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Evaluating the Use of Radio Frequency Identification Device (RFID) Technology to Prevent and Investigate Sexual Assaults in a Correctional Setting

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Abstract

This evaluation examines the implementation, use, and impact on inmate behavior of Radio Frequency Identification Device (RFID) technology at the Northeast Pre-Release Center (NEPRC) in Cleveland, Ohio. In correctional facilities, RFID transmitter chips can communicate the locations and movements of inmates within prison facilities to staff. The technology can be programmed to issue alerts when inmates are out of place, in prohibited locations, or in proximity to individuals with whom they have conflict. In addition, RFID historical records can be used to investigate allegations of inmate misconduct. Given these capabilities, RFID technology may increase the ability of prison staff to identify inmate misconduct both in real time and after an incident occurs. This enhanced detection capability may in turn increase the risk of detection for inmates and deter them from engaging in prohibited behaviors such as sexual assault, consensual sex, and fighting. Accordingly, this evaluation investigated whether the use of RFID technology deterred inmates from engaging in acts of sexual assault, violence, and other prohibited behaviors.

The evaluation design for this study consisted of three data collection and analysis strategies: (1) semi-structured, one-on-one interviews with a random sample of correctional staff to understand how RFID system was implemented and used as well as how it affected prison management; (2) structured, one-on-one interviews with a sample of randomly selected inmates to elicit opinions about the technology and its impact on prohibited acts and perceptions of safety; and (3) analysis of infraction data for NEPRC, a women's prison that houses approximately 580 low- and medium-security inmates, and Franklin Pre-Release Center (FPRC), an Ohio women's prison with a similar population size and demographic makeup as NEPRC that had not implemented RFID technology. Interviews with sexual assault investigators on their use of the technology were also conducted. Both comparisons of means between pre- and post-RFID implementation inmate infractions and ARIMA modeling were employed to determine if RFID technology affected inmates' propensities to commit sexual assault, related acts of violence, and other acts of misconduct.

Results from the process evaluation component of this study revealed two serious problems with RFID implementation and use at NEPRC. First, the technology was not fully implemented due to limited resources, restricting its utility to confirm facility-wide head counts (essentially rendering the technology nothing more than a perimeter control device). This prevented NEPRC from utilizing the capabilities of the RFID system that are theorized to

increase the ability of staff to detect misconduct, increase inmate risk of detection, and deter prohibited behaviors: namely, the ability to detect when inmates are out of place or in close proximity to one another. Second, NEPRC experienced technical problems, which resulted in an interruption of RFID service for a period of weeks, forcing the evaluation team to adopt a less desirable two-phased impact evaluation approach.

As a result of these problems, this evaluation is unable to determine the degree to which RFID technology – when implemented to its full capacity – deters inmates from committing acts of misconduct. As implemented at its most basic capacity, as was observed in NEPRC, results of the quantitative and descriptive analyses show that RFID did not have a positive impact on inmate misconduct and may in fact be responsible for a temporary increase in prohibited acts. Despite the fact that this evaluation is inconclusive regarding the merits of RFID as a deterrence to violence and other prohibited acts among inmates, its assessment of RFID implementation and use at NEPRC yields important lessons for corrections practitioners who are contemplating investing in this technology. Practitioners should ensure that they have enough resources to: support the full implementation of all capabilities of the RFID system; fund easily accessible and continuous technical support; and adequately train staff on the use of the technology.

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Executive Summary

The problem of sexual violence in correctional facilities has gained national prominence in recent years, due in large part to the passage of the Prison Rape Elimination Act of 2003. Sexual victimization behind bars causes pain and trauma for victims and may also increase their propensity to commit violence both within the facility and outside prison walls. The psychological trauma of victimization can also have important implications for mental health and substance addiction, leading to reintegration challenges upon release. The gravity of this issue suggests that technologies supporting prison management efforts to prevent sexual assaults, to investigate them effectively, and to increase inmates' perceptions of safety from sexual victimization, would benefit the entire culture of a prison. This report evaluates one such technology, Radio Frequency Identification Device (RFID), examining the degree to which it prevents sexual assault and related acts of violence in a correctional setting.

RFID technology enables users to authenticate, locate, and track objects or people tagged with a unique identifier. In correctional settings, inmates can be fitted with RFID units on their ankles or wrists that enable correctional officers to track their locations and movements, potentially increasing their perceived risks of being detected when engaging in sexual assaults and other prohibited behavior (particularly if officers confirm inmates' perceptions by responding to RFID alerts and following through with disciplinary action). Because the system maintains historical data on inmates' locations, RFID may be a useful tool for investigating assaults, identifying which inmates were at the location where the assault took place, and aiding in the substantiation of allegations of sexual and other assaults. It is therefore feasible that RFID increases inmates' perceptions of safety from sexual assault based on the belief that perpetrators are more likely to be apprehended. Thus, from a theoretical perspective, RFID technology should effectively increase an inmate's perceived risk of detection for both the perpetration of sexual assaults and the reporting of false allegations.

To examine the impact of RFID technology on inmate behavior, this evaluation documented the implementation, use, and impact of RFID at the Northeast Pre-Release Center (NEPRC), a women's prison in Cleveland, Ohio. Employing a combination of quantitative analyses of administrative disciplinary records and descriptive data obtained through staff and inmate interviews, we explored the following research questions:

1. How was RFID implemented and used at NEPRC?

2. Does the use of RFID technology deter sexual and related acts of violence by increasing the perceived risk of detection?
3. Does the use of RFID technology aid in the investigation of alleged sexual and related acts of violence?

The evaluation found that implementation challenges at NEPRC prevented the most sophisticated applications of the RFID system from being employed. The technology as implemented did not afford officers the ability to identify when inmates were in prohibited areas of the prison. Thus, while the system was used to aid in investigations, applications theorized to prevent sexual assault, violence, and other acts of misconduct were not implemented. Quantitative analyses indicate that the number of infractions did not decrease following RFID implementation. To the contrary, a significant increase was detected, suggesting that inmates' discovery that the system was not fully functional led to a spike in violence and other prohibited acts. In addition, staff and inmates overwhelmingly reported that the RFID system did not improve inmate behavior or aid in prison management.

The obstacles that occurred during the RFID implementation period at NEPRC prevented this evaluation from concluding whether RFID technology – when used to its full capacity – can prevent sexual assaults and related violence. However, NEPRC's experience underscores the importance of dedicating sufficient resources to fully implement all facets of the technology, as well as to train staff sufficiently and support technical maintenance over time. Without investing in the system's continued use, any initial deterrent effects of RFID technology are likely to be short lived.

Introduction

In recent years, the problem of sexual violence in correctional facilities has gained national prominence, largely due to the passage of the Prison Rape Elimination Act (PREA) of 2003 (Public Law 108-79, now codified as 45 U.S.C. 15601 to 15609). As stated in the Act, sexual violence may present serious problems in correctional facilities, affecting not just the victims of violence but the correctional population as a whole. In response to the increased attention on this issue, correctional administrators have sought ways in which to harness new training methods, management tools, and technologies. The focus of this evaluation is to explore the use and effectiveness of one such measure: Radio Frequency Identification Device (RFID) technology, which enables correctional staff to track inmate locations in an effort to prevent prohibited acts, including sexual assault. In correctional facilities, RFID transmitter chips can communicate the locations and movements of inmates within prison facilities to staff. The technology can be programmed to issue alerts when inmates are out of place, in prohibited locations, or in proximity to individuals with whom they have conflict. In addition, RFID historical records can be used to investigate allegations of inmate misconduct.

While the most recent estimates of sexual assault behind bars are relatively low (Beck et. al 2007), perceptions of the risk of sexual assault and related violence have far reaching consequences for the victims of such acts as well as for the quality of life of all incarcerated persons. In addition to the well-documented pain and trauma associated with sexual victimization, such abuse behind bars may increase the victim's propensity to commit violence both within the facility and on the outside (Dumond 1992). The psychological trauma of victimization can also have important implications for mental health and substance addiction, leading to reintegration challenges upon release (Dumond and Dumond 2002). The gravity of this issue suggests that RFID technology designed to support prison management efforts to prevent sexual assaults, to effectively investigate them, and to increase inmates' perceptions of safety from sexual victimization, would benefit the entire culture of a prison.

RFID technology enables users to authenticate, locate, and track objects or people tagged with a unique identifier (NLECTC 2005). In correctional settings, inmates can be fitted with RFID units on their ankles or wrists that enable correctional officers to track their locations and movements, potentially increasing the perceived risks of being detected when engaging in sexual assaults and other prohibited behaviors. RFID technology may deter inmates from committing prohibited acts by increasing their perceived risk of detection, especially when

officers confirm inmates' perceptions by responding to RFID alerts and following through with disciplinary action. Similarly, it is feasible that RFID increases inmates' perceptions of safety from sexual assault based on the belief that perpetrators are more likely to be apprehended. Moreover, because the system maintains historical data on inmates' locations, RFID may be a useful tool for investigating assaults, identifying which inmates were at the location where the assault took place, and aiding in the substantiation of allegations of sexual and other assaults. Thus, from a theoretical perspective, RFID technology should effectively increase an inmate's perceived risk of detection for both the perpetration of sexual assaults and the reporting of false allegations.

In 2006, the Urban Institute completed an evaluability assessment of RFID technology funded by the National Institute of Justice. The assessment investigated how RFID technology was being implemented in correctional settings across the country and found that 13 correctional facilities had implemented or were in the process of implementing RFID at that time. That study, however, simply identified likely evaluation sites, as evaluating the impact of RFID technology on prison management at these locations was beyond the scope of the contract (La Vigne 2006, see Appendix B for details). From a knowledge building perspective, no published evaluations currently exist of RFID use as a correctional management tool, much less as a tool to prevent sexual and other violence. Correctional institutions across the country have expressed interest in obtaining RFID systems, but may be hesitant to expend scarce correctional resources in the absence of reliable evidence that the technology works. This evaluation therefore fills an important gap in the literature, examining whether inmate tracking through RFID technology is an effective measure both to prevent sexual and other violence as well as to aid in the investigation of such acts.

To evaluate the impact of RFID technology on inmate behavior, this study examined the use of the RFID system at the Northeast Pre-Release Center (NEPRC), a women's prison in Cleveland, Ohio, managed by the Ohio Department of Rehabilitation and Correction (ODRC). Using a combination of quantitative analyses of administrative disciplinary records and descriptive data obtained through staff and inmate interviews, researchers investigated the extent to which the capabilities of RFID technology were utilized, whether the technology deterred sexual and related acts of violence, and whether the technology aided investigations of allegations of sexual assault and other acts of misconduct. The process evaluation component of this study documents implementation challenges and experiences, including how correctional officers respond to RFID alerts, how sexual assault investigators use RFID data to support investigations, and how use of the technology might be enhanced and replicated.

This report will first explain in more detail how RFID technology works and why it is theorized to prevent sexual violence and other acts of misconduct. Research questions based upon these theorized preventative effects are then presented, along with the methods of data collection and analysis that were used to investigate these questions. Results of the RFID process evaluation, including staff responses regarding how the technology was used and how it affected prison management, are then discussed, along with the implications of these findings for the theoretical affects of RFID on inmate behaviors. Finally, the findings of the evaluation's quantitative analyses and inmate interviews are presented.

Background

This evaluation investigates whether RFID technology can deter individuals from committing sexual violence and other acts of misconduct in a correctional setting. To fully explore the theorized connection between RFID technology and the prevention of sexual and related acts of misconduct, one must first understand how the technology operates, the nature and context of sexual violence in correctional settings, and the theoretical basis for the hypothesis that RFID can prevent individuals from committing sexual violence and related acts of misconduct. This section of the report will therefore present this important background information, followed by the research questions investigated in the evaluation.

How RFID Technology Operates in Correctional Settings

RFID technology aids in the identification and tracking of items through a “tag” or chip that sends data to electronic readers through wireless data communication (HighJump Software 2004). RFID enables users to authenticate, locate, and track tagged objects with a unique identifier (NLECTC 2005). RFID use in the United States has increased tremendously in the last few decades, particularly throughout the retail and defense industries. The use of RFID technology by Wal-Mart and the Department of Defense for inventory and supply chain management has fueled the growth and use of RFID technology in a variety of other industries (NLECTC 2005). This technology has also been recognized for use within corrections, law enforcement, and homeland security. The National Law Enforcement and Corrections Technology Center (NLECTC) reports that, “the capabilities that make RFID ideal for management supply chains give it great potential for corrections, homeland security, and law enforcement, and each of these fields have much to gain from the continued development, testing, and evaluation of RFID” (NLECTC 2005:2).

The predominant criminal justice application of RFID in the United States has been in correctional settings. In this context, RFID technology consists of three components: (1) an RFID chip, which is imbedded in a bracelet or anklet that also has the ability to detect body mass index (if the bracelet is removed, tampered with, or not within one finger’s width of the skin, an alert is issued); (2) a series of Data Extension Units (DEUs), which operate like antennas to read and transmit information stored on the RFID chip; and (3) computer software that enables corrections officials to document – in almost real time – the whereabouts of inmates (La Vigne 2006). With a sufficient number of DEUs in a facility, RFID technology has the ability to track the locations of inmates every 30 seconds, with software mapping the

locations and movements over time in a fashion similar to Global Positioning Systems (GPS) technology (La Vigne 2006).

On its most basic level, RFID use in corrections can help confirm counts and serves as a perimeter control device. However, the software can also enable more sophisticated applications. Corrections officials can enter information on inmates' schedules and the locations of where they are supposed to be at certain times of day (e.g., class, cafeteria, housing unit), programming the software to issue "out of place" alerts if inmates deviate from those schedules and locations. RFID software has also been employed to track whether inmates have been through the cafeteria line, which helps track diabetic inmates' eating habits and prevents "double backs" – when inmates loop back to the end of the cafeteria line in an attempt to get a second meal (La Vigne 2006). In addition, the software can be programmed to issue alerts when certain inmates, such as rival gang members or former intimate partners, are in close proximity to one another. And, because the system maintains historical data of inmates' locations, RFID may be a useful tool for investigating assaults, pinpointing which inmates were at the location where the assault took place, and aiding in the substantiation of allegations of sexual and other assaults (La Vigne 2006). RFID may be particularly useful for investigative purposes when it is used in conjunction with CCTVs. Given these capabilities, RFID may hold promise for improving the efficient operation of correctional facilities, as well as the safety of inmates. Despite the relatively rapid adoption of this innovative technology, however, NEPRC provides the only example of RFID use that was specifically intended to address sexual violence.

Sexual Assault and Related Violence in Correctional Settings

Research on sexual assault in correctional settings is limited and little agreement exists regarding the prevalence of such acts, partly because sexual assault is widely underreported due to shame, stigma, and fear of consequences (Kunselman et al. 2002, Human Rights Watch 2001, Human Rights Watch 1996, Beck et al. 2007). Many experts believe that neither official corrections records nor data collected by researchers accurately reflect actual prevalence rates due to the reliance on victim self-reporting, low response rates, inconsistent record-keeping by corrections officials, and difficulties in research design (Gaes and Goldberg 2004, Kunselman et al. 2002, Bell et al. 1999, English and Heil 2005). In 2007, however, BJS conducted the first National Inmate Survey (NIS). The NIS enabled inmates to anonymously disclose information about sexual victimization they experienced in prison. Since the survey does not rely on administrative records, attained a large response rate, and protected inmates from identification,

its results are likely more accurate than other studies. BJS estimates from the results of the survey that 4.5 percent of state and federal prisoners are victims of abuse behind bars each year (Beck and Harrison 2007). Other researchers estimate that the lifetime prevalence rates for sexual assaults by force range from 0 to 16 percent, with most estimates falling around 2 percent or less, while rates that include other forms of sexual coercion and pressure (i.e., any unwanted sex) are typically 21 percent or less (Gaes and Goldberg 2004).

Although the consensus among researchers is that the prevalence of sexual assault in correctional settings is relatively low, it is clear that there remains a widespread cultural belief among inmates and the general population that sexual violence is common in American prisons and jails (Fleisher and Krienert 2006, Fleisher and Krienert 2008, Owen et. al 2007). Even studies that conclude that the incidence of sexual assault to be virtually nonexistent have found that the majority of inmates perceive it to be widespread in their own or other facilities (Saum et al. 1995, Krienert and Fleisher 2005). Inmate misperceptions of high rates of sexual assault can be extremely damaging, not only due to the psychological trauma and feelings of fear and danger these perceptions produce in inmates, but also because the misperceptions can lead to violence and aggressive behavior (Fleisher and Krienert 2005). Research indicates that some share of prisoners commit violence as a preventative measure to indicate their “toughness” to other inmates in order to avoid becoming victims themselves (Irwin 1985, Dumond 1992, Kunselman et al. 2002, Brook 2004). Indeed, inmate perpetrated physical assaults are one of the most visible manifestations of the culture of violence in correctional facilities. BJS reports that in 2000, 34,400 inmate-on-inmate assaults and 18,000 inmate-on-staff assaults occurred in state and federal correctional facilities (Stephan and Karberg 2003). Yet Cooley (1993) suggests that, like sexual assaults, accurate rates of inmate physical violence are difficult to establish due to underreporting.

