturbances caused by police conducting curfew checks are evident in a Transcript of Proceedings from the WA Magistrates Court (*Western Australia Police v. David Michael Arias 2014*). The transcript specifies that the accused was to remain in his family's residence from the hours of 7pm to 7am, as per his bail condition. The accused's mother informed the Magistrate that because of this bail condition, the family home was subjected to as many as five police visits per night, often occurring within a thirty-minute window. These disturbances were detrimental to the entire family, resulting in sleep deprivation and impacting upon their work commitments. The accused's mother also explained that adhering to the curfew had adversely affected her son's mental and emotional health as he struggled to maintain employment in a trade requiring him to arrive before 7 am. In response to these accounts, the Magistrate revoked the curfew imposition, stating that '[curfews] achieve very little and they create havoc in the lives of- not only of offenders, but in the lives of the offender's family' (*Western Australia Police v. David Michael Arias 2014, p. 5*).

An examination of the Computer Assisted Dispatch system conducted by Daley (2017), revealed that from 1 February to 30 June 2016, WA police conducted 46,955 curfew checks. Specifically, 20,953 were

undertaken in the Perth metropolitan area, and 26,002 were conducted in regional WA. The cost of undertaking these curfew checks during the specified time period was estimated to be \$2,044,890 (calculated by multiplying the number of curfew check tasks by the average time taken to complete a check, multiplied by the average hourly wage of the attending officers). The CAD data revealed—despite this large allocation of resources—that officers in the Perth metropolitan districts only checked their top 20 high-risk defendants each night, with some receiving multiple visits (Daley 2017). In regional WA, 100% of curfews were monitored by police (Daley 2017).

It is evident that the current state of curfew checking in WA can be detrimental to both the accused and their families, is resource intensive, and potentially lacking in efficiency. A less disruptive and more efficient means of ensuring accused individuals are adhering to their curfews could be an important priority for police.

Electronic Monitoring Technologies

An alternative to physically monitoring curfew compliance may be to make use of electronic monitoring technology. Driven by jail overcrowding, and facilitated by technological advancements, the use of electronic monitoring is prevalent at every level of the criminal justice process worldwide. Electronic monitoring refers to forms of surveillance of people's location, movement and behaviour (Bartels & Martinovic 2017; Nellis & Lehner 2012). The legislative basis for monitoring offenders electronically in WA is evident in Section 118 of The Sentence Administration Act (2003). Specifically, the Act stipulates that any device or equipment may be installed to monitor the offender at their residence, which is currently undertaken by a Community Corrections Officer. There are two main forms of electronic monitoring: Radio Frequency Identification (RFID) and Global Positioning System (GPS).

Considered the 'first generation' of electronic monitoring, RFID is commonly used on low-risk offenders to monitor home detention or curfew compliance (Nellis & Lehner 2012). This technology involves fitting a tamper-proof device to the ankle or wrist of an offender and installing a monitoring unit within their residence. The monitoring unit is connected to law-enforcement via a landline and alerts authorities immediately if the signals received from the RFID tag indicate a breach of set distance parameters (Bartels & Martinovic 2017; Schmidt 1998). Authorities are also alerted if the device is removed or tampered with.

GPS technology costs approximately five times that of RFID devices and is therefore typically reserved for high-risk offenders, including both sex offenders and violent offenders (Graham & McIvor 2015). The three types of GPS trackers are active, passive, and hybrid:

Active: Active trackers provide law-enforcement agencies with the 'real time' location of offenders via satellite transmission. The frequency at which authorities receive information regarding an offender's whereabouts is specified by law enforcement, and is determined according to the risk profile of the offender (Buchholz et al. 2014)

Passive: Passive GPS receivers continuously collect monitoring data throughout the day. The data, however, is only received by law enforcement when the offender plugs the device into the charger (Brown et al. 2007). The charging dock must be connected to a land line for authorities to receive the data.

Hybrid: In Hybrid GPS tracking, both active and passive technologies are used. If the offender is complying with the specified conditions, the information is received by law enforcement in a time frame that is longer than Active tracking (generally every few hours). If an offender breaches their conditions, however, the tracker automatically switches to the Active mode and begins to track the offender in real time.

