Evidence on the Effectiveness of GPS Monitoring for Mental Health Forensic Rehabilitation Patients

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Key Informant Interview Analysis

Nova Scotia Health Research Foundation
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Key Messages

- The impetus for developing a GPS monitoring program for mental health forensic rehabilitation patients in the UK and Australia was high profile incidents.
- The programs were implemented as permanent programs rather than according to an experimental protocol.
- Despite concerns about infringement on rights and stigma, program stakeholders feel there are benefits of GPS monitoring to different stakeholder groups.
- The program in the UK proved successful in reducing the number of incidents involving absconding and failure to return, decreasing escorted leave, and increasing leave episodes.
- Negative reactions from stakeholders, costs associated with devices and monitoring, training of staff, and technical difficulties were reported as the biggest barriers and challenges to development and implementation.
- Participants in the UK reported two main challenges regarding evaluation. First, they were not able to establish causal relationships between the use of GPS monitoring and measured outcomes as the program was not set up according an experimental protocol. Second, the lack of pre-intervention data made it difficult to make comparisons between pre- and post-intervention data.
- Participants in the UK pointed out that the program is more effective at leave transition points within forensic service. In both the UK and Australia, participants stated that they would not recommend extending GPS monitoring programs to non-forensic mental health patients or use them with the purpose of reducing costs associated with escorted leave.
Executive Summary

The purpose of this report is to provide insight into the use of global positioning systems (GPS) to monitor mental health forensic rehabilitation patients in the United Kingdom (UK) and Australia. Participants were asked to comment on several issues, including the development, implementation, and evaluation of the program, any barriers and challenges associated with these, and the features and functionalities of the device.

The impetus for developing a GPS monitoring program for mental health forensic rehabilitation patients was the result of a number of high profile incidents. However, in the UK the program was initiated by clinicians and senior managers who were able to get funding for the program from the hospital, whereas in Australia the program was implemented as a result of a political directive. Participants in both jurisdictions stated that no empirical evidence existed regarding the use or effectiveness of such programs in forensic mental health settings at the time they developed and implemented their programs.

As both interventions were developed in response to serious incidents, they were implemented as a permanent program rather than according to an experimental protocol. Both programs target mental health forensic rehabilitation patients; however, in Australia the program currently involves only a small number of high-risk offenders whereas in the UK the target population consists of three groups of medium-secure patients. These are patients who have recently been granted leave privileges, patients who are going to court, and patients who are going to a pre-arranged or emergency medical appointment.

The main intended outcome of both programs is a reduction in leave violations among patients. In the UK, a secondary outcome has been identified as granting patients increased access to community, which may help them progress more quickly through the stages of supervised and unaccompanied leave and result in an earlier discharge from the hospital.

GPS monitoring of mental health patients has been criticized by stakeholder groups, mainly voluntary sector organizations that provide advocacy for people with mental illness, families and friends of patients, and patients themselves, who view it as an infringement on rights and as a needless restriction, contributing to the stigma attached to having mental