As mentioned above, sexual assault, physical violence, and inmate conflicts are highly interconnected, both theoretically and empirically. Many theorists of sexual assault assert that the act is about power, control, and violence as much as it is about sex (Brownmiller 1975, Groth et al. 1977, Man and Cronan 2002), and this dynamic holds true in correctional settings. Although there may be an element of sexual gratification involved in the act, sexual assault in correctional settings, perpetrated by both inmates and staff members, frequently serves the same purposes as physical violence: to humiliate and degrade the victim, to control the victim, and to lower the status and power of the victim and raise that of the perpetrator (Dumond 1992, Knowles 1999, Human Rights Watch 1996, Human Rights Watch 2001, Man and Cronan 2002, O'Donnell 2004.). The fact that sexual assaults in correctional settings are frequently

accompanied by violence or the threat of violence further demonstrates that sexual assault takes place within a larger context of violence in jails (Human Rights Watch 2001, Struckman-Johnson et al. 1996, Struckman-Johnson and Struckman-Johnson 2002).

Within prison settings, some groups of inmates are more vulnerable to sexual assaults and related violence than others. Those at greatest risk for sexual victimization include those who are young, white, middle-class, homosexual, unfamiliar with prison culture, and are nonviolent first-time offenders (English and Heil 2005, Dumond 2000, Man and Cronan 2002, Struckman-Johnson et al. 1996, Wortley 2002, Knowles 1999). Inmates who have previously been sexually assaulted are at high risk of being assaulted again (Struckman-Johnson et al. 1996, English and Heil 2005). Perpetrators of sexual violence are also likely to share common traits related to age, race, class, incarceration histories, and histories of violence (English and Heil 2005, Man and Cronan 2002).

Much of the research that exists has been conducted among male inmates, despite the fact that the dynamics of sexual assault in men's and women's correctional facilities are different in some significant ways. Wolff and colleagues found that female inmates are more than four times as likely to be victims of inmate-on-inmate sexual assault than are male inmates, indicating that findings of male inmate-focused studies of the prevalence of sexual assault in prisons cannot be generalized to female inmate populations (Wolff et al. 2006). Another important difference is that women are more likely than men to be victimized by correctional staff, who are often male (Beck and Hughes 2005). According to BJS, 82 percent of substantiated sexual assaults on female inmates were committed by staff, compared to just under a third (30 percent) of substantiated sexual assaults of male inmates (Beck and Hughes 2005). Other researchers have found that half of sexual assaults on female prison inmates involved staff as perpetrators, compared with only one-fifth of sexual assaults on male inmates (Struckman-Johnson and Struckman-Johnson 2000, Struckman-Johnson and Struckman-Johnson 2002, Struckman-Johnson et. al. 1996).

Theoretical Underpinnings

Given the fact that the precipitators of – and contexts conducive to – sexual assault and other violence in correctional settings are closely intertwined, one would expect that technology designed to prevent sexual assault would be effective in preventing other forms of assault as well. Rational choice theory serves as a useful framework to develop hypotheses about how RFID technology might prevent both forms of violence. Rational choice theory purports that

potential offenders make purposeful, rational (albeit bounded¹) decisions to commit crime after weighing the potential costs and benefits of the crime in question (Cornish and Clarke 1986). Practical applications of rational choice theory are typically embodied under the Situational Crime Prevention rubric, offering an array of means by which the cost-benefit ratio of offending opportunities can be altered: (1) increasing the risk of being apprehended; (2) increasing the effort involved in committing the crime; (3) decreasing the rewards of the crime; (4) increasing the shame and guilt expected to result from the crime or felt at the immediate moment of decision-making; and/or (5) reducing provocations (Clarke 1997, Cornish and Clarke 2003, Wortley 2001).

Applying rational choice and Situational Crime Prevention to this evaluation, any impact of RFID technology on inmate perceptions would likely take the form of increasing the risk of apprehension. This risk would apply not only to being detected in close proximity to a victim of sexual assault or other violence, but could also extend to risks of being caught with contraband that can serve as a tool to commit such acts. Because anyone in proximity to an assault could potentially be linked to the incident, regardless of his or her involvement, bystanders might be more likely to intervene or report an incident and the general prison culture could shift towards a greater disapproval of such acts. Moreover, because rational choice is based upon perceptions rather than reality, if RFID increased perceived risks of detection for any type of inmate misconduct, such as being caught out of place, failing to report to a scheduled program, or doubling back in the cafeteria line, then based on rational choice theory those perceptions could be generalized to more serious proscribed behaviors, including sexual violence. In many respects this hypothesis is also consistent with broken windows theory and the related “zero tolerance policing” approach, both of which purport that enforcing minor quality of life incidents sends a message that those committing other, more serious offenses will be detected and punished (Wilson and Kelling 1982, Kelling and Coles 1996).

Equally important to RFID’s impact on inmate behavior is a consideration of how RFID might affect correctional staff behaviors. While staff are not tracked by RFID, they may nonetheless perceive a greater risk of detection of their own sexual misconduct if an inmate’s allegations can be supported by RFID, or if RFID is used by management to confirm “consensual” sexual relations between a staff person and an inmate. When inmate movement is tracked electronically, the ability of staff to bring inmates to isolated areas that are only

¹ Rational choice theory acknowledges that an offender’s decisionmaking processes may not be truly rational, in that they could be influenced by intoxication or drug addiction, low intelligence levels, and/or an inclination to discount the future costs of one’s actions.

accessible to staff in order to perpetrate sexual assault or participate in “consensual” sexual relations² with the inmate is circumscribed. This is particularly true given that any tampering of the RFID device (e.g., the removal of the device by a correctional officer intent on engaging in a prohibited act with an inmate) sets off an alarm and is recorded in the RFID database. And, as with reported incidents of inmate violence, rational choice theory would predict that reports of correctional staff’s excessive use of force would decrease along with any actual acts of staff sexual misconduct.

Unfortunately, no studies prior to the present research have examined the use and impact of RFID on sexual assaults and other prohibited acts in correctional environments. In fact, few evaluations exist on any correctional technologies aimed at reducing inmate violent and ensuring the safety of facilities. The sole exception is an evaluation of the impact of CCTV on prisoner misbehavior in Australia. The study found that the threat of detection through camera monitoring did deter inmates from committing non-violent acts of misconduct – consistent with both rational choice and situational crime prevention theories – but that CCTV had a lesser impact on violent behaviors, such as assaults (Allard et. al 2008). Given the scant prior research on correctional technologies in general and RFID specifically, this current study prompted a number of pressing research questions which are described below.

Research Questions

Given the theorized ability of RFID technology to deter sexual violence and other forms of violence and inmate misconduct, this evaluation set out to answer the following questions:

1. How was RFID implemented and used at NEPRC?

An understanding of how RFID technology is implemented at NEPRC and how the system’s more advanced capabilities are used is thus necessary to determine whether RFID technology is capable of achieving its desired outcomes in a correctional setting. To evaluate the extent to which RFID technology was implemented at NEPRC a detailed examination of the system and its implementation process was conducted through interviews with inmates and staff.

2. Does the use of RFID technology deter sexual and related acts of violence by increasing the perceived risk of detection?

² Given the power differential between correctional staff and inmate, we use the term “consensual” loosely to characterize a situation in which the inmate is a willing party in the act.

One of the primary goals of this evaluation was to determine if RFID technology has a prevention impact. This research question was explored through interrupted time series modeling that examined changes in the prevalence of disciplinary charges against inmates for sexual assault, related acts of violence, and other proscribed behaviors at NEPRC. Pre- and post-RFID implementation rates of sexual violence and related acts were also compared with rates of such acts occurring at Franklin Pre-Release Center (FPRC), a women's prison in Columbus, Ohio with a similar staff and inmate population to NEPRC's. Changes in inmates' perceptions of risk of detection of proscribed behaviors, their safety from sexual assault, and their inclination to report actual assaults or false allegations were obtained through interviews with a randomly selected group of 89 NEPRC inmates.

3. Does the use of RFID technology aid in the investigation of alleged sexual and related acts of violence?

Separate and apart from the question of whether RFID technology prevents crime is the question of whether it results in a more efficient use of correctional resources. Through interviews with staff and inmates, this evaluation explores the degree to which RFID is used in the investigation of alleged acts of sexual assault and related violence and whether the technology is viewed as a useful investigative tool.

Research Design and Methods

We employed a variety of data collection and analysis methods to pursue answers to the above research questions. While this evaluation can draw empirically-based findings from an analysis of administrative records, the findings from staff and inmate interviews provide contextual information on the ways RFID technology was used at NEPRC and what effects it had on prison management as well as on the perceptions and behaviors of inmates.

Selection of Facilities

The evaluation site selected for this study was NEPRC, a dormitory-style prison located in Cleveland, Ohio, housing minimum and medium security women who serve an average of 26 months. In 2004, ODRC issued a Request for Proposals for the installation of RFID at NEPRC and ultimately selected the company Elmotech as the vendor. Because funds for RFID at NEPRC came from the Prison Rape Elimination Act (PREA), the primary purpose of the system was to reduce inmate-on-inmate sexual assaults and to aid in the investigation of alleged assaults. At the time this evaluation began, NEPRC was the only correctional setting in the country that had implemented RFID as a sexual assault prevention and investigation tool, so it provided an ideal laboratory in which to study RFID technology's potential use for the prevention and investigation of sexual violence.

One component of the evaluation design was to compare ratios of sexual assault and related acts of violence at NEPRC to similar prison data in the state. The Franklin Pre-Release Center (FPRC) provided an ideal match for that purpose (see Table 1 below). Like NEPRC, FPRC opened in 1988 and houses female inmates. Both NEPRC and FPRC have roughly equal ratios of staff to inmates, with one security staff person for every six inmates. In terms of security levels, both have similar shares of maximum security inmates, although NEPRC has smaller shares of minimum security inmates and larger shares of medium security inmates compared to FPRC (56 percent versus 68 percent, and 44 percent versus 31 percent, respectively). NEPRC, however, has a slightly smaller share of black inmates and a slightly larger share of Hispanic inmates. The similarities between the two prisons far outweigh the differences, which prompted the selection of FPRC for comparison purposes.

Table 1. Characteristics of NEPRC and FPRC

Franklin Pre-Release Center (Columbus, Ohio)

Date Opened	1988	Population	481
Total Acreage	10	Black Inmates	31%
Accreditation Status	Yes	White Inmates	68%
Total Security Staff	82	Hispanic Inmates	0%
Total Staff	154	Other Inmates	0%
GRF Budget <i>(subject to monthly review/adjustment)</i>	\$10,681,112	Escapes/Walkaways 2006	0
Daily Cost Per Inmate	\$62.67	*Security Level	1 (68%) 2 (31%) 3 (0%)

Northeast Pre-Release Center (Cleveland, Ohio)

Date Opened	1988	Population	594
Total Acreage	14	Black Inmates	47%
Accreditation Status	Yes	White Inmates	51%
Total Security Staff	96	Hispanic Inmates	2%
Total Staff	170	Other Inmates	0%
GRF Budget <i>(subject to monthly review/adjustment)</i>	\$15,570,207	Escapes/Walkaways 2006	0
Daily Cost Per Inmate	\$74.20	*Security Level	1 (56%) 2 (44%) 3 (0%)

Quantitative Data Collection and Analysis

In order to detect changes in the frequency of sexual violence and other acts of misconduct at NEPRC and FPRC, we collected and analyzed institutional disciplinary records. The following section describes the quantitative data collected and outlines the methods employed to detect any changes in levels of misconduct and isolate the effects of RFID technology on these changes.

Data Collection

ODRC maintains extremely detailed Rule Infraction Board (RIB) administrative disciplinary records for each institution. When inmates are charged with rule violations – including being out of place, committing physical and sexual assaults, engaging in consensual sex, and fighting – they are referred to the RIB for a hearing. The RIB records of these hearings include the date of the incident and hearing, the infractions with which inmates are charged, and the verdicts of these hearings. RIB data were collected and analyzed from both NEPRC and FPRC from

January, 2005 through January, 2009 to determine if any changes in levels of misconduct that occurred in the post-RFID implementation period may have resulted from the technology's affects on inmate behavior.

Methods of Analysis

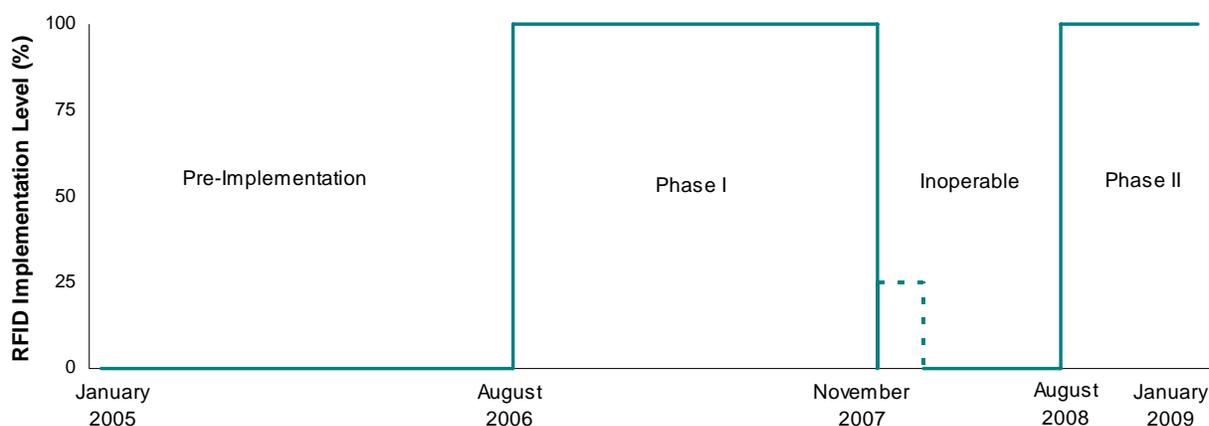
This evaluation employed two methods of quantitative analysis: a comparison of means employing t-tests and time series analyses. The interrupted time series design was used to compare pre-RFID implementation to post-RFID implementation RIB data. The 19-month pre-implementation period began in January, 2005 and lasted through July, 2006. The original intention was to evaluate the impact of RFID for a full 18 months after implementation, but due to system upgrades (discussed in detail in the following process evaluation section) the technology became inoperable for a number of months following implementation.³ Researchers therefore modified the evaluation design to analyze the impact of two separate implementation periods. The first phase of the implementation period ran from August, 2006 through October, 2007. Since very few staff were trained on the technology during this time period and because the technology itself was not used in any meaningful way, the results of this phase one evaluation represent the initial impacts of the RFID system when used in its most basic capacity and is useful information for the field. Indeed, often agencies find the resources to invest in a technology but do not dedicate time and resources to train staff and use it properly. Departments of correction will thus find it useful to know whether RFID at its most minimal application has any type of deterrent impact on inmate sexual assaults and other infractions.

The second phase of implementation began in August, 2008 (after the system was back online) and lasted through January, 2009. Although the system was used similarly to the way it was employed during the first implementation period, more staff were trained on how to use the RFID system during its period of inoperability. An analysis of the second post-RFID implementation period enables the measurement of any changes in inmate behavior that may have resulted from possible changes in staff use of the system that resulted from this additional training. Although the exact rate at which inmates determined that the system was not functioning cannot be determined, NEPRC staff believed that the majority of inmates discovered that the system was inoperable immediately after the system crashed and that it took

³ Staff from NEPRC and Elmotech gave conflicting reports as to the length of this period of inoperability, reporting that the system was down for a period as short as three weeks and as great as seven months. The longer time period was reported by multiple staff members at NEPRC, whereas the reports of shorter periods of inoperability were not consistently reported by individuals who had been closely involved with the system. For this reason this evaluation assumes that the system was down during the seven-month period lasting from November 2007 through July 2008.

approximately two months for the remaining inmates, estimated to be approximately 25 percent of the total inmate population, to determine that the system did not work. Therefore, for time series analysis purposes the first two months of data from the eight-month period of inoperability lasting from November 2007 through July 2008 were weighted as .25 of the intervention period to account for the lag in time between the time the RFID system stopped functioning and the time inmates became aware the system was inoperable. The remaining six months of the inoperability period were excluded from the analyses of post-intervention periods. Figure 1 provides an illustrated timeline of the evaluation’s pre- and post-implementation periods.