GPS technology allows law enforcement agencies to set 'geofenced' inclusion and exclusion zones for each offender (Gies et al. 2012). Inclusion zones specify a location perimeter that an offender is required to occupy during certain time periods, whereas exclusion zones specify a location that an offender is prohibited from entering, either at certain time periods or at all (Gies et al. 2012). If the offender breaches either of these set parameters, law enforcement is contacted immediately. All three forms of GPS require offenders to be fitted with an ankle bracelet, a personal tracker, and a base unit. Because the battery life lasts between 18 and 30 hours, offenders are required to charge the batteries on their personal tracking units daily. For GPS to work efficiently, the bracelet and the personal tracking unit must remain within range of one another. If the offender tampers with the device in any way, a tamper alert is relayed to the monitoring centre.

The International Experience

Aligning with the evidence-based approach to policing, the intent of this proposal is to understand what works and what does not work when electronically monitoring offenders on curfew. As such, a fruitful approach would be to learn from the experiences of law enforcement agencies worldwide. Here we review published literature pertaining to the use of electronic monitoring on a range of offender types, with the aim of identifying strengths and weaknesses. Seven relevant studies were identified and their background, research design, main findings, and limitations are summarised in Table 1. The potential advantages and disadvantages of electronic monitoring on the basis of these studies are discussed in Table 1.

Potential Advantages of Electronic Monitoring

Law-Enforcement

In the Tennessee Pilot, police officers indicated that electronic monitoring was a positive supervision tool because it provided detailed information regarding the offender's whereabouts. Law enforcement suggested that electronic monitoring increased police productivity because it allowed officers to complete other tasks instead of continuously monitoring curfews (Tennessee Board of Probation and Parole 2007).

Public Safety

Electronic monitoring has been found to improve public safety by reducing offender criminality. In the Florida pilot, it was found that electronic monitoring reduced the likelihood of offenders absconding or reoffending while on home detention (Padgett et al. 2006). Similar results were found in the United Kingdom pilot where electronically monitored offenders had lower reconviction rates during their bail periods and at the 6 month follow-up compared to controls. These findings are also consistent with those of the Scottish study. One participating officer stated, for example, that "It's another tool in the tool box as far as I'm concerned that should be getting used. I sleep quite happily at night knowing someone's tagged in their house and they're not in mine" (Barry et al. 2007).

GPS provides authorities with near real-time data regarding offender whereabouts, and so law enforcement agencies are able to act immediately in response to a violation. An offender, therefore, could be apprehending before they have the opportunity to commit a further crime. In the Tennessee Pilot, for example, when upon receiving information suggesting an offender had violated his bail conditions the officer was able to respond immediately (Tennessee Board of Probation and Parole 2007). In this case, the electronic monitoring technology coupled with the officer's immediate response prevented potential harm to a child, and resulted in the offender's incarceration.

Table 1. Summary of international published literature on electronic monitoring, including background, research design, main findings, and limitations.

Study	Background	Research Design	Main Findings	Limitations
Florida 1998–2002 Padgett, Bales & Blomberg 2006	The aim of the analysis was to determine the effectiveness of GPS and RFID technology when worn by offenders sentenced to a home-confinement program.	The data were separated into 4 groups: No Electronic Monitoring (N = 45, 475); Total Electronic Monitoring (RFID and GPS) (N = 3,347); RFID Monitoring (N = 2,203); and GPS Monitoring (N = 1,144). Dependent Variable: Rates of absconding and new offences.	After controlling for sociodemographic factors and offender history, offenders on EM were 94.7% less likely to commit a new offence and abscond, than offenders not electronically monitored. RFID was slightly more effective than GPS for violent, property and drug offenders. Both types of EM produced a prohibitive effect on absconding.	Offenders were not randomly assigned and the groups had significantly different characteristics. Researchers controlled numerous variables including offender characteristics, supervision conditions and criminal history to account for the group differences as far as possible.
United Kingdom 1999 Dodgson et al. 2001	England and Wales introduced The Home Detention Curfew scheme, allowing eligible offenders to complete the final 60 days of their sentence in their homes under electronic monitoring.	The data was separated into two groups: Discharged on home detention under EM, and offenders discharged in 1998 who were released prior to the scheme. Dependent Variable: Rates of reoffending during the curfew period and rates of reoffending at a six-month follow up.	Offenders serving their final 60 days in home detention with EM, had significantly lower recidivism rates than controls. At the 6 month follow up, the treatment group had significantly lower reoffending rates when compared to controls. 8% of the treatment group reoffended, compared to 31% of the control group.	These results are confounded by the home detention/incarceration conditions. Therefore, it is unclear which variables are influencing reoffending rates.
Canada 1999 Corrective Services Canada 2009	The aim of the study was to evaluate the effectiveness of the EM Pilot Program which electronically monitored offenders on conditional release from prison. In phase one, one staff member wore the GPS tags to assess the technology. In phase two, nine offenders were released into the community under EM and required to adhere to either a curfew or home confinement. The third phase added 47 offenders to the pilot program on conditional release.	To test the effectiveness of EM, offenders (N = 9) and staff (N = 37) were asked to participate in an interview. Of the 46 offenders involved in the pilot, nine participated voluntarily.	Of the staff interviewed, 88% agreed there was a need for EM; 98% believed EM “filled a gap” in offender supervision; 89% agreed that EM addressed challenges associated with monitoring curfews; 80% stated the device had malfunctioned. Of the offenders interviewed, 50% experienced problems with the size, comfort, and visibility of the device. 100% believed the battery took too long to charge. Throughout the pilot, tamper alerts occurred because: 5% were true tampers; 32% were related to the offender’s activity such as exercising; 42% were issues with the device; 21% were a combination of factors.	Only 20% of the entire offender sample voluntarily participated in the interview, therefore these offenders’ views are not representative of the offender population.
Tennessee 2005–2006 Tennessee Board of Probation and Parole	Pilot program testing the effectiveness of monitoring sex offenders via GPS. All violations were sent to a monitoring centre and serious alerts were assigned to an officer for investigation. The project was executed by existing BOPP staff.	Treatment group: monitored by GPS (N = 493); Control group: Offenders previously subjected to police supervision (N = 370). Dependent Variable: Recidivism rates	No significant differences between the two groups were found in: Violation frequency; New charges; Number of days before first violation. The pilot cost \$1,871,787.96, with the majority of expenses funding the GPS equipment.	Groups were not randomly assigned. Researchers attempted to replicate random sampling by selecting counties from varying locations, with varying population densities and offender characteristics.
Scotland 2005–2006 Barry et al. 2007	Law-enforcement in Scotland undertook a pilot program implementing EM as a bail condition. The majority of individuals were imposed with a curfew condition requiring them to remain in a specified residence from 7pm to 7am.	Researchers interviewed 45 staff, 16 accused individuals and 15 household members, collecting quantitative and qualitative data. Overall, 63 individuals were electronically monitored while on bail for aggression, disorderly conduct or violent offences. 46% of participants were under the age of 20. DV: Questions pertaining to the appropriateness and effectiveness of EM bail.	Of the offenders electronically monitored: 30% were compliant; 70% breached their curfew condition; 36% breached their curfew within the first 10 days of receiving order. Of the electronically monitored individuals under 20 years of age, 79% breached their bail conditions. Qualitative analysis revealed they “couldn’t be bothered sticking to the terms”. Of the individuals accused of breaching their previous bail conditions by committing a criminal offence, 70% breached their bail again.	The data was incomplete due to poor data collection methods. Small sample therefore cannot be generalised. There was no control group.
California 2006–2009 US Department of Justice	Californian study evaluating the effectiveness of monitoring high-risk sex offenders via GPS upon release from prison. In California, it is mandatory that all sex offenders are supervised via GPS for life.	Experimental Design—Treatment group—On parole with GPS monitoring (N = 259). Control group—subject to parole only (N = 259). To account for the differences between the treatment and control groups, participants were matched for pre-treatment characteristics. Dependent Variable: Recidivism and compliance rates. Staff were also interviewed about their experiences (N = 128).	Recidivism rates were more than twice as high for the control group compared to the treatment group subjected to GPS monitoring. Days until a new conviction was greater for the treatment group monitored via GPS than the controls. Of the staff: 16% reported always or frequently experiencing problems with tamper alerts; 37% reported always or frequently experiencing programs with drift.	Participants were not randomly assigned. As participants were matched rather than being randomly assigned, it is possible the control group differed from the treatment group in unobserved ways.
New Zealand 2015–2016 Department of Corrections	Globally, New Zealand is one of the biggest users of RFID and GPS technologies for corrective purposes. GPS technology is utilised for monitoring offenders on home detention and parole.	In 2015/2016, 13,499 offenders were monitored electronically.	In the specified time period, corrections reported: 0.5% – 1.0% of offenders removed their trackers and absconded; 97.1% did not remove their trackers.; 3.5% of offenders were convicted of a new offence while being electronically monitored. Of the 448 individuals on electronically monitored bail, 19 absconded.	These findings were obtained from the corrective services website and there was no access to the raw data. Consequently, these findings should be interpreted with caution as they may be inherently biased or incomplete.