Figure 1. Evaluation Implementation Timeline⁴



Due to additional implementation problems (discussed in more detail in the following process evaluation section), the more sophisticated exclusionary zone capabilities of the system were not initiated in either phase. The creation of exclusion zones would enable correctional staff to be alerted when inmates were in prohibited locations or in close proximity to individuals with whom they have inappropriate or potentially combative relationships. Theoretically, officers receiving these alerts can detect misconduct in real time and respond swiftly, increasing an inmate’s risk of detection and decreasing the likelihood that inmates will commit prohibited acts. Since the exclusion zone capability is one of the major aspects of the RFID system that is theorized to increase inmates’ perceived risk, the impact of fully-implemented RFID technology on inmate behavior could no longer be evaluated as originally planned. Records from the RFID system could still be used in investigations, however, which would theoretically increase inmates’ risk of being detected through investigative proceedings that take place after a

⁴ For the purposes of this figure, 100% indicates 100% of the system’s most basic capacity, which was the extent to which implementation was possible at NEPRC.

prohibited act has occurred. The resulting analysis thus evaluates the effect of RFID technology on inmate behavior when it is only used in investigations and as a perimeter control device.

An autoregressive integrated moving average (ARIMA) model was used to assess whether and to what extent RFID use affected inmate behavior at NEPRC. ARIMA modeling is a common research tool that can detect patterns in historical data, predict how these patterns will carry on into the future, and determine if an outside event – such as the implementation of RFID technology – creates diversions from these pre-determined patterns. For the purposes of our evaluation, ARIMA was applied to RIB data from NEPRC and FPRC. Data from the pre-implementation period was compared to data from the two post-implementation periods individually, as well as together, excluding the period of inoperability. This 40-month evaluation period enabled the detection of and control for seasonal variations that may have existed. Changes in population size and composition over time were included in the ARIMA model based on our review of monthly population data and security level composition, which revealed that the populations at both NEPRC and FPRC were consistent throughout the evaluation period. The ARIMA model used in this analysis employed biweekly time periods of observation, which provided a sufficient number of total observations in each biweekly period before and after the treatment to evaluate the significance of the overall change in infractions and changes in violent and non-violent offenses. Given the small number of inmate assaults and other inmate infractions, ARIMA modeling could not be used to evaluate the significance of specific types of infractions (See Appendix C for a sample of the first three months of pre-implementation data for each biweekly period for NEPRC and FPRC). Instead, this evaluation employed t-tests to assess the statistical significance of pre- and post-implementation occurrences of these low base rate infractions at NEPRC and FPRC. However, the rates of many individual offenses, such as sexual assault, were so low at both institutions that no method of analysis could determine with statistical certainty whether the prevalence of these infractions changed significantly after RFID implementation.

Interviews with Staff and Inmates

Staff at NEPRC were interviewed to determine how RFID technology was implemented and the extent to which it was used, while interviews with inmates were conducted to discover the extent to which RFID impacted their overall perceived risk of detection, their sense of safety, and the likelihood that they would commit or report prohibited acts.

Sample of Inmates

The total population of NEPRC inmates that we considered eligible to participate in the evaluation consisted of all inmates except those suffering from mental health disorders or who were held in seclusion. This selection criterion, however, resulted in a dramatic reduction in eligible inmates for interview purposes. Of the total population of 581 inmates, NEPRC administrative staff identified only 155 inmates who did not suffer from mental health problems or who were not being held in seclusion. According to NEPRC staff, at the time of our visit to the facility the majority of female inmates suffered from some type of mental health disorder, including depression. NEPRC's definition of inmates who suffer from mental health disorders includes those women who suffer from depression and facility staff were unwilling to allow us to interview these women. As a result, the pool of inmates eligible for selection was severely reduced. Of the 155 inmates who remained eligible for study participation, 35 had been at NEPRC since February, 2006, six months before the RFID system was installed. One hundred and twenty inmates arrived at NEPRC after installation. All 35 inmates who arrived at NEPRC prior to RFID installation were selected for interviews (pre-RFID group) and 60 of the inmates who arrived after RFID installation were randomly selected to participate in interviews (post-RFID group), resulting in a recruitment sample of 95.

Sample of Staff

In order to collect information on the ways in which RFID was employed, a random sample of all correctional officers and all three staff persons who were directly involved in the use of the RFID hardware and software were identified for interview participation. NEPRC administrative staff provided Urban Institute staff with a list of all 80 correctional officers at the facility and their corresponding shift assignments. A total sample of 16 correctional officers, evenly stratified by shift, was selected by Urban Institute staff for interview participation and all agreed to participate. The three staff members involved in the administration of the RFID system identified for interviews were NEPRC's Warden, Deputy Warden, and Quartermaster. On average, the staff surveyed had worked in corrections for 15 years and at NEPRC for 10 years. Of the total sample of staff interviewed, 86 percent were male and 14 percent were female.

With regard to investigative staff, ODRC has a formal partnership with the Ohio State Highway Patrol (OSHP), which conducts all formal investigations of criminal activity that occur in the prisons. When an allegation of inmate-on-inmate assault is made, the OSHP investigator assigned to the respective prison conducts his or her own investigation. Staff-on-inmate allegations in Ohio are initially handled internally by the Chief Inspector's Office and referred to

the local prosecutor if criminal charges are warranted. For the purposes of this evaluation, two ODRC staff from the Chief Inspector's Office as well as the OSHP investigator assigned to NEPRC were selected for interviews.

Instruments

Interview protocols for both staff and inmates were created by Urban Institute research staff. The inmate and staff interview protocols each contained questions regarding how RFID technology affected the safety and behavior of inmates and staff and how respondents would change or improve RFID technology and its use at NEPRC. The inmate interview protocol contained additional questions about inmates' demographic information, criminal and substance abuse histories, sense of privacy at NEPRC, and opinions about the effects of RFID technology on reporting. The staff interview protocol included additional questions about their employment history in corrections, any RFID training they received, their experiences using the technology, and their opinions about how the technology affected prison management. The relevant questions from the inmate and staff interview protocols are described in detail below.

Inmate Interviews

Inmates were asked a series of questions about how RFID had affected life at NEPRC, including whether the RFID ankle bracelets influenced their sense of privacy and safety, deterred them from committing acts of misconduct, or increased the likelihood that they would report offenses (See Appendix D for the Inmate Interview Protocol). Given the gender of the study participants and our interests in ensuring that all participants felt equally comfortable participating in a study that included perceptions of the risk and frequency of sexual assault in the facility, only female Urban Institute research staff conducted inmate interviews.

Safety and Privacy

To determine inmates' perceptions of safety at NEPRC, all respondents were asked, "On a scale of 1 to 5, how safe do you personally feel at NEPRC?" To assess the relative sense of safety inmates felt at NEPRC in relation to other facilities, individuals who had been incarcerated at other prisons were asked, "Do you feel more safe, less safe, or about the same at NEPRC than in other prisons you have been housed in?"

Inmates were also asked a series of open-ended questions about privacy at NEPRC, including, "If an inmate or staff member wanted to harm someone here, would they try to find privacy to do so or is that not very important?" and, "Are there places inmates can go where

they can't be detected by ankle bracelets? If so, where?" Questions followed about whether inmates had been able to remove their ankle bracelets, how difficult it is for inmates to be alone with other inmates and staff members, and whether ankle bracelets prevented individuals from being alone together.

Behavior and Reporting

Inmates were asked if they believed the RFID ankle bracelets made correctional officers, "more aware of where inmates are, less aware of where inmates are, or have no bearing on officer awareness of inmate locations," and if the ankle bracelets made officers more aware, less aware, or had no bearing on officer awareness of inmate activities. Inmates were also asked to identify on a scale of 1 to 5 how likely is it that ankle bracelets are preventing inmates from being out of place, getting into fights, engaging in consensual sex, forcing unwanted sex on other inmates, using drugs, making or keeping weapons, and stealing.

Inmates were asked if, "the ankle bracelets lead inmates to report misconduct by other inmates more often, less often, or about the same as before [they] had or as if [they] didn't wear the ankle bracelets." Respondents were also asked whether the ankle bracelets lead inmates to make false allegations of misconduct more often, less often, or about the same as they would without the ankle bracelets. Questions followed about whether the RFID system leads inmates to report misconduct by *staff* more often, less often, or about the same as they would without the RFID system and whether the technology discouraged false reporting of such incidents.

Staff Interviews

Due to the varied roles that correctional and investigative staff members play in RFID implementation and use, semi-structured one-on-one interviews that allowed for the flexibility to adapt survey questions to each individual respondent and his or her role within the institution were used (See Appendix E for the Staff Interview Protocols). Questions covered such topics as RFID training and use and perceptions of the technology's usefulness for prison management.

Training and Institutional Procedures

All staff were asked a series of questions about the training they received on RFID use, including whether or not they received training, when the training occurred, and how long the training lasted. Respondents were asked whether the training they received covered how to use the technology and how the technology can be used to: (1) track inmate movements and counts; (2) prevent sexual assault; (3) prevent consensual sex; (4) prevent violence; and (5)

assist in investigations after an incident has occurred. Respondents were also asked whether the training was easy to understand and whether, “the training fully prepared [respondents] to operate and understand RFID technology in the capacity [they] are expected to use it.”

Application of RFID

Staff respondents were asked if they have used RFID technology as part of their jobs, how they used the technology and how often they used it. They were also asked how reliable the ankle bracelets, RFID hardware, and RFID software are, and if they identified any aspect of the technology that was unreliable, they were asked to explain why. All respondents were asked what barriers exist at NEPRC to implementing the technology as it is meant to be used.

Effects on Prison Management

We were interested in exploring whether RFID improved management practices at NEPRC. We therefore asked staff, “Do you think RFID supports, detracts from, or has no bearing on the effectiveness of prison management at NEPRC?” and, “What changes in prison management have resulted from the use of RFID, if any?” Staff were also asked open ended questions about the strengths and weaknesses of the RFID system at NEPRC.

RFID in Investigations

Investigative staff from NEPRC and ODRC were asked a series of questions about RFID technology's role in the investigative process. Investigators were asked how often RFID data is used for investigative purposes and the process by which those data are extracted. They were also asked if RFID records are used in conjunction with NEPRC's camera system and how these tools are used together to support investigations. Additional questions explored whether RFID technology has impacted the time it takes to investigate a case, reduced the number of cases closed due to insufficient evidence, or played a role in sexual violence cases against a staff member; and whether local prosecutors are aware of RFID as a form of evidence, the degree to which they find it credible, and how often they have used it in the prosecution of cases.

Procedures

At the facility, an administrative staff person at NEPRC called each inmate and staff member to be interviewed by Urban Institute research personnel. Each one-on-one interview was conducted in a private room that was sound proof, but that could be monitored visually from the

outside by correctional officers. Inmates and staff were sent into these rooms one at a time and were promptly informed about the purpose of the evaluation. Each respondent was informed that their name and any information that could be used to identify them would not be shared and told that they could choose not to participate or not to answer any questions during the course of the interview if they did choose to participate. Each individual signed a voluntary consent form after agreeing to participate and was given a document summarizing in more detail the information explained to them regarding their rights to confidentiality. At the close of each interview inmates and staff were informed that they could contact research staff if they had any questions or would like a copy of the evaluation report.

Response Rate

Six inmate respondents – all from the post-RFID implementation group – chose not to participate, resulting in a final post-RFID group of 54 inmates and a pre-RFID group of 35 inmates. The 89 inmates interviewed represent 57 percent of the eligible NEPRC population, excluding those inmates who suffer from mental health problems and who were held in seclusion at the time of the interviews. All 21 staff from ODRC and NEPRC selected for interviews agreed to participate.

Process Evaluation

Since RFID technology is theorized to increase inmates' perceived risks of detection and reduce the number of prohibited acts committed by inmates, it follows that if the technology works as intended the number of inmate infractions – including sexual assaults and related acts of violence – will decrease after RFID technology is implemented. However, in the absence of documentation of how the technology was implemented and used at NEPRC, the results of our impact evaluation would shed little light on the effectiveness of RFID technology. For example, a finding of no impact of RFID on inmate infractions may suggest that the technology has no impact on inmate behavior, but it is equally possible that the technology was not implemented as planned or to its fullest capacity. Drawing from interviews with NEPRC staff and representatives of the RFID vendor, the following section provides this necessary context, detailing the way in which the technology was implemented, the manner in which it was used, and the extent to which the intended purpose of the technology was realized.

RFID Implementation and System Design

The RFID system was originally activated at NEPRC in August, 2006. Staff from Elmotech installed DEUs – the antennas that read the locations of individual RFID signals – throughout the facility, and staff fitted all inmates with RFID anklets at this time. Due to signal interference, some of the DEUs did not function correctly when the system was first initiated, leaving some “blind spots” where inmates' ankle bracelets could not be detected. NEPRC officials called the vendor, who returned to the facility from out of state to correct the problems. However, NEPRC continued to experience transmission problems with some DEUs. Because NEPRC did not have on-site technical expertise to maintain the RFID system over time, when the units malfunctioned they had to contact the vendor. Often the vendor was not able to return to the prison immediately, rendering faulty DEUs inoperable for periods lasting from a week to several months.

Separate from transmission problems associated with individual DEUs, the RFID system became completely inoperable for a period of time between November 2007 and July 2008. While accounts of the reasons for and length of the inoperability differed by respondent, it appears that when NEPRC made some system upgrades to its IT infrastructure it was discovered that these upgrades rendered the RFID system inoperable. During this period of inoperability, a decision was made to cease equipping newly entering inmates with RFID anklets during some period of time.

When working properly, DEUs send RFID transmitter signals from inmates' ankle bracelets to six remote terminals and a central server at NEPRC. Thus, as originally envisioned, several NEPRC staff would be using terminals to locate inmates and extract historical data for investigative purposes. In addition, while NEPRC leadership were interested in employing the software component of the RFID system to detect inmates in "exclusion zones," such as in prohibited housing units or close proximity to other inmates with whom they have had conflicts or sexual relationships, these zones were not programmed at the time of installation due to budgetary constraints.

Operational and Maintenance Challenges

NEPRC's experience with RFID technology implementation and use has been mixed, at best. While the data collected from the system clearly holds value for investigations, the full promise of the technology was not realized due to the limited manner in which it was implemented and an extended period of inoperability.

Perhaps the most impressive feature of RFID is the ability to create exclusion zones, which can be programmed to associate individual inmates with their designated housing units, enabling correctional staff to confirm physical counts by using the RFID system to ensure that all individuals are in their cells. These exclusion zones can also be programmed to keep alert officers when certain inmates are in close proximity in order to prevent fights, sexual assaults, or other unauthorized activities. In theory, the senior staff member in charge of administering the RFID system could receive alerts, locate inmates engaged in suspected prohibited activity on his computer screen, and communicate the locations of those inmates to correctional officers via radio so that officers could respond to the scene. Likewise, if correctional officers needed to find an inmate within the prison they could ask the senior staff member to look up the inmate's location on his RFID monitor.

However, given that the RFID system at NEPRC was not programmed with exclusion zones, staff could not use the RFID system to identify in real time when inmates were out of place. And, since RFID computer monitors were not located throughout the facility, most correctional officers could not access the system directly and reported that trying to locate inmates using the RFID system was too difficult because of the time it took to contact the senior staff member for inmate locations. A short delay of 30 seconds to a minute between the time the DEUs read the location of an inmate and the time the location is relayed to the RFID monitor also prevented staff from being able to locate inmates. Due to these obstacles staff did not use

the RFID system to locate inmates. Instead, they resorted to the usual method of calling inmates to report to a location using the prison's intercom system.

Additional obstacles prevented the technology from working as planned. First, when the system was activated only a small number of correctional officers were trained on how to use the system. Most NEPRC staff did not understand the capabilities or purpose of the RFID system and did not attempt to find inmates by using it. Second, as a result of the system becoming inoperable in November of 2007, archival data from the RFID system that can be used in investigations were not recorded. In addition, NEPRC staff stopped outfitting new inmates with RFID ankle bracelets while the system was down. In May, 2008, approximately 136 of NEPRC's 578 inmates were not equipped with the ankle bracelets. Inmates observed that newly admitted women were not equipped with bracelets and astutely assumed that the system was inoperable. Thus, any deterrent effect that the RFID system had during the first 13 months of implementation was likely lost.

RFID Training and Use at NEPRC

At the time of initial implementation of the RFID system, very few staff members were trained to use the technology. Detailed training was limited to one officer whose role it was to maintain and operate the system. Several other line staff learned how to equip inmates with anklets while on the job. While more staff members were trained on how to use the system during the period of RFID inoperability, by the time of our interviews with correctional staff in October, 2008, one-third of those interviewed had still not received any RFID training. Among those who were trained to use the system, 43 percent reported that they had not learned how to use it to track inmates and 57 percent were not aware that the system could be used to assist in investigations. Less than one-third of staff (29 percent) reported receiving training on how the RFID system could be used to prevent sexual assaults, violence, and consensual sex among inmates. A similar share (30%) reported that the training they received sufficiently prepared them to use RFID technology in the capacity they were expected to use it. Staff members also shared that there were no written protocols for using the RFID system.

Use of RFID Technology by Correctional Staff

According to staff interviews, the RFID-related responsibilities of staff ranged from having basic knowledge of how the system operated to more advanced administrative and investigative tasks, such as data archiving and extracting records for senior staff. Almost half (48 percent) indicated that they had not used RFID technology as part of their job. Twenty-nine percent had used it weekly or less, while only 10 percent reported using it daily. Although some staff

reported being trained on how to use RFID technology to prevent sexual assaults and other acts of violence, no one reported using the RFID system at NEPRC to prevent these acts because the exclusion zones that would have theoretically enabled staff to prevent misconduct were not initialized. Indeed, for all its promise, the technology's use was limited to confirming facility-wide count. In addition, the majority of staff reported no change in the frequency with which they used RFID technology between the time of initial implementation and the time the system was re-initialized. Since staff had limited contact with the RFID system and had not received training, staff respondents were not able to provide in-depth responses to interview questions.

RFID in Investigations

Investigative staff reported that RFID technology is employed on occasion to investigate cases, but is still not used on a regular basis because RFID evidence is not typically necessary in order to corroborate facts and confirm the identity and culpability of alleged perpetrators. The three investigative staff interviewed reported that, because staff members are not tracked by the RFID system, the technology was used very infrequently to investigate allegations of sexual assault against staff. In fact, during the course of the evaluation a staff member at NEPRC was convicted of sexual abuse of multiple female inmates and RFID records were not used in the investigation. However, the technology does hold value in increasing the efficiency of investigations: two of the three investigative staff who had used RFID in investigations felt that RFID data reduced the number of cases that were closed due to insufficient evidence. One investigator felt that prosecutors were aware of RFID or used RFID very often as a form of evidence, and two staff members believed that prosecutors consider RFID reports to be a credible form of evidence.

Staff Perceptions of the Utility of RFID

Staff had both positive and negative things to say about the RFID system. As strengths, a few respondents cited the technology's ability to track and count inmates (7 out of 21) and its usefulness in conducting investigations into misconduct (3 out of 21). Three staff members said that the RFID system has no weaknesses and 13 said that the system was reliable when operational, but that it was not operational on a consistent basis. Four staff members felt that the RFID system cannot pinpoint the exact location of inmates due to delays between the time the transmitters are read by the DEUs and the time that information is relayed to the RFID monitoring screen in the senior staff member's office. Two staff members reported that the ankle bracelets slide off, pop off, and can sometimes falsely report that inmates are tampering with the

units when in fact the units came off accidentally. As a result, they said, inmates are no longer punished for their bracelets breaking unless it can be proven that they deliberately tampered with the units. Out of the 21 staff interviewed, eight believed that the RFID system did not improve prison management at all.

Impact Analysis

An examination of the infraction data from the post-implementation period as a whole does not reveal results that would indicate that RFID is an effective tool for reducing inmate infractions. In the 19-month period prior to RFID implementation, there were an average of 29 charges brought to the rule infraction board at both NEPRC and FPRC each month. During the first period after the RFID system was installed the average number of monthly charges at NEPRC actually increased significantly to 42 infractions per month (an increase of 43 percent from the pre-implementation mean), while the average number of monthly charges at FPRC decreased to 22 infractions per month. During Phase II of the implementation period the average number of infractions decreased to 36 per month at NEPRC and increased to 26 per month at FPRC. In total, during both implementation periods the average number of monthly infractions increased by 34 percent (from 29 to 39) at NEPRC and decreased by 17 percent at FPRC (from 29 to 24). Table 2 presents the findings of the ARIMA and t-test analyses of NEPRC RIB data.

At NEPRC, the number of charges for violent offenses, including fighting and physical assaults, increased from 5 offenses per month during the pre-implementation period to 8 charges per month after RFID implementation. However, when analyzing each offense type, although analyzed independently, the only violent offense that increased significantly was fighting. Charges for non-violent offenses, including being out of place and property-related violations, also increased significantly during this time, from an average of 18 charges per month before RFID implementation to 25 charges per month after RFID implementation. At FPRC, the average number of charges for violent offenses equaled 5 per month both in the pre- and post-RFID implementation periods. The average number of non-violent offenses at FPRC decreased from 25 per month during the pre-implementation period to 19 per month during the entire post-implementation period. Figure 2 presents a comparison of the total number of charges at NEPRC and FPRC over the course of the evaluation period.

Table 2. Results of T-Tests and ARIMA Models on Selected Infractions (NEPRC)

Type of Infraction	Pre-RFID Period Mean	1st Implementation Period Mean	2nd Implementation Period Mean	Both Implementation Periods Mean	ARIMA Results Significance
Total number of infractions	29.3	41.9*	35.5	38.7***	***
Total guilty	23.8	30.3*	29.6	30.0***	
Total number of cases	17.3	25.2*	20.7	23.0***	***
Violent	5.5	8.3*	6.9	7.6***	***
Nonviolent	18.2	25.5*	21.1	23.3***	est. p = 0.06
Assaults	0.9	1.1	0.5	0.8	
Nonconsensual sex	0.4	0.1	0.3	0.2	
Consensual sex	1.2	2.6*	0.8+	1.7	
Out-of-Place	2.9	4.2	3.5	3.9	
Fighting	2.6	5.2*	4.9**	5.0***	
Lying	2.5	2.5	2.5	2.5	

* T-test results indicate significant difference from Pre-RFID to 1st implementation period (p < .05)

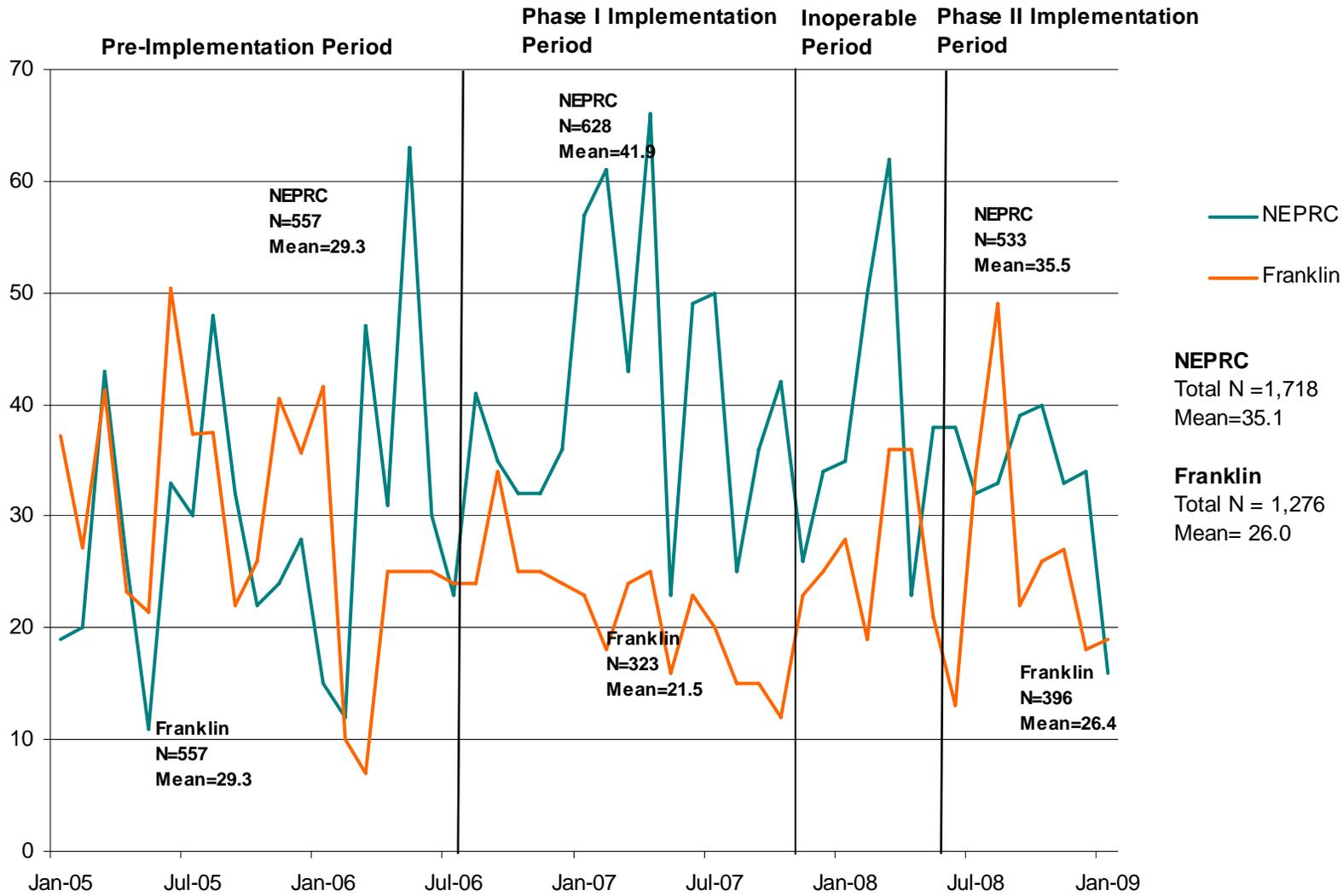
+ T-test results indicate significant difference from 1st implementation period to 2nd implementation period (p < .05)

** T-test results indicate significant difference from Pre-RFID period to only 2nd implementation period (p < .05)

*** T-test results indicate significant difference from Pre-RFID period to both implementation periods (p < .05)

ARIMA modeling could not be used to determine the significance of specific types of infractions due to an insufficient number of observations in each biweekly unit of analysis. See Appendix C for a sample of the first three months of pre-implementation data from NEPRC and FPRC for each biweekly unit of analysis.

**Figure 2. Number of Infractions for NEPRC and Franklin
January 2005 - January 2009**



Initially, these findings might suggest that the number of charges spiked immediately after implementation because the system increased officers' ability to detect infractions that previously went unnoticed. On closer inspection, however, the spike in infractions during the first phase of the implementation period began in January, 2007 – roughly four months after the system was first initiated. It is unlikely, therefore, that the number of charges increased because the system improved the detection capabilities of staff. A more likely explanation is that, because the system was not used by staff to prevent misconduct and the threat of monitoring was not reinforced, the post-implementation increase in infractions occurred because inmates realized that the system was not being used to actively track them, committing an even greater number of acts of misconduct because they believed that staff could not detect them. This conclusion is supported by the fact that infractions did not increase significantly at FPRC during this time. By September, 2007 the number of monthly charges returned to pre-implementation levels and closely mirrored the number of charges that were filed against inmates at FPRC. This suggests that after inmates realized the system was not operating and “rebelled” by committing more infractions than they normally would have prior to RFID implementation, behaviors returned back to the pre-RFID implementation period status quo.

During the second phase of the post-RFID installation period, the average number of total charges decreased from 42 to 36 per month and both violent and non-violent related-charges decreased from 8 and 25 to 7 and 21, respectively. However, none of these decreases were statistically significant. Since both staff and inmates indicated that staff use of the RFID system did not increase during the second implementation period, it is not surprising that the frequency of acts of misconduct during the second implementation period is similar to the frequency of misconduct during the first implementation period. Overall, the total number of charges – including those for violent and non-violent rule violations – increased significantly over the entire post-implementation period. Since the number of charges increased and never decreased below pre-implementation levels, it is clear that the RFID system did not have an overall deterrent effect on inmate misconduct given its minimal implementation.

Sexual Misconduct and Related Acts of Violence

Both alleged and substantiated incidents of inmate sexual assaults at NEPRC and FPRC are extremely low, averaging 5 and 3 per year, respectively, so it not possible to assess with statistical confidence the extent to which RFID reduces sexual violence. At NEPRC, eight charges of sexual assault were filed in the 19-month pre-RFID implementation evaluation period, compared to four charges in the post-RFID implementation period. At FPRC, no charges of sexual assault were filed in the pre-period and three charges were filed in the post-period. Given that RFID did not deter inmates from committing a variety of other prohibited offenses, and given that the prevalence of sexual assault remained constant, it is unlikely that RFID technology deterred perpetrators from committing sexual assaults. Twenty-two charges of consensual sex were filed at NEPRC in the pre-implementation period compared to 51 in the post-implementation period. While this increase was not statistically significant, it does suggest that the RFID system did little to deter acts of consensual sex. Twenty-two charges of consensual sex were also filed at FPRC during the pre-implementation period and 17 were filed in the post-implementation period, but this decrease is also not statistically significant.

Consistent with the general trend of infractions, fighting at NEPRC increased significantly after the RFID system was installed. During the first phase of the implementation period the number of charges for fighting increased significantly from 3 incidents per month to 5 incidents per month. During the second phase of the implementation period, after more staff had been trained on RFID and inmates were once again fitted with ankle bracelets, the number of incidents decreased slightly (but significantly) to 5 incidents per month. When considering both post-implementation periods, fighting increased significantly during the implementation period.

Investigations

RFID records can be used as evidence in investigations of misconduct to identify where inmates were located at the time of alleged infractions, theoretically making it easier for investigators to pinpoint which inmates were involved in assaults or other prohibited acts. If the implementation of RFID technology suddenly increases the ability of investigators to prove inmate locations with RFID evidence, one would expect the number of charges that resulted in guilty verdicts to increase after RFID implementation and eventually decrease once inmates realized the risk of detection through

investigations was heightened due to the RFID tracking system. Since RFID evidence was used minimally at NEPRC, however, a significant change in the proportion of charges that resulted in guilty verdicts was unlikely. Prior to RFID implementation, an average of 81 percent of total monthly charges resulted in guilty verdicts. After implementation, the average share of total monthly charges that resulted in guilty verdicts was 78 percent. This minimal decrease is statistically significant, but is most likely related to other, unknown factors and not to the RFID system.

Inmate Perceptions of RFID Technology

Inmate interviews consisted of questions regarding how RFID technology affected the safety and behavior of inmates and staff and about how respondents would change or improve RFID technology and use at NEPRC. Responses from these interviews, described in the following section, while strictly descriptive, provide in-depth insight into the effects RFID technology had on both inmate perceptions of risk and the operations and management of the prison.

Inmate Profile

At the time of the interviews, inmate respondents had served an average of 26 months at NEPRC. Typically, respondents had been convicted of two crimes and had been sentenced to an average of one or two prison terms. Most had never been in NEPRC for a prior prison term, but 97 percent of respondents had served time at other prisons before being transferred to NEPRC. The primary offenses they were incarcerated for included drug crimes of trafficking and possession, robbery, homicide, manslaughter, theft/burglary, and assault. The majority of respondents identified themselves as black and heterosexual, and the average age was 38-years-old. Over half of respondents had not used drugs six months before their incarceration at NEPRC. Of the 48 percent who did use drugs, 62 percent reported using drugs daily.

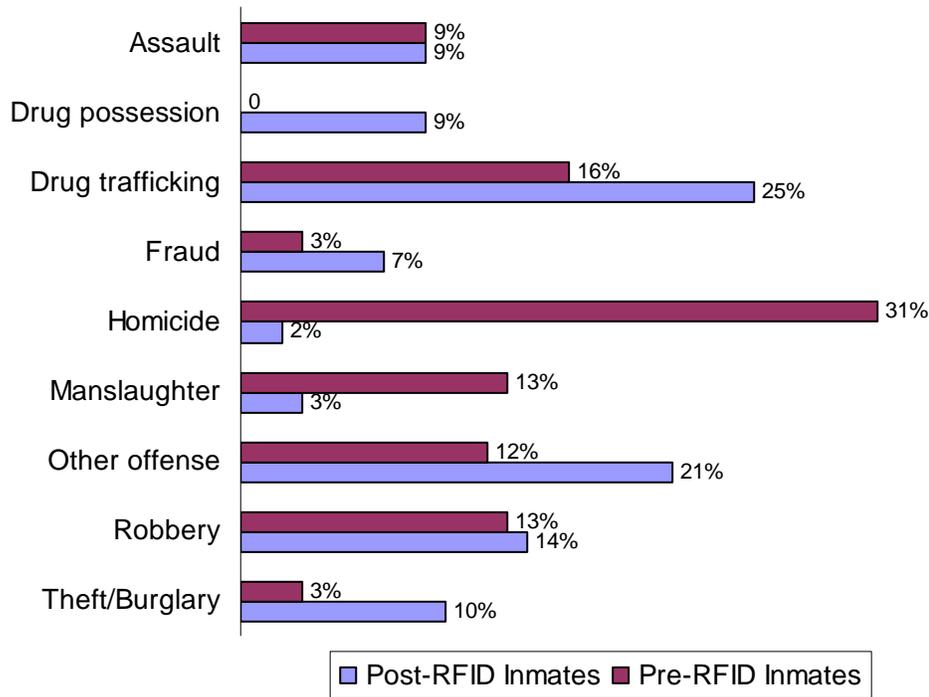
The characteristics of respondents who were incarcerated at NEPRC before the installation of RFID differed in many ways from those who arrived after RFID installation (see Table 3). Individuals who arrived at NEPRC before RFID installation had served an average of four years at the facility, while those who arrived after the RFID system was installed had served an average of 14 months. Individuals who were incarcerated before the RFID system was installed were on average eight years older than respondents from the post-RFID group, and two-thirds of pre-RFID respondents were black as compared to less than half of those who arrived at NEPRC after the RFID system was installed.