Investigation Assistance and Deterrence

GPS tracking data can be overlaid with crime incident data to allow law enforcement agencies to determine if an offender was in the vicinity of a crime, thus assisting police to identify or exclude the electronically monitored offender (Gies et al. 2012). In the Tennessee Pilot, the GPS data was utilised to confirm an offender’s presence at the scene of a murder, which assisted police with their investigation and resulted in the offender’s murder conviction (Tennessee Board of Probation and Parole 2007).

Electronically monitoring offenders may reduce absconding and reoffending rates. It is therefore reasonable to assume these findings are indicative of a deterrence effect, as electronic monitoring technology reliably tracks offenders in real time and so possibly deterring criminality by increasing punishment certainty (Padgett et al. 2006).

Potential Disadvantages of Electronic Monitoring

Increase in Officer Workload and Overtime

Officers involved in implementing the Tennessee pilot were detrimentally affected by their participation in the study due to the onerous time requirements of GPS monitoring. Officers stated that because they were expected to respond to alerts 24 hours a day, their work schedules became unpredictable and subsequently impacted morale and quality of life. Indicative of the impacts on officers, 27% of those involved in the Tennessee pilot requested reassignment. This number is considerably higher than the previous year’s staff turnover rate of 7% (Tennessee Board of Probation and Parole 2007). From 2005 to 2007, the Tennessee Board of Probation and Parole spent \$344,159 on overtime for monitoring staff. This figure is substantially higher than the prior agency-wide 2004–2005 overtime expenditure of \$32,600 (Tennessee Board of Probation and Parole 2007).

Equipment and Compliance

Problems associated with the electronic monitoring technology present constant challenges for law enforcement agencies. In the Tennessee pilot, officers stated they spent a substantial portion of their time attending to equipment malfunctions rather than to the offenders themselves. In the Canadian pilot, 80% of monitoring staff indicated that the technology had malfunctioned (Correctional Service Canada 2009).

Another problem relevant to electronic monitoring technology is referred to as ‘drift’. GPS drift occurs when the location points specified on the monitoring map are inaccurate, thus displaying either incorrect position readings or no readings at all (Gies et al. 2012). These position errors occur because GPS receivers require an unobstructed view of the sky and therefore experience technical difficulties when inside buildings, underwater, or underground (Gies et al. 2012). In the Canadian pilot, drifts of up to 200 metres were reported (Correctional Service Canada 2009).

Due to the frequency with which these equipment issues occur, some officers consider violations to be inaccurate and consequently do not respond to them (Tennessee Board of Probation and Parole 2007)—a situation similar to false alarm effect seen with medical audible alarms in the operating theatre (Edworthy 2013). Recent advancements in position calculation, such as dead reckoning, may reduce false alarms (Martinovic 2013).

For electronic monitoring to work, individuals must comply with the unit’s operating requirements. Officers report that it takes time to familiarise themselves with the equipment, and so technical problems commonly occur during the first few months. These technical problems can inadvertently result if the device is not carried correctly or if warnings and guidelines are not adhered to (Brown et al. 2007). Some offenders, however, remain noncompliant with the equipment (Tennessee Board of Probation and Parole 2007).