Table 3. Selected Demographic Characteristics

	Pre-RFID (N = 35)	Post-RFID (N = 54)	Total (N = 89)
Average Age in Years	43.4	34.7	37.9
Race			
% Black	65.6	47.3	54.0
% White	18.8	45.4	35.6
% Other	3.6	7.0	5.9
Ethnicity			
% Hispanic	15.6	7.3	10.4
% Used Drugs	53.1	44.6	47.7
Months at NEPRC	48.3	14.2	26.5
Total # of Convictions	1.6	1.7	1.7
Total # of Sentences	1.3	1.4	1.4

Compared to the post-RFID group, the pre-RFID group contained a higher proportion of women serving long-term sentences for serious violent offenses (see Figure 3 for the percentage breakdown of primary offense type for pre- and post-RFID groups). Forty-four percent of the pre-RFID group were serving time for homicide and manslaughter compared to only five percent of the post-RFID group. Women in the pre-RFID group had been transferred to NEPRC because they had been downgraded to a lower security level after serving time at maximum security facilities, but were not approaching their release dates. Conversely, the majority of women in the post-implementation group were convicted of less serious drug and property crimes and had been transferred to NEPRC in preparation for release.

Figure 3. Primary Offense



Inmate Responses

Inmates were asked a series of questions about RFID technology’s impact on privacy, safety, and behavior at NEPRC. If RFID’s exclusion zone capabilities had been set up to alert correctional officers when inmates were out of place or in prohibited locations, inmates being tracked by RFID would theoretically feel like they had less privacy to commit acts of misconduct and would be deterred from breaking institutional rules, in addition to feeling safer than they did before RFID was installed. Since the RFID system was inoperable from November 2007 to June 2008 and exclusion zone capabilities were not installed, however, it had only been back online for a few months when interviews were conducted in October 2008. Consequently, many of the inmates’ perceptions about RFID technology use at NEPRC were formed during a period of time when no detection of misconduct by the RFID system – and thus no deterrent effects – were occurring.

Privacy

According to the majority of respondents, if they wanted to harm someone they would not need privacy to do so. Most respondents said that fights were likely to break out in the open air prison yard spontaneously and without thought of consequences, so rational choice theory – and being tracked by the RFID system – would have no impact on violence even if individuals did understand that they would be disciplined for their actions.

Nevertheless, most respondents did not feel that the RFID system reduced the amount of privacy they had at the facility. Over 80 percent of respondents reported that correctional officers were no more aware of where inmates were located or what they were doing than they were prior to the implementation of RFID, and many respondents (44 percent) did not think that the units worked or were being used. One respondent said, “How would this bracelet change my privacy? It’s not like they ever take the time to look where I’m at.” Ninety-three percent of respondents said that the ankle bracelets did not prevent individuals from being alone together, three-quarters said that it was easy for inmates to be alone together, and 44 percent felt that it was easy to be alone with a corrections officer.

Safety

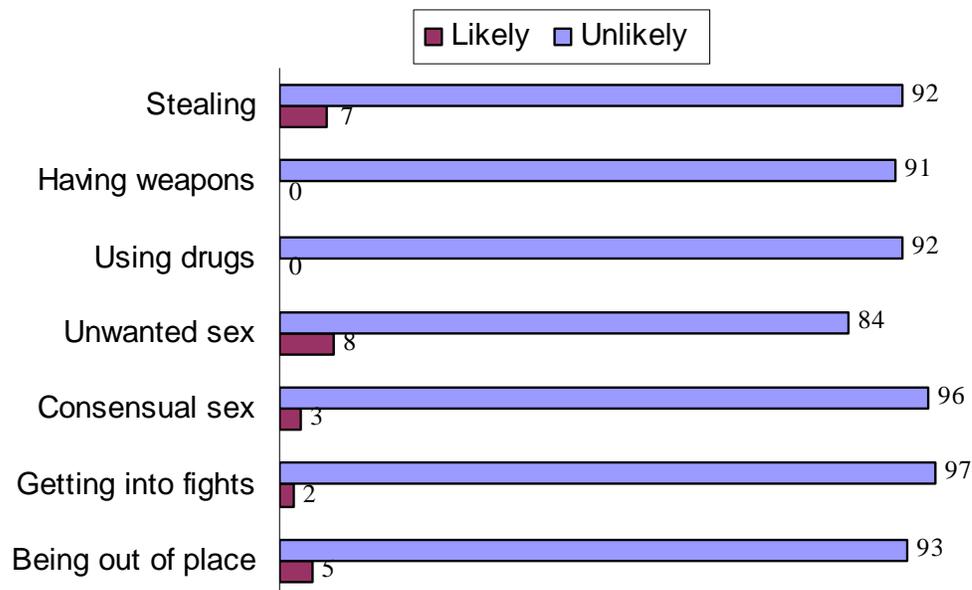
The majority of respondents from both pre- and post-RFID implementation groups considered NEPRC to be a relatively safe prison facility, but they did not attribute safety at NEPRC to the RFID system. Eighty-three percent of respondents felt safe at NEPRC, and over two-thirds of respondents who had previously been incarcerated at other prisons felt that NEPRC was safer than these other institutions. Of those who felt safe at NEPRC, most attributed their sense of safety to the prison’s small population and reluctance of inmates to engage in misconduct that will prolong their sentences. Ten percent of respondents reported feeling unsafe at NEPRC, and most of these individuals said that they did not feel safe because of the threat of disease. When asked how safe she felt one inmate said, “I don’t feel safe because a girl with AIDS is in the unit.”

Behavior

Respondents were asked whether the knowledge that they were being tracked by the RFID system would prevent them from breaking a variety of institutional rules. Overwhelmingly, the response to these questions was that RFID was not likely to prevent any type of misconduct. Respondents said that RFID did not prevent individuals

from being out of place (93 percent), getting into fights (97 percent), forcing unwanted sex (84 percent), engaging in consensual sex (96 percent), using drugs (92 percent), making or keeping weapons (92 percent), or stealing (92 percent). Figure 4 presents inmate responses by type of misconduct for pre- and post-RFID groups.

Figure 4. Does RFID Prevent Misconduct?⁵



Although cited by very few individuals, the behavior cited by both groups as most likely to be prevented by the use of RFID was sexual assault. Eight percent of respondents (two individuals from the pre-RFID group and five individuals from the post-RFID group) believed that RFID records could be used in the investigation of allegations of sexual assaults to convict perpetrators when the victim reported the crime. These individuals did not believe that the system could help officers catch individuals in the act of sexual assault because they do not believe officers monitor the system on a regular enough basis to observe when inmates are alone with other inmates. In addition, respondents did not believe the RFID system could detect acts of consensual sex or prevent these acts from occurring because inmates do not report when consensual sex takes place. The majority of respondents also agreed that the RFID system does not prevent correctional officers from sexually assaulting inmates, since correctional officers

⁵ Figures for each type of misconduct do not equal 100% because some individuals did not respond or said that they did not know whether RFID technology impacted the likelihood that inmates would engage in misconduct.

are not tracked by RFID technology and system records cannot prove that officers were present at the scene of alleged assaults.

Reporting

Most inmate respondents believed that the RFID system did not impact the likelihood that individuals would make true or false reports of misconduct against other inmates. Only 15 percent thought that RFID led people to report misconduct by inmates more often, with 80 percent saying the level of reporting was the same as before the RFID system was implemented. This is consistent for both true and false reports, and there was no difference between the pre-RFID and post-RFID groups in these perceptions.

Over 80 percent said that the ankle bracelets do not lead people to report staff misconduct more often, and only four percent said that the level of reporting staff misconduct increased due to the RFID system. RFID also had little impact on people making false staff reports, with only nine percent saying that the RFID system leads people to report staff misconduct more often. As stated previously, staff at NEPRC do not wear any type of monitoring devices. Many respondents attributed the lack of impact of the RFID system on reports of staff misconduct to the fact that the system cannot be used to substantiate claims of abuse or misconduct by staff.

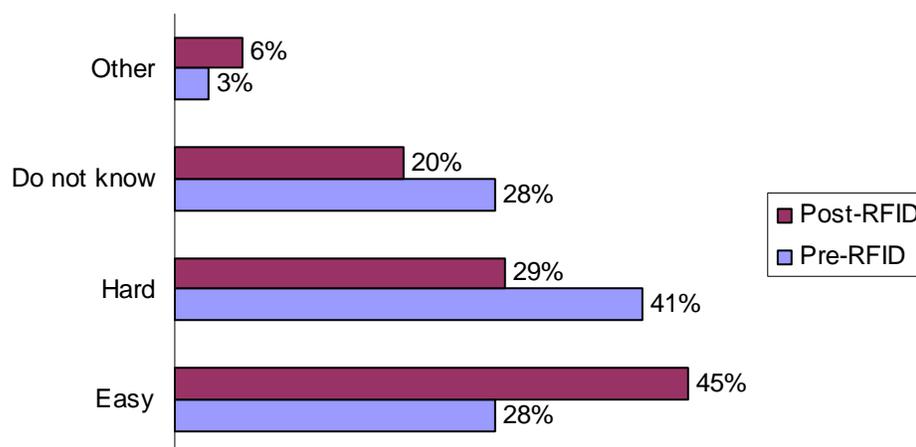
Reliability of Ankle Bracelets

Inmate respondents were also asked a series of questions about the ankle bracelets used to attach the RFID transmitter units to their bodies. Over 80 percent of respondents from both groups said they knew of persons who had removed the ankle bracelets. Of the individuals who knew of a bracelet that had been removed, fifty-three percent said that the bracelets were removed accidentally. The reasons cited for accidental removals were that they can slide or fall off, they break, or the clasp that connects the ankle bracelet pops open. Sixty percent thought they were removed on purpose because they were uncomfortable, but not in order to escape, break rules or commit illegal acts. Only two people said the ankle bracelets were removed to steal, and one person said an ankle bracelet had been removed to be used as a weapon.

Two-thirds of inmate respondents said that the ankle bracelets were easy to remove (see Figure 5 for responses of pre- and post-RFID groups). Of the individuals who said the bracelets were easy to remove, most (78 percent) were in the post-RFID group. This difference between groups could be due to the fact that prison staff began to

outfit inmates with looser bracelets at some point in 2007 when they received complaints from inmates about the bracelets being too tight on their ankles, making them easy to come off. Individuals in the pre-RFID group were still equipped with tighter bracelets. RFID bracelets do trigger an alert that is sent to the senior staff member in charge of administering the RFID system when they are not in direct contact with an inmate's body to signify bracelet removal, but by October, 2008 staff had stopped responding to these alerts because many bracelets were loose and would trigger false removal alerts. Staff had also stopped uniformly punishing inmates for broken bracelets at this time because they recognized that the bracelets were capable of breaking accidentally.

Figure 5. Are RFID Bracelets Easy to Remove?

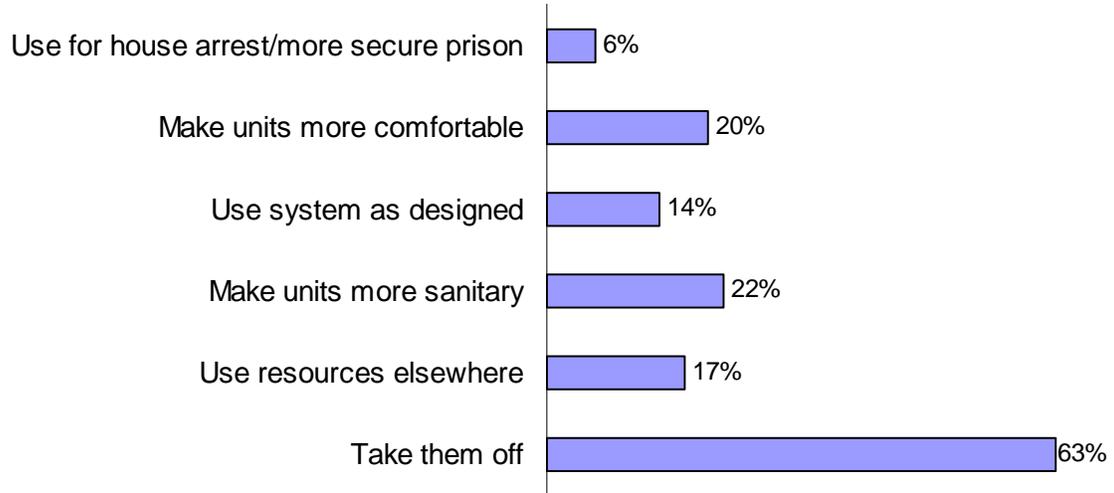


Recommended Improvements

When asked how they would improve the RFID tracking system and ankle bracelets, inmates said that the bracelets should be more comfortable (20 percent) and more sanitary (22 percent). They also responded that the RFID system wastes resources that could be spent elsewhere in the prison (17 percent), that the system does not work (32 percent), and that the ankle bracelets should be taken off (63 percent). Fourteen percent of respondents suggested that they would support the system if correctional officers used it on a regular basis to improve their safety. Figure 6 presents inmate suggestions for RFID improvement (both pre- and post-RFID groups).

Figure 6. Inmate Recommendations for Improvement⁶

⁶ Categories are not mutually exclusive.



*Percentages refer to all respondents (both pre- and post-RFID groups).

Limitations of Evaluation Design and Analyses

This evaluation faced a number of limitations. These limitations stem from both the challenges of studying a rare event such as sexual assault as well as from the realities of conducting an evaluation in a “real world” setting subject to serious threats to implementation fidelity. Both factors feature prominently in this evaluation’s inability to report conclusively on the degree to which RFID technology could have a beneficial impact on sexual violence in correctional settings.

Sexual assaults in correctional settings are notoriously difficult to study. This is particularly true for women’s prisons, where the context of sexual acts differs from the context surrounding such acts occurring at men’s institutions. While base rates of officially reported sexual assaults are low in both male and female settings, the use of the best available proxy – inmate infractions for consensual sexual acts – may not be particularly germane in women’s prisons given the widely accepted view that many incarcerated women form intimate relationships with each other in the absence of violence or coercion.

The prevalence and context surrounding staff sexual misconduct are also likely to be different in women’s institutions compared with male facilities. Unfortunately, since NEPRC staff were not tracked with RFID technology this evaluation could not determine if RFID deters staff misconduct. Overall, the differences between male and female incarceration experiences limit the generalizability of this study’s findings to women’s correctional facilities.

In addition to the challenges characterized by the specific population and topic under study, evaluation researchers encountered problems associated with restrictions imposed by NEPRC as well as institutional changes that occurred during the course of the evaluation period. Chief among these was the institution’s rigid definition of which inmates at NEPRC were ineligible to be interviewed due to a mental health diagnosis, drawing a hard line by excluding all inmates who had been diagnosed with any mental illness, regardless of their being housed in the general population. This restriction resulted in a sample of inmates that was likely not representative of the entire institution. This threatens the validity of our findings, in that it is conceivable that inmates who suffered from mental health disorders but were not confined in seclusion may have offered different responses to interview questions compared with those inmates who were selected for interview participation.

Institutional changes at NEPRC and FPRC during the evaluation period also threatened the validity of the evaluation findings. In May 2005, FPRC, the comparison prison, transferred twelve restriction beds that had been used for disciplinary purposes to the general population to accommodate its growing population. In June 2006, NEPRC began admitting a small number of high-security inmates. Given their higher security level, these inmates in both institutions would theoretically be more likely to engage in prohibited acts. During the entire course of the evaluation, however, the total number of high-security inmates at both NEPRC and FPRC did not vary greatly and never exceeded one percent of either institution's total inmate population. Moreover, NEPRC staff reported that the additional high-security inmates did not engage in disproportionate amounts of misconduct. FPRC staff also indicated that the scarcity of restriction beds had existed for several years, meaning that most of those sentenced to segregation were already residing in the general population. These population changes may therefore have had little impact on evaluation findings.