Stigmatisation

Anecdotal accounts from the Tennessee pilot suggest that some offenders were detrimentally impacted by the GPS monitoring. Specifically, officers reported that the visibility of the device resulted in offenders being verbally abused by strangers and deprived of employment. In the U.K pilot, some juveniles felt the device was stigmatising and humiliating. Individuals subjected to electronic monitoring are unable to remove their monitoring devices throughout the day, advertising to society their 'criminal' label. This advertising may lead to social disadvantage and exclusion. These negative associations cause deviant individuals to experience social rejection as they are typically ostracised by their communities (Hirschfield & Piquero 2010). This separation from society may hinder any efforts by the accused to act as a normally integrated member of the community, with potential effects on their social support networks, employment and education. The literature suggests that once an individual has been ascribed a label, they experience embarrassment and disgrace, causing them to engage in further acts of criminality. This effect may counteract short-term efforts to control criminal behaviour (Akers & Sellers 2009).

False Sense of Security

While electronic monitoring technology may provide information pertaining to the whereabouts of an offender, it may not reveal the offender's behaviour (DeMichele 2014). A false sense of security provided by GPS monitoring was evident in the United States when a sex offender who was being electronically monitored was charged with holding a girl hostage for several years. While the GPS device informed law enforcement that the offender was in his backyard, the monitoring officers never checked on what the offender was doing in his yard (Bartels & Martinovic 2017). If an offender is determined to breach their boundaries and commit a crime, a crime can be committed well before the arrival of law enforcement (Bülow 2014). Further, data used in these studies was based on official arrest statistics and so represents the crimes that have come to the attention of police. Crimes that have not come to the attention of police will continue to go unnoticed even with electronic monitoring.

Privacy and Evidence

Ethical issues around privacy arise with the use of electronic monitoring. When electronic monitoring is not used and offenders are required to adhere to a curfew, they do so during specified time periods. Outside these periods, offenders are free to leave their residence. If, however, curfew adherence is electronically monitored, law enforcement will have continuous access to the accused individual's whereabouts because the electronic monitoring device remains on for the entire bail duration. This situation may be considered a breach of privacy because these individuals have not yet been convicted for their crimes. Further, as a result of the technical problems associated with the GPS equipment, judges may be wary about accepting GPS-based evidence in court. During the Tennessee pilot, for example, several warrants were dismissed because the GPS data was not considered adequate proof of a violation (Tennessee Board of Probation and Parole 2007).

The National Experience

Having reviewed the relevant literature and summarised potential advantages and disadvantages of electronic monitoring, we now describe the Australian experience. In Australia, electronic monitoring has been used to monitor sex offenders and other offenders on home detention (Bartels & Martinovic 2017). Commencing in 1985, offenders on home detention were supervised electronically in all mainland

states of Australia. Initially, RFID was the method of electronic monitoring implemented. Recently, however, law enforcement agencies nationwide have transferred to GPS technology (Bartels & Martinovic 2017). Since 2003, following societal reactions to the release of high-profile sex offenders into the community, New South Wales, Victoria, Queensland and Western Australia have implemented GPS technology to monitor sex offenders. Despite the prevalence of GPS use in Australia, no empirical studies examining its effectiveness have been undertaken.

New South Wales currently monitors dangerous sex offenders using electronic monitoring. In 2016, the Government allocated \$2 million to trial GPS technology to track high-risk domestic violence perpetrators, allowing law enforcement and victims to receive alerts if an offender enters a restricted area. Throughout 2014 and 2015, approximately 200 offenders were supervised using electronic monitoring. Offenders charged with murder, manslaughter, armed robbery or sexual assault are not eligible for home detention.

South Australia uses electronic monitoring to a greater extent than other Australian jurisdictions. Home detention is monitored electronically as either a 'back end' or 'front end' alternative to prison. Dangerous sex offenders and offenders on bail are supervised via electronic monitoring. The Northern Territory uses electronic monitoring for home detention. Typically, twenty offenders are monitored at any one time (Australian Bureau of Statistics 2016). In Victoria in 2013, GPS monitoring was introduced as a parole condition. In June 2016, 87 offenders were electronically monitored. Western Australia monitors dangerous sex offenders with GPS technology. Corrections utilises RFID technology to monitor a range of offender types, subject to conditional bail with a home detention requirement. Offenders can be monitored for a maximum of 6 months. In June 2016, 19 dangerous sex offenders were electronically monitored.