Perhaps the greatest share of this evaluation's limitations is related to the RFID implementation decisions made and the technological challenges experienced by NEPRC. The fact that, unbeknownst to evaluators, the technology had never been fully implemented with the features that theoretically would yield the greatest deterrence effect is particularly troubling. That fact, combined with the unexpected period of RFID inoperability, left the evaluation team with a diluted and interrupted intervention. Efforts to salvage the evaluation resulted in a less rigorous two-phased implementation period. Additional efforts to encourage NEPRC to fully implement, train, and use the system did not yield the intended results and bordered dangerously close to a Hawthorne Effect, in that any improvements NEPRC made in phase II implementation may not have been realized absent the evaluation team's intervention.

In retrospect, it is difficult to discern what improvements could have been made to the evaluation design that would have enabled the research team to minimize the impact of these unexpected challenges. Hindsight might suggest that a more prudent approach would have been to select a more viable evaluation site. However, NEPRC was documented as a strong evaluation site through an extensive evaluability assessment which concluded that of all the candidate evaluation sites NEPRC was the most promising. In addition, most of the problems cited above were encountered well into the evaluation period and many were the result of poor implementation fidelity, which could well have been observed at any evaluation site. Some of these problems,

however, may have been identified and addressed earlier if the project budget had allowed for more frequent site visits to the facility. Future evaluations of this type would likely benefit from building in more field time for the research team.

Conclusions and Implications

Given that the more sophisticated applications of RFID technology that are theorized to prevent sexual assault and related acts of violence were not employed at NEPRC, it is difficult to conclude from this evaluation that the technology – when implemented as designed – is or is not an effective tool in deterring inmates from engaging in prohibited behaviors and preventing sexual assault and related violence. Indeed, the rational choice theory underlying this research investigation is effectively rendered useless in the context of the limited manner in which the technology was implemented. The most that we can conclude from this present evaluation is that, when used in its most basic capacity as a perimeter control device, RFID technology does not deter inmates from committing either violent and non-violent acts of misconduct and may indeed increase violence in the short run. If, however, the system is used in its full capacity, RFID technology may well reduce sexual assault, related violence, and other prohibited acts in prison settings by increasing inmates' perceived risks of detection. These effects, however, will be short-lived if the system is not operable or is not being used appropriately by staff. Currently, NEPRC is moving forward with plans to initiate the more advanced applications of the technology, including exclusion zones. Once these capabilities are used the system may begin to deter inmates from committing prohibited acts, but officials will most likely find it difficult to convince both inmates and staff that the system works given previous experiences with the technology at NEPRC.

Correctional administrators interested in employing RFID technology can gain important lessons in practice from NEPRC's experience. First, technical problems with the installation and implementation of the RFID system at NEPRC were substantial and lasted throughout this evaluation's implementation period. Without on-site technical assistance, technical problems went unattended until the vendor could travel from out of state to fix them. This inefficient process prevented NEPRC from moving forward with the system to utilize the more advanced capabilities that are theorized to produce declines in sexual assault and violence. Because staff were not initially trained on how to use the system and were not given easy access to it, very few ended up using it. Moreover, while RFID records were used minimally in investigations, an analysis of administrative records revealed that RFID evidence did not significantly reduce the number of cases closed due to insufficient evidence.

As a result, ODRC invested resources in a system that was used minimally in investigations and was otherwise only used as a backup method of securing the facility's perimeter, yielding no benefits in reductions in misconduct or improvements in prison management. This experience suggests that if correctional agencies hope to benefit from RFID technology, they must be willing to dedicate the resources not only to implement the system fully, but also to train staff and ensure ongoing technical maintenance when problems occur. Corrections administrators may also find it useful to refrain from outfitting inmates with RFID transmitter units until the system can be implemented fully and positively impact their safety.

Implications for Further Research

It is clear that the correctional field can still benefit from a rigorous evaluation of both the use and impact of RFID technology. Evaluators undertaking such a study should take care to ensure that the technology has been implemented in a manner consistent with the benefits theory suggests the technology would yield. Specifically, any future evaluations of RFID in corrections should first confirm that the software component of the system is fully utilized to create exclusionary zones generating alerts when inmates are out of place or in close proximity to rivals. It bears noting that such assurances were obtained in the present study, but hindsight indicates that the on-site demonstration offered by the vendor and correctional staff person at NEPRC represented a hypothetical application of the technology rather than current practice within the facility.

Future evaluations should also aim to examine the use and impact of the technology on both inmates and correctional staff. RFID tracking devices currently exist in the form of an officer alert system, enabling officers to issue alerts that show their physical locations when they find themselves in dangerous or compromised positions. These devices are imbedded in wrist watches or identification cards, so are not as tamper resistant as the ankle bracelets worn on inmates. Nonetheless, an evaluation of RFID use with both inmates and officers would enable the exploration of how RFID data might be used to confirm or refute charges of staff sexual misconduct and other prohibited staff behaviors. While correctional officer unions are likely to be a barrier to the implementation of the technology on correctional staff, such an evaluation would generate important information for the field.

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Appendix B: Evaluability Assessment

Radio Frequency Identification Device (RFID) Use in Correctional Settings

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SYNOPSIS

Project Summary

Radio Frequency Identification Device (RFID) technology has been in existence for over thirty years, but its application in correctional settings is relatively new, dating back to 1997. RFID use in correctional facilities is designed to improve prison management, offering a more efficient means of locating inmates, confirming counts, and alerting officials to escapes. Overall, it holds promise for improving inmate behavior (i.e., reducing infractions and assaults) and to provide a safe and secure environment for staff and inmates. Two Ohio adult correctional facilities, Ross Camp and Northeast Pre-Release Center (NEPRC), were selected as the focus of this evaluability assessment. Both facilities have RFID fully operational, and because each used a different vendor to install RFID, an evaluability assessment of both provides an opportunity to learn about differences in implementation and potential outcome measures.

Scope of Evaluation

The overall conclusion from this assessment is that an evaluation of the use of RFID technology at NEPRC employing an interrupted time series design is currently feasible. An impact evaluation at Ross Camp is not feasible due primarily to lack of outcome data. Absent an impact evaluation, a process evaluation at both facilities is still recommended.

Summary of Evaluability Assessment Activity

The assessment of the feasibility of evaluating RFID technology began with a review of the literature and a web-based search to identify RFID vendors as well as agencies currently using RFID. In addition, interviews with technology experts at the National Law Enforcement and Corrections Technology Centers (NLECTC) and staff at NIJ were conducted. Our research revealed that two vendors, ElmoTech and TSI Prism/Alanco (TSI) are the primary providers of RFID technology for correctional institutions. ElmoTech and TSI provided UI with a list of agencies that are using, or are in the process of implementing, RFID to monitor inmates and/or staff. Currently over 4,200 inmates and staff in seven states are tracked using RFID technology.

Additional screening, including input from vendors, revealed nine mature and four planned applications of RFID technology in correctional settings. On the basis of the background information compiled and discussions with NIJ, it was mutually decided that the Ohio Department of Rehabilitation and Correction's (ODRC) Ross Camp and the NEPRC would be the locations for the RFID site visit.

ANALYSIS

1. Initial Screening

Background

Describe the technology. What is the background/history of this technology?

RFID technology has been in use for over three decades, mostly in the context of inventory tracking. In recent years, both the use and number of applications of RFID have grown exponentially. The use of RFID technology by Wal-Mart and the Department of Defense for inventory and supply chain management has fueled the growth and use of RFID technology throughout other industries (Justice Technology Information Center 2005). Moreover, significant developments in the technology and reductions in cost have led to an open standard system that can be used for any application and applied to any object (Beck 2006). RFID technology has been implemented in various retail and commercial industries to prevent theft (Justice Technology Information Center 2005). In addition, in 2001 the United Kingdom implemented the Chipping Goods Initiative in an effort to reduce the cost of property crime, relieve pressure on police resources, and trace the ownership of stolen goods (Adams 2004; Home Office 2006). RFID technology has also been recognized for use within corrections, law enforcement, and even homeland security (Justice Technology Information Center, 2005).

The first application of RFID in a correctional setting was in 1997 at Corcoran, a California state prison, where it was used to track staff for safety purposes. In 2002, RFID technology was piloted at a Michigan juvenile facility, the first known application of RFID use on inmates (Reza, 2004). To date, RFID has been implemented (or is in the process of being implemented) with inmates in 13 facilities in seven states across the country (see Attachment A for complete list of sites, including facility name, location, type of facility, number of RFID units, year of implementation, implementation status, targets, and vendor).

In the context of correctional settings, RFID technology consists of three components: (1) an RFID chip, which is embedded in a bracelet or anklet that also has the ability to detect body mass index (issuing an alert if the bracelet is removed or is not within one finger's width of the skin); (2) a series of Data Extension Units (DEUs), which operate like antennas to read and transmit information stored on the RFID chip; and (3) computer software that enables corrections officials to document – in almost real time – the whereabouts of inmates. With a sufficient number of DEUs in a facility, RFID technology has the ability to track the locations of inmates every 30 seconds, with software mapping the locations and movements over time in a fashion similar to Global Positioning Systems (GPS) technology, but at a fraction of the cost.

On its most basic level, RFID use in corrections can help confirm counts of inmates and serves as an additional perimeter control device. The software can also enable more sophisticated applications. Corrections officials can enter information on inmates' schedules and the locations of where they are supposed to be at certain times of day (e.g., classes, cafeteria, cells), issuing an "out of place" alert if inmates deviate from those schedules. The software can be programmed to issue alerts when certain inmates, such as rival gang members, are in close proximity to one another. And, because the system maintains historical data of inmates' locations, RFID can also be a useful tool for investigating assaults, pinpointing which inmates were at a location where an assault took place, and aiding in the substantiation of allegations of sexual and other assaults.

Maturity

Time in field

Regarding use in correctional facilities, RFID has been in the field since 1997.

Prevalence in the field

Two vendors, TSI and Elmotech, currently offer RFID implementation in correctional settings. Among nine correctional agencies that have already implemented RFID, the Ohio Department of Rehabilitation and Corrections (ODRC) is one of the earliest adopters of RFID technology, with RFID fully operational in two separate correctional institutions, each of which implemented RFID using a different vendor. The ability to examine applications of two different vendors' technologies in one site visit prompted us to select Ohio as the focus of the evaluability assessment.

What do we already know about technologies like these?

RFID use in correctional settings is relatively new and has not been subject to rigorous evaluation. The only study identified through an extensive literature review was an assessment of implementation of RFID at a Michigan juvenile facility, which found that, during a three-year test period, there were no escapes and violent incidents were reduced by 65 percent compared to pre-RFID incidents (Reza, 2004). Beyond this one assessment, anecdotal evidence supplied by vendors, and personal impressions of the few departments of correction that have already invested in RFID technology, very little is known about this technology's potential impact on efficiencies and outcomes.

What could an evaluation of this technology add to current knowledge?

An evaluation of RFID will enhance our knowledge of how to apply this technology to improve prison and jail operations and manage correctional populations.

Which audience(s) would benefit from this evaluation?

An evaluation of RFID would benefit both directors of departments of corrections as well as wardens and line-level officers. The application of RFID in corrections settings is relatively new, and Ohio represents one of the earliest adopters. Word of mouth has attracted representatives from DOCs across the country to visit Ohio and learn more about the technology, but much of the information they collect is based on perceptions rather than any hard numbers on impact and costs/benefits.

What could they do with the findings?

There is much to be learned and documented about the process of implementing and using RFID in correctional settings that would be of use to the corrections community and help guide DOCs in making an educated investment in RFID rather than relying solely on the information provided by vendors. Agencies that have already invested in RFID would naturally be interested in knowing whether it has an impact on prison management as well as the various uses of RFID in a correctional setting. Agencies contemplating investing in RFID would also be interested in these findings. For example, if an RFID evaluation demonstrates that it is effective in both detecting inmate misbehavior as well as possibly discouraging it, more corrections agencies might consider investing in it.

At what stage of adoption/implementation is the technology in the targeted site?

ODRC has enjoyed a long history of being at the forefront of innovative correctional practices. ODRC Director Terry Collins first became interested in the possibilities of RFID during his tenure as Director of Prisons. He was particularly interested in installing RFID for perimeter control around Ross agricultural

camp, a correctional institution of approximately 350 inmates who run a full farm operation. Because Ross operates as an honor camp, Director Collins was interested in testing the technology for tracking, scheduling, and alerting correctional staff about out of place inmates and perimeter violations. Collins was also interested in RFID's capacity to support investigations of allegations of staff assaults on inmates, as well as inmate-on-inmate assaults. Shortly after releasing an RFP for Ross, Director Collins secured money through the Prison Rape Elimination Act (PREA) to implement RFID at the Northeast Pre-Release Center (NEPRC) in Cleveland, a 570-inmate woman's institution. While the focus of the RFID technology at NEPRC was similar to that at Ross, a greater emphasis was placed on preventing and supporting investigations of sexual assaults. In both correctional facilities, only inmates are currently equipped with RFIDs, but ODRC is contemplating using RFID-equipped identification cards on staff sometime in the future.

Ross Camp is a 350-inmate mixed security institution that neighbors the 1,600-inmate medium security Ross Correctional Institution in rural Chillicothe, Ohio (approximately 30 miles south of Columbus). The camp is part of a 1,800 acre working farm, where inmates raise and slaughter cattle used to feed inmates. The camp borders on a Veterans Administration hospital and a high school, with a river 400 yards to the east and a major highway in close proximity. As an "honor camp," inmates are free to move about the facility and surrounding campus, and frequently check in and out of the facility to report to and return from their farm work. In 2004, ODRC issued a Request for Proposals (RFP) for RFID implementation at Ross Camp, and ultimately selected TSI as the vendor. RFID at Ross Camp is used primarily as a means of enhancing perimeter control based on concerns about escapes, with a secondary use in determining whether inmates had reported to school and other programs and if not, where they are located. RFID has also been used to identify who ate (for diabetics) and to prevent "double backs" – when inmates get back in the cafeteria line for a second meal. Ross has little in the way of disciplinary issues, so there was no belief on the part of corrections officials that RFID would have an impact on inmate violence.

The Northeast Pre-Release Center (NEPRC) is a 570-inmate minimum/medium security women's prison located in Cleveland, Ohio, with an average inmate stay of 24 months. It is a dorm-style facility with 2, 4, or 6 cots to a room. In 2005, ODRC issued an RFP for RFID at NEPRC, and ultimately selected Elmotech as the vendor. Because funds for installation at NEPRC came from the Prison Rape Elimination Act (PREA), the primary purpose of RFID at NEPRC was to reduce inmate on inmate sexual assaults and to aid in the investigations of both actual and alleged assaults. RFID at NEPRC is also used to confirm if an inmate is where she is supposed to be and to document the date, time, and location of where fights occur. In addition, as with Ross Camp, NEPRC uses RFID to enhance perimeter control and complement body counts by providing an electronic "running count" of inmates.

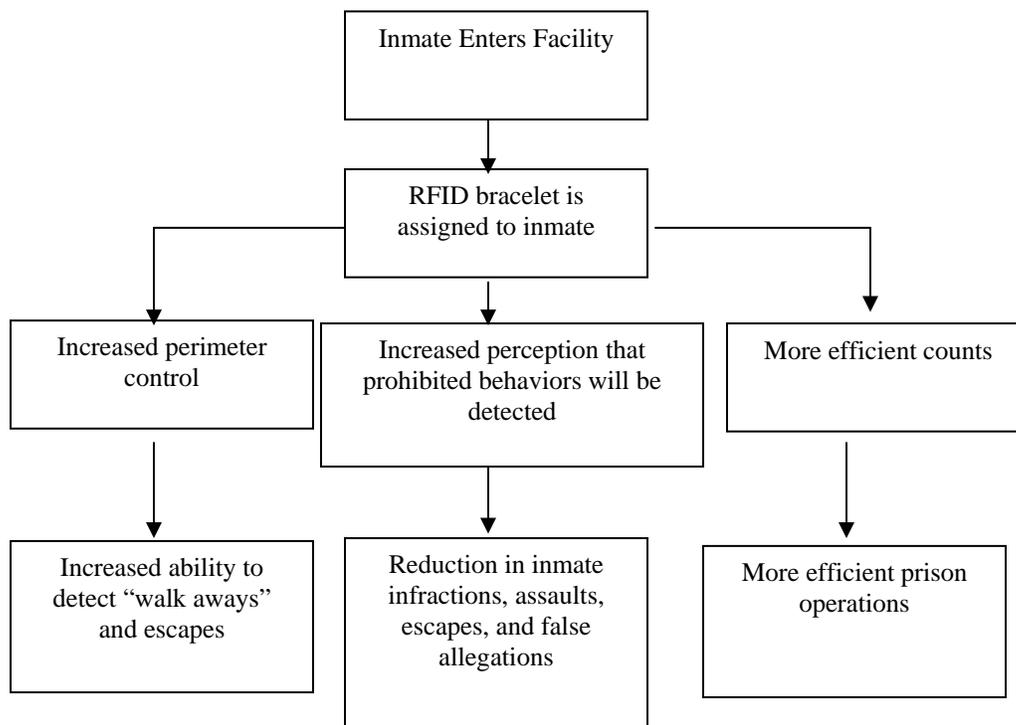
RFID at both Ross Camp and NEPRC became fully operational in August, 2006.