An Evidence-Based Policing Approach

Having reviewed the international published literature on electronic monitoring and described the Australian experience with the technology, we now describe an evidence-based approach to the question of electronic monitoring efficacy. We also consider ethical and legislative considerations, police agency and legitimacy risk, and officer engagement.

The purpose of an experiment would be to determine whether monitoring offenders electronically is a more efficient means of checking curfew compliance compared to police physically conducting checks. When compared to current curfew checking practices, the literature suggests that electronically monitoring curfew adherence will be less disruptive, reduce recidivism and result in fewer curfew breaches. The primary hypothesis would be that electronically monitoring curfew compliance will reduce the amount of time officers spend attending to individuals on curfews in comparison to current curfew checking practices. Secondary hypotheses could include assessing rates of recidivism, breach rates, social effects, and cost to police.

For a station or district to be suitable experimentation, it should have (1) an appropriate number of individuals issued with bail imposed curfew conditions, (2) satisfactory mobile network coverage to the area to ensure GPS accuracy, and (3) availability of and buy-in from police officers. A randomisation protocol should be established to ensure that each individual issued with a curfew has equal probability of being allocated to either the control group or the treatment group.

In terms of measurement, the electronic monitoring condition will immediately detect breaches, whereas breaches within the control condition will only be detected if an officer attends the residence at a specific time.

The electronic monitoring condition, therefore, may record many more breaches not because more were occurring in comparison to the control condition but because of the sensitivity of this condition. To overcome this issue, researchers could establish specific time frames during which electronic monitoring and physical curfew checks would both be conducted with certainty. This approach would provide comparability between approaches and so increase experimental control. On the other hand, the approach would not reflect current police practice and so may compromise external validity. The costs and benefits of controlling for the sensitivity of the electronic monitoring condition should be thoughtfully considered as doing so is essentially controlling for some of the very benefits (and costs) that electronic monitoring purports to provide.

Ethical and Legislative Considerations

Consideration should be given as to whether offenders participating in the trial are required to give informed consent. If participation in the experiment is contingent upon consent then a sample bias could result. To remove the informed consent requirement, legislation must stipulate that police are legally permitted to monitor individuals on curfew electronically. The current legal basis for this approach may be found within The Bail Act (1982) and The Sentence Administration Act 2003. Sections 50K and 50L of The Bail Act specify that an electronic device may be placed on an accused individual required to adhere to a home detention condition, but a Community Corrections Officer is still responsible for monitoring them. To waive the need for informed consent, police must work together with Corrections to monitor the experiment or consider discussing the experiment with the courts to have the legislation amended for the purpose of the trial.

Police could ensure that any group identified in the *Equal Opportunities Act* (2010) will not be disadvantaged from participation in the experiment. To assist with ensuring the experiment is not disadvantaging a certain group, police should consult a substantive equality assessment process relevant to the selected location in order to take the local offender demographic into account. For example, if the area participating in the trial is remote there may be a number of individuals without a permanent residence, which would make their participation in the trial difficult. Similarly, individuals subjected to electronic monitoring will likely experience stigmatisation, causing embarrassment and disgrace, and so potentially counteracting any effort to control their criminal behaviours (Akers & Sellers, 2009).

Police Agency and Legitimacy Risk

If an offender, while participating in the experiment, were to commit a high-profile offence, there is a risk that the public or the media may not appreciate the purpose of the trial and the police force may be held accountable. Similarly, if the electronic monitoring equipment were to malfunction, resulting in an offender committing an offence, or if an officer fails to attend to an alert resulting in an offence, the police force may be held accountable. Such matters are costly and undesirable (Gies et al. 2012). Risk could be minimised by ensuring that offenders classified as 'high-risk' do not participate in the experiment (see Matson's 2016 recommendations of offence types that should be excluded from a trial). Weekly tracking statistics—including breaches, reoffending rates, and deployment hours—should be collected and released to a steering committee for regular risk assessment.

Police legitimacy refers to the judgments made by citizens regarding the fairness of police conduct (National Research Council 2004). The experiment could detrimentally affect police legitimacy if, following the experiment, the treatment was not found to be effective. Police could be viewed as making irresponsible decisions that exceed their legitimate role by conducting experiments at the expense of the public.

Officer Engagement

Officer engagement is especially important for an experiment like this one. Randomised controlled trials are considered one of the most powerful experimental designs (Stolberg et al. 2004). The power of this methodology is derived through the random allocation of participants to either the treatment or control group because doing so ensures that on average all variables between the groups are equal. This allows researchers to assume that any significant differences found between the two groups can be attributed to the treatment or intervention, rather than to an uncontrolled variable.

To protect the integrity of the research and to ensure that the findings derived from the experiment were due to the different curfew monitoring procedures, it is essential the officers involved in the study strictly adhered to all aspects of the experiment and measured the data accordingly (Jadad 1998). Ensuring the officers comply with the experiment, therefore, is vital to the success of the research.

Research pertaining to increasing officer compliance in evidence-based policing experiments has found that officers are more willing to engage in an experiment if they have been exposed to the scientific method (Palmer 2011). Educating officers about the scientific process is likely to increase their confidence in experimentation and reliance on the knowledge of what works (Sherman 2015). This can be achieved by posing experimental scenarios to officers and encouraging their involvement. Officers are also more receptive to material when the agency makes use of its usual channels of communication because suspicion arises when the information is delivered through police leaders or by external experts (Lum et al. 2012). By encouraging attachment and a sense of ownership over the experiment on a local level, officers may be more inclined to comply with and support the treatment parameters. Formalising the participation of supervisors through a project working group could foster a sense of shared ownership.

Discussion

In order to determine whether bailees are abiding by their curfew conditions, police are often required to undertake curfew checks physically. These checks can drain police resources and disrupt the accused and their families. The difficulties posed by conducting physical checks may be resolved by employing electronic monitoring technology to monitor offenders. A randomised controlled trial could help determine which method of monitoring curfew compliance is more effective.

Successful execution of a trial relies upon the agency being willing to invest funding and personnel in the trial and accept the risks that come with innovation. The internal validity of the experiment relies upon the participating officer's compliance to the measurement procedures.

To minimise the risk of noncompliance, data reporting procedures must be easy to follow and require minimal effort or time on behalf of the officer. If participation in the experiment requires consent, the findings may lack external validity due to the inherent sample bias. Suitable analysis of sub-groups—for example, understanding differential outcomes for younger and older offenders, or offenders within different crime types—along with qualitative analysis of outcomes for individuals and families, will allow better understanding of the generalisability of electronic monitoring to different locations or offender groups. Legislative change may also be required before electronic monitoring can be adopted by police as part of the everyday suite of management options for offenders in the community.

The international literature suggests that monitoring offenders electronically increases public safety by reducing absconding and reoffending rates. Accounting for these findings may be the deterrence effect produced by the technology, because electronically monitoring offenders increases punishment certainty. The technology may have residual effects, such as a reduction in reconviction rates during the 6-month post-bail period, as is evident within the literature. Electronic monitoring offers several benefits to law enforcement agencies because monitoring offenders electronically permits officers to complete other tasks. Internationally, the technology has assisted law enforcement with criminal trials as the tracking data has been used to identify or exclude offenders. Real-time tracking data allows officers to respond immediately when an offender escapes, often resulting in the offender's apprehension. Electronic monitoring may also provide intangible benefits by increasing police legitimacy through decreasing community disruption.

Despite the benefits of electronic monitoring, the technology is not without its limitations. The literature indicates that changing curfew checking practices with electronic monitoring may be costly due to the expenses associated with the initial set-up. Further, there are considerable complications associated with the equipment and its monitoring capabilities. It is essential that law enforcement are not lulled into the false sense of security provided by the equipment—electronic monitoring is simply a tool that provides information regarding an offender's location rather than behaviour.

Current curfew checking practices may benefit from incorporating electronic monitoring. A randomised control trial should be conducted in order to determine efficacy. The data derived from the trial can be used to increase curfew checking efficiency, inform policy, improve transparency in the use of public funds and enhance public safety.

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