What efficiencies or primary/secondary outcomes are expected?

RFID use in correctional facilities is designed to improve prison management, offering a more efficient means of locating inmates, confirming counts, and alerting officials to escapes. It also has the ability to aid in investigations. Overall, it holds promise for improving inmate behavior (i.e., reduced infractions and assaults).

Sketch the logic by which technology use should affect goals

Exhibit 1 – RFID Logic Model



Is the technology well suited and appropriately specified given these goals?

It is, but an evaluation would need to occur to explore exactly how the technology is implemented and used by corrections staff.

Are there operational alternatives that could be used for comparisons?

The operational alternative would be no RFID use, which in this context would mean the identification of a comparison institution that is not currently using RFID. Given the variations in ODRC's facilities in terms of size, design and population, it would be difficult if not impossible to select such a comparison institution.

Is the site interested in being evaluated?

The site is keenly interested in being evaluated.

Is the site planning and evaluation?

Currently, ODRC has no plans for formal evaluation of RFID.

Data sources

What data systems exist that would facilitate evaluation?

ODRC maintains an Institutional Climate Database for each facility, which documents numbers of: inmate escapes, walkaways, drug finds, weapons finds, disruptive incidents, use of force incidents, cell extractions, Rules Infraction Board (RIB) hearings, drug test results, homicides, suicides and suicide attempts, and inmate-on-inmate physical assaults, sexual assaults, and fights. While base rates are low for most of these measures, significant numbers of inmate fights occur at NEPRC (an average of 36 per year) and there are also a relatively high number of RIB hearings at NEPRC, averaging 197 each year. Both alleged and founded incidents of inmate sexual assaults are extremely low, averaging 5 and 3 per year, respectively.

While ODRC maintains similar incident data for Ross Camp, incidents for Ross Camp are combined with data for Ross Correctional Institution, precluding the use of incident data to assess the impact of RFID on inmate behavior at Ross Camp.

At the facility level, data are also maintained on inmate locations, movements, and out-of-place alerts. Currently, those data are only maintained for 30 days and are then purged from the system. However, given the fact that this information would support a process evaluation, it is likely that ODRC would agree to maintain these data for longer periods of time in support of an evaluation.

What key data elements are contained in these systems?

See data systems discussion above.

Are there data to estimate unit costs of labor and capital?

Currently the cost data are embodied in the original RFPs released for Ross Camp and NEPRC, the contracts of which totaled at \$425,000 and \$390,000 respectively. There are no maintenance costs to date, as both installations are still under warranty. Labor costs and benefits are also difficult to estimate, as RFID does not replace staff, it simply aids them in locating inmates, identifying infractions, and conducting investigations.

Are there data for possible comparison technologies or other solutions?

No. The only comparison would be business as usual prior to implementation of RFID.

In general, how useful are the data systems to an impact evaluation?

If the goal is to look at the global impact of RFID in prison (i.e., aggregate inmate behavior) rather than the local impact (e.g., tracking individual inmates on RFID), then the data should be suitable for impact evaluation purposes.

2. Checkpoint

Is this site worthwhile?

Yes.

3. Site Visit Screening

The Intervention

Has the organization implemented a policy and/or training for the technology's use?

Training has thus far been vendor-supplied, with more training offered at NEPRC than at Ross Camp. Mostly the training has been “on the job” and procedures have adapted over time to suit the way the technology has been used as well as the problems that have been encountered with the technology. For example, officers have developed a system for calling into the central command area to clear false alarms.

Who are the users?

The users of the technology are correctional staff at all levels who play a role in managing and accounting for the whereabouts of the inmate population. In addition, the investigators at each institution use the technology to research assaults and other inmate incidents.

Who/what are the targets?

The targets are the inmates at each of the two institutions. At Ross Camp, there are 350 mixed security male inmates. At NEPRC, there are 570 minimum security female inmates.

Who/what gets excluded as a user or target?

No one is excluded – all inmates have RFID bracelets.

Have the characteristics of the user or target population changed over time?

Ross has had an increase in more short-term inmates over the last several years. While the female inmate population across Ohio has increased significantly in recent years, the composition of women at NEPRC has been relatively stable.

What values/outcomes do users see/envision in the technology?

According to the correctional staff we interviewed, RFID serves as a useful management tool. While it does not serve as a substitute for head counts, it reinforces counts and aids tremendously in identifying where out-of-place inmates are located. This saves staff time and effort in tracking down inmates, which can be very time consuming, particularly at Ross. This could become particularly critical during inmate escapes, none of which have occurred at NEPRC or Ross Camp since the time of RFID implementation. While escapes are rare, with RFID, corrections officers would know that an escape occurred – and which inmate escaped – within minutes.

ODRC also believes that RFID is saving time and money in investigations, and that it is particularly useful when used in tandem with CCTVs at NEPRC.

Because of inmates' perceptions that they are closely monitored and their whereabouts are known at all times – perceptions that are reinforced when they are caught out of place – ODRC believes that RFID may actually prevent rules infractions, assaults, and thefts from taking place.

What are the limitations/obstacles in using the technology?

The most common problem with the RFID technology as experienced by both Ross and NEPRC staff is false alerts. False alerts can occur when an inmate is sitting on the floor and the bracelet's RFID signal is

picked up by the DEU on floor below where the inmate actually is. Signal blockage can also cause false alerts, as was the case with inmates under the metal- roofed pavilion at NEPRC (the vendor added additional DEUs to correct the problem). Signals may also be blocked if a male inmate is sleeping with his hand against the wall or if a female inmate has her ankle on the ground.⁷

The sizing of the RFID bracelets may also cause problems. The bracelets used at Ross are difficult to re-size and in both facilities if inmates gain or lose weight the bracelets will not fit. Overly tight bracelets prompt complaints from inmates and naturally require adjustment, but overly loose bracelets are perhaps more problematic, in that they issue an “inmate missing” alert. When RFID was first implemented at both facilities, these types of alerts were frequent, but as corrections officers have become more accustomed with the technology they have decreased significantly.

Other issues with bracelets include their battery life (when batteries die, the unit reports “inmate missing”), and the cleaning and maintenance of the bracelets, which can be time consuming for corrections officers.

One final limitation to use of the technology is unique to Ross, in that corrections officials at that facility do not find the software to be user friendly, which may limit their use of the technology to its fullest capacity.

What outcomes could be assessed? Using what measures?

Improved prison management. With regard to prison management issues, it would be useful to know the extent to which RFID has increased corrections officers’ efficiency and perhaps saved officers’ time. For example, the time it might take to track down the location of an inmate might be better spent patrolling the grounds or conducting counts. However, given the fact that any evaluation would likely be retrospective, it is not feasible to collect hard data on how officers spent their time before and after RFID implementation. This outcome would have to be addressed qualitatively through interviews or focus groups with corrections officers.

Improved inmate behavior. Theoretically, one would anticipate that RFID increases inmates’ perceptions of the risk of being detected while committing an offense or infraction. One would also expect that any effect that RFID had on improved management overall would have a secondary effect on inmate behavior. The best means of measuring inmate behavior is through an analysis of inmate infraction data before and after RFID implementation.

Better investigations. More specific to sexual assault, RFID may have an impact on inmate reports of victimizations. Fewer false allegations may be reported if inmates learn that RFID helps refute false claims. Likewise, RFID may increase the number of inmates who report actual sexual assaults because they have more confidence in the system based on evidence supplied by RFID. Theoretically, this outcome could be measured by analyzing the number of sexual assault complaints filed before and after RFID implementation, as well as the share of those complaints that are substantiated at time one versus time two. However, given the low base rate of sexual assault allegations (5 per year on average), this would be difficult to confirm quantitatively.

Designing a Study

Are there other operational environments for which the technology is well suited?

Any type of correctional facility should be well suited for this technology.

⁷ Due to the standard width of the RFID units, they are used on wrists for male inmates but are more suitable for use on female inmates’ ankles.

What are the constraints in such environments?

The constraints are mostly in cost and implementation time. Large facilities and those that have extensive grounds will require the installation of many more DEUs, and it takes time to calibrate the reception area around each DEU.

Do the technology “events” permit randomly generated applications of the technology?

This technology is not conducive to random assignment, as any efficiencies gained in prison management would be lost under such a scenario.

Can comparison samples be formed? With what difficulties?

The only possible comparison sample would be a comparison institution. Due to the variations in institution size, design, and location, however, this is not an appropriate evaluation approach.

How many times would the technology be applied in one year?

The technology, once applied, remains within the institution indefinitely.

Will modest but statistically significant effect sizes be detectable given sample sizes?

The only likely evaluation method would be an interrupted time series design. The base rate of inmate infractions, however, is relatively low. However, if one examines changes in rates of both inmate fights and RIB hearings, these data should be sufficient to detect a difference between pre- and post-implementation if one exists.

How many units – if any – would have to be procured for an evaluation?

The units have already been procured. However, this technology would be even more powerful if corrections officers also were equipped with RFID devices, particularly with regard to allegations of sexual assault or other charges of inmate abuse. Such a study would require the procurement of additional units (one for each correctional staff person).

What does a control/comparison group receive?

The “comparison group” would be the institution prior to RFID implementation, so it would receive nothing.

What kinds of data elements are available from existing data sources?

See data elements question above.

What specific input, process, and outcome measures would they support?

See above.

How complete are data records?

The data are in the process of being converted to a new system. However, the data that are maintained on inmate behavior are extremely rich and detailed.

Can user and/or target populations be followed over time?

Target populations may be followed over time at the institutional level; once an inmate leaves an RFID-equipped facility, he or she would drop out of the sample. However, RFID use should not be measured at the individual level, but rather at the institutional level whereby aggregate changes in infractions can be assessed over time.

Can the dosage of technology used be identified?

No.

Can data systems help diagnose implementation problems?

To some extent, the data system associated with the RFID software enables the generation of reports for different types of alerts and how they were handled by corrections officers. Those data would therefore aid in learning whether corrections officers are responding promptly and appropriately to alerts.

What threats to a sound evaluation are most likely to occur?

The greatest threat to an evaluation is a Type II error (failing to reject the null hypothesis when it is false). The relatively low base rate of inmate infractions and fights may not provide sufficient statistical power to detect a significant reduction in events from pre-RFID implementation to post-RFID implementation.

Another potential evaluation threat is that, because RFID may actually increase *detection* of infractions, official infractions records may increase and therefore not reflect any improvement in inmate behavior.

What changes is the site director willing to make to support the evaluation?

ODRC might be willing to consider using RFID with its corrections staff, but union issues may make that difficult to sell.

Overall

Would you recommend that the technology be evaluated?

Evaluation is possible at NEPRC but not at Ross Camp. Ross' base rate of inmate infractions is already quite low, so any impact on infractions is unlikely to be detectable. Moreover, the infractions data for Ross cannot be disaggregated from that of its larger neighboring correctional institution.

What type of evaluation designs would you recommend?

The most appropriate evaluation design for identifying changes in inmate behavior as a result of RFID implementation would be a retrospective interrupted time series design employing autoregressive integrated moving average (ARIMA) modeling. Employing weekly RIB and inmate fight data, there should be ample pre- and post- intervention data points to support this approach. This quantitative evaluation should be complemented with qualitative data collected through semi-structured interviews with correctional staff and the facility investigator to learn their perceptions of the impact of RFID, as well as focus groups with inmates to learn whether RFID use promotes a safer prison environment. Given the data restrictions at Ross Camp, an impact evaluation is only recommended for NEPRC.

Even without an impact evaluation, this technology still merits a full process evaluation at both facilities. Such an evaluation would support prospective new adopters in making informed decisions about whether to invest in the technology and ways in which it can be effectively applied in a correctional setting.

Plans for future expansion

Director Collins has expressed an interest in implementing RFID in a second woman's prison, as well as in Ross Correctional Institution, the 2,600-inmate medium-level facility located 500 yards away from the Ross Camp. Implementation at RCI, while expensive, would enable ODRC to test out RFID's capabilities at identifying gang members and triggering alerts when rival gang members are in close proximity to one another. Director Collins is also contemplating equipping correctional officers with RFID, which would further support investigations efforts and has the potential to protect correctional officers from false allegations of misconduct. In a perfect world, Director Collins would like to see RFID implemented during the construction of a new prison, placing DEUs and CCTVs strategically throughout the facility in order to enhance surveillance and monitoring of inmates. While no plans are underway for new prison construction in Ohio, Director Collins believes this would be the most cost-effective approach to RFID implementation and operation.

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Attachment A

Correctional Agencies using RFID

Facility Name	Location	Type of Facility	Number of RFID Units	Implementation Year	Implementation Status	Targets	Vendor
ODRC Ross Correctional Center	Chillicothe, OH	Minimum, medium, closed facility	350	2004	Fully implemented	Male and female inmates	TSI Prism
Logan Correctional Center	Lincoln, IL	Medium security facility	2,000	2003	Fully implemented	Male inmates	TSI Prism
W.J. Maxey Training School for Boys	Whitmore Lake, MI	Youth detention/ rehabilitation center	250	2002	Fully implemented	Male juvenile inmates	TSI Prism
Marion Treatment Center	Marion, VA	Mental health facility	N/A	2006 (expected by year-end)	Not fully implemented	Male inmates	TSI Prism
Minnesota Correctional Facility-Faribault	Faribault, MN	Medium security, level three facility	150	2002	Fully implemented	Male inmates	ElmoTech
Pitchess Detention Center North	Castaic, CA	Low and medium security facility	300	2004	Fully implemented	Male inmates	ElmoTech
St. Peter Regional Treatment Center	St. Peter, MN	Mental health facility	100	2005	Fully implemented	Male and female inmates	ElmoTech

Facility Name	Location	Type of Facility	Number of RFID Units	Implementation Year	Implementation Status	Targets	Vendor
ODRC Northeast Pre-Release Center	Cleveland, OH	Minimum, medium security compound	704	2006	Fully implemented	Female inmates	ElmoTech
Southern Nevada Correctional Center	Jean, NV	Medium level facility	200	2006	Fully implemented	Juvenile male and female inmates and staff	ElmoTech
California State Prison - Corcoran State Hospital	Corcoran, CA	Minimum, medium, closed, and high security facility including protective housing unit	200	1997	Fully implemented	Staff	TSI Prism
Minnesota Correctional Facility-Stillwater	Stillwater, MN	Minimum security and closed facility	100	2006 (expected by year-end)	Not Implemented	Male inmates	TSI Prism
St. Joseph Community Supervision Center	St. Joseph, MO	Minimum security halfway house	50	2006 (expected by year-end)	Not Implemented	Male and female inmates	TSI Prism
Farmington Supervisory Center	Farmington, MO	Minimum security halfway house	50	2006 (expected by year-end)	Not Implemented	Male and female inmates	TSI Prism

Appendix C: Number of Charges per Biweekly Period, by Offense Type

NEPRC

Period	Total # charges	Guilty	Violent	Nonviolent	Physical assaults	Nonconsensual sex	Consensual sex	Causing					
								Out of place disturbance	Fighting	Lying	Property	Drugs	
1/1/2005	14	13	1	3	0	0	0	6	0	0	0	0	0
1/16/2005	5	4	0	4	0	0	0	0	0	0	1	1	0
2/1/2005	10	7	1	7	0	0	0	0	0	0	0	3	0
2/16/2005	10	6	4	6	0	0	0	0	5	0	0	0	0
3/1/2005	11	8	0	9	0	0	2	1	0	0	1	0	0
3/16/2005	32	26	4	19	2	0	0	6	3	0	4	2	0

FPRC

Period	Total # Charges	Guilty	Violent	Nonviolent	Physical assaults	Nonconsensual sex	Consensual sex	Causing					
								Out of place disturbance	Fighting	Lying	Property	Drugs	
1/1/2005	22	22	5	5	0	0	0	5	0	5	0	0	0
1/16/2005	37	34	4	11	0	0	2	4	1	3	0	1	0
2/1/2005	21	21	0	11	0	0	2	6	1	0	0	1	0
2/16/2005	16	16	0	4	0	0	0	3	0	0	0	0	0
3/1/2005	39	40	1	16	0	0	0	1	0	0	0	0	1
3/16/2005	22	20	3	10	0	0	0	4	2	2	0	1	0

Appendix D: Inmate Interview Protocol

Introduction

The purpose of this interview is to help us study safety conditions in NEPRC and to get your views on whether the ankle bracelet you wear has an impact on safety here. Your answers to this survey will help us learn more about increasing your safety and that of all inmates and staff here at NEPRC. So we hope that you will answer these questions, but your participation is completely voluntary. If you do choose to do this interview, I promise that I will not share anything you say to me in a way that can identify you. I will not share any personal information about you to others. You may also choose to skip any questions you do not want to answer. Thank you for taking the time to do this interview today.

Dummy Questions: Prison Programming

First let's talk about life here at NEPRC.

1. What kinds of programs have you participated in since you have been in this prison (educational, vocational, religious, life skills, substance abuse treatment, etc.)?
2. What programs would you like to participate in that are not available here?
3. What type of programs do they have here to help prepare you for leaving prison and reentering the community?

Dummy Questions: Substance Abuse

4. In the six months before you were incarcerated, how many times a week did you use drugs on average?
5. In the six months before you were incarcerated, what drug did you use most often?
6. Since you arrived at NEPRC, have you been offered any type of substance abuse treatment program? If so, what kind?

CRIMINAL HISTORY

The next questions ask about your experiences during this prison term.

7. What is your current security level?

- 1A
- 1B
- 2
- 3 _____
- Don't know

8. How long have you been in NEPRC for this term?

years months

9. When did you arrive at NEPRC? (Enter your best guess if you do not know for sure)

_____ month day year

Don't know

10. What was your primary offense for this prison term?

➔ MARK ONLY **ONE** BOX:

- Homicide
- Rape
- Robbery
- Assault
- Burglary
- Theft
- Car theft
- Fraud or forgery
- Weapons offense
- Other sex offense (not Rape)
- Drug dealing
- Drug possession
- DWI or DUI
- Other _____

11. When do you expect to be released? (Enter your best guess if you do not know for sure)

_____ month day year

Don't know

The next few questions ask about your criminal history.

12. How many times have you been convicted in a court of law as an adult?

times

13. How many times have you been sentenced to prison for a crime? Do not include county jail terms. Do not include parole or probation revocations.

times

14. Have you been in NEPRC before this prison term? Yes No

OVERALL PERCEPTIONS OF SAFETY

Now I am going to ask you some questions about how safe you feel here and how safe you think other inmates and staff feel here.

15. On a scale of 1 to 5, how safe do you personally feel at NEPRC?

- 1 – very unsafe
- 2 – somewhat unsafe
- 3 – neither safe nor unsafe
- 4 – somewhat safe
- 5 – extremely safe
- 98 – don't know
- 99 – no response

16. On a scale of 1 to 5, how safe do you think corrections officers feel in this facility?

- 1 – very unsafe
- 2 – somewhat unsafe
- 3 – neither safe nor unsafe
- 4 – somewhat safe
- 5 – extremely safe
- 98 – don't know
- 99 – no response

17. Do you feel more safe, less safe, or about the same at NEPRC than in other prisons you have been housed in?

- 1 – less safe
- 2 – about the same
- 3 – more safe
- 8 – have not been in any other prisons
- 98 – don't know
- 99 – No response

USE OF ANKLE BRACELETS AT NEPRC

Now I'd like to ask you about the use of ankle bracelets at NEPRC that help corrections staff here know where you are.

18. Do you think the ankle bracelets make officers more aware of where inmates are, less aware of where inmates are, or have no bearing on officer awareness of inmate locations?

- 1 – more aware
- 2 – no bearing
- 3 – less aware
- 98 – don't know
- 99 – no response

19. Do you think the ankle bracelets make officers more aware of what inmates are doing, less aware of what inmates are doing, or have no bearing on officer awareness of inmate activities?

- 1 – more aware
- 2 – no bearing
- 3 – less aware
- 98 – don't know
- 99 – no response

20. On a scale of 1 to 5, with 1 being very unlikely and 5 being very likely, how likely is it that ankle bracelets are preventing inmates from the following activities:

a. Being out of place

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

b. Getting into fights

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

c. Engaging in consensual sex

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

d. Forcing unwanted sex on another inmate

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

e. Using drugs

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

f. Making or keeping weapons

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

g. Stealing belongings from other inmates

- 1 – very unlikely
- 2 – unlikely
- 3 – no bearing
- 4 – likely
- 5 – very likely
- 98 – don't know
- 99 – no response

21. Do the ankle bracelets lead inmates to report misconduct by other inmates more often, less often, or about the same as before you had/as if you didn't have] them?

- 1 – more often
- 2 – about the same
- 3 – less often
- 98 – don't know
- 99 – No response

22. Do you think the ankle bracelets lead inmates to make **false** reports about other inmates doing things they are not supposed to do more often, less of often, or about the same as [before you had/if you didn't have] them?

- 1 – more often
- 2 – about the same
- 3 – less often
- 98 – don't know
- 99 – No response

23. Do you think the ankle bracelets lead inmates to report staff misconduct more often, less often, or about the same as [before you had/as if you didn't have] them?

- 1 – more often
- 2 – about the same
- 3 – less often
- 98 – don't know
- 99 – No response

24. Do you think ankle bracelets lead inmates to make **false** reports of staff misconduct more often, less often, or about the same as [before you had/if you didn't have] them?

- 1 – more often
- 2 – about the same
- 3 – less often
- 98 – don't know
- 99 – No response

CONTRABAND AND PRIVACY

Let's talk about privacy *and* weapons here at NEPRC.

Access to Contraband

25. How easy is it to get access to a weapon here? What types of weapons? Do ankle bracelets have an impact on weapons getting into NEPRC?

26. Do ankle bracelets have any impact on use of weapons at NEPRC?

Access to Privacy

27. If an inmate or staff member wanted to harm someone here, would they try to find privacy to do it, or is that not very important?

28. Are there places where inmates can go where they can't be detected by ankle bracelets? If so, where?

29. Do you know if any inmates have been able to remove their ankle bracelet? If so, how? Why do they try to remove it? How easy is it to remove?

30. How easy is it for an inmate to be alone with another inmate? Do ankle bracelets prevent two inmates from being alone together?

31. How easy is it for a corrections officer to be alone with an inmate? Do ankle bracelets prevent an inmate and a corrections officer from being alone together?

32. If you could recommend improvements or changes to the use of ankle bracelets at this prison, what would you suggest?

DEMOGRAPHICS

33. How old are you?

years old

34. Do you consider yourself to be Hispanic or Latina?

- Yes
- No

35. Do you consider yourself to be...

- Asian
- African American or Black
- American Indian or Alaska Native
- White
- Other race
- Biracial

36. Do you consider yourself to be...

- Straight/Heterosexual
- Lesbian/Homosexual
- Bisexual
- Transsexual/Transgender
- Would rather not say

Appendix E: Staff Interview Protocols

Correctional Officer Interview Protocol

INTRODUCTION

The purpose of this interview is to help us study safety conditions in NEPRC and to get your views on whether RFID has an impact on safety here. As one of the staff members who have worked with RFID technology, your answers will help us learn more about how effective it is at improving safety in corrections settings. We hope you will answer these questions, but your participation is completely voluntary. If you choose to participate, nothing you say will be shared in a way that would enable people to identify you and no personal information about you will be shared with others. You can also choose not to answer certain questions and can end the interview at any time.

I'm going to start with some questions about your background and the work you do here at the jail. Then I'll ask a few questions about your training with RFID technology, your experiences using it and the RFID protocols you are expected to follow, followed by some questions about the affect you think RFID has had on things like management procedures, investigations, sexual misconduct and violence in the facility. To wrap up, I'll be asking about how staff respond to all of these kinds of incidents and what suggestions you have for making the facility safer. The interview should probably last about 30 minutes.

BACKGROUND

Let's start by talking about your background in corrections and the work you do here in the jail.

1. What is your specific job title?
2. How long have you worked in corrections?
 - a. At NEPRC?
3. What shift do you usually work?
1st 2nd 3rd 4th
4. Where do you spend most of your day?
5. What are your primary duties?

RFID TRAINING

Now I'll ask you some questions about the RFID training you received.

6. Did you receive training on the use of RFID?
7. When were you initially trained on the use of RFID?
8. What was the content of the training?
 - a. How to use the technology?
 - b. How to respond to RFID alerts?
 - c. How the technology can:
 - o Track inmate counts, transfers, movements?

- Prevent sexual assaults?
 - Prevent consensual sex?
 - Prevent Violence?
 - Assist investigations after-the-fact?
 - Other?
9. How long did the training last? Hours? Days? Weeks? Months?
10. Was it easy to understand?
11. Did the training fully prepare you to operate and understand RFID technology in the capacity you are expected to use it?
12. Have you received any additional training in RFID?
- a. If yes, who provided you with this training? When?
 - b. What was the content of this training (refresher course, investigation course)?
 - c. Was it useful?
13. Did you receive a user's guide or other documents related to RFID use?
14. What other training or instructional materials do you think would have been useful?

RFID USE

The next few questions will be about your experiences using RFID technology.

15. Have you used RFID technology as a part of your job?
16. Do you use RFID to:
- a. Monitor inmates?
 - b. Investigate incidents?
 - c. Other?
17. How often do you use RFID technology? Daily? Weekly? Monthly? Rarely?
18. How reliable do you feel the RFID technology is?
- a. Ankle bracelets?
 - b. Hardware/Software?
19. If it is not reliable, why?
20. Are there other barriers to implementing the RFID technology? What are they?

RFID PROCEDURES

Now I will ask you a few questions about the RFID staff procedures here at NEPRC.

21. Are there procedures in place for how officers respond to RFID alerts? If yes:
- a. Are these procedures followed appropriately?
 - i. All the time? Sometimes? Rarely? Never?
 - ii. What exceptions?
 - b. Are there any audits to see if procedures are being followed?
 - c. What are the consequences for staff who do not follow protocols (if there are any)?
 - d. What changes/ improvements should be made to the RFID protocols?

RFID OUTCOMES

Now I'll ask you some questions about the effects you think RFID technology has had on the behavior of inmates and corrections officers.

Inmates

22. Do you think RFID supports, detracts from or has no bearing on the effectiveness of prison management?
23. What changes in prison management have resulted from the use of RFID, if any? For example, staff attentiveness to inmate counts and movements within NEPRC.
24. Does RFID discourage, encourage or have no bearing any of the following behaviors among inmates?
 - a. Violence? Significantly or minimally?
 - b. Sexual Assault? Significantly or minimally?
 - c. Consensual sex? Significantly or minimally?
 - d. Theft? Significantly or minimally?
 - e. Being out of place? Significantly or minimally?
 - f. Other prohibited behaviors? Significantly or minimally?
25. If RFID technology has discouraged these behaviors, how has it done so?
26. Are there prohibited behaviors RFID does *not* discourage among inmates?
27. Do you believe the use of RFID technology has improved the overall safety of inmates?

Corrections Officers

28. Do you think RFID discourages, encourages or has no bearing on the following prohibited behaviors among corrections officers?
 - a. Violence? Significantly or minimally?
 - b. Sexual assault? Significantly or minimally?
 - c. Consensual sex with inmates? Significantly or minimally?
 - d. Other prohibited behaviors?
29. If yes, how does it discourage these behaviors?
30. Are there other prohibited behaviors RFID does *not* discourage among corrections officers?
31. Do you believe the use of RFID technology has improved the overall safety of corrections officers? If yes, how? To what degree?

CONCLUSION

32. What do you consider the strengths of RFID technology?
33. What do you consider the weaknesses of the RFID technology?
34. How do you think RFID technology can be improved?
35. Are there any other thoughts you have or information you would like to share with me on RFID use?

Investigative Staff Protocol

INTRODUCTION

The purpose of this interview is to help us study safety conditions in NEPRC and to get your views on whether RFID has an impact on safety here. As one of the staff members who have worked with RFID technology, your answers will help us learn more about how effective it is at improving safety in corrections settings. We hope you will answer these questions, but your participation is completely voluntary. If you choose to participate, nothing you say will be shared in a way that would enable people to identify you and no personal information about you will be shared with others. You can also choose not to answer certain questions and can end the interview at any time.

I'm going to start with some questions about your background and the work you do here at the jail. Then I'll ask a few questions about your training with RFID technology, your experiences using it and the RFID protocols you are expected to follow, followed by some questions about the affect you think RFID has had on things like management procedures, investigations, sexual misconduct and violence in the facility. To wrap up, I'll be asking about how staff respond to all of these kinds of incidents and what suggestions you have for making the facility safer. The interview should probably last about 30 minutes.

BACKGROUND

Let's start by talking about your background in corrections and the work you do here in the jail.

3. What is your specific job title?
4. How long have you worked in corrections?
 - a. At OCI?
3. What are your primary duties?

RFID TRAINING

Now I'll ask you some questions about the RFID training you received.

4. Did you receive training on the use of RFID? Yes No
5. When were you initially trained on the use of RFID?
6. How long did the training last?

Hours	Days	Weeks	Months
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7. What was the content of the training?
 - a. How to use the technology?
 - b. How the technology can:
 - Track inmate counts, transfers, movements?
 - Prevent sexual assaults?
 - Prevent consensual sex?
 - Prevent Violence?
 - Assist investigations after-the-fact?
 - Other investigatory uses?
8. Was it easy to understand?
9. Did the training fully prepare you to operate and understand RFID technology in the capacity you are expected to use it?
10. Have you received any additional training in RFID?
 - a. If yes, who provided you with this training? When?
 - b. What was the content of this training (refresher course, investigation course)?
 - c. Was it useful?
11. Did you receive a user's guide or other documents related to RFID use?
12. What other training or instructional materials do you think would have been useful?

RFID USE

The next few questions will be about your experiences using RFID technology.

13. Have you used RFID technology as a part of your job?
14. How do you use the technology?
15. How often do you use RFID technology? Daily, weekly, monthly, or rarely?
16. How reliable do you feel the RFID technology is?
 - a. Ankle bracelets?
 - b. Hardware/Software?
17. If it is not reliable, why?
18. Are there other barriers to implementing the RFID technology? What are they?

RFID OUTCOMES

Now I'll ask you some questions about the effects you think RFID technology has had on the behavior of inmates and corrections officers.

Inmates

19. Do you think RFID supports, detracts from or has no bearing on the effectiveness of prison management?
20. What changes in prison management have resulted from the use of RFID, if any? For example, staff attentiveness to inmate counts and movements within NEPRC.
21. Does RFID discourage, encourage or have no bearing any of the following behaviors among inmates?
 - a. Violence?
Significantly or minimally?
 - b. Sexual Assault
Significantly or minimally?
 - c. Consensual sex
Significantly or minimally?
 - d. Theft
Significantly or minimally?
 - e. Being out of place
Significantly or minimally?
 - f. Other?
22. If RFID technology has discouraged these behaviors, how has it done so?
23. Are there prohibited behaviors RFID does *not* discourage among inmates?
24. Do you believe the use of RFID technology has improved the overall safety of inmates?

Corrections Officers

25. Do you think RFID discourages, encourages or has no bearing on the following prohibited behaviors among corrections officers?
 - a. Violence?
Significantly or minimally?
 - b. Sexual assault?
Significantly or minimally?
 - c. Consensual sex with inmates?
Significantly or minimally?
 - d. Other prohibited behaviors?
26. If yes, how does it discourage these behaviors?
27. Are there other prohibited behaviors RFID does *not* discourage among corrections officers?
 - a. What are they?
28. Do you believe the use of RFID technology has improved the overall safety of corrections officers?
 - a. If yes, how?
 - b. Significantly or minimally?

RFID IN INVESTIGATIONS/ PROSECUTIONS

These are some specific questions for you as an investigator.

29. How often do you extract RFID data for investigation purposes?
30. How is RFID evidence extracted and documented?
31. Is RFID evidence used in conjunction with any other technologies (such as CCTV or CVSA)?
32. How are these tools used together to support investigations?
33. How does RFID fit into the overall investigative process?
34. Has RFID decreased, increased or had no effect on the time it takes to investigate a case? By how much time?
35. Has RFID reduced the number of cases that are closed due to insufficient evidence? Significantly or minimally?
36. Does RFID play a role in sexual violence cases that involve a staff member? If yes, please describe how. If not, why not?
37. Are local prosecutors aware of RFID as a form of evidence?
38. How often do local prosecutors use RFID as a form of evidence?
39. Do local prosecutors find RFID a credible piece of evidence alone and/or in conjunction with other forms of evidence?
40. Can you tell me the names of any local prosecutors that use RFID evidence in their cases and/or are familiar with the technology?

CONCLUSION

41. What do you consider the strengths of RFID technology?
42. What do you consider the weaknesses of the RFID technology?
43. How do you think RFID technology can be improved?
44. Are there any other thoughts you have or information you would like to share with me on RFID use?

Thank you for your time. Those are all the questions I had. Do you have any questions for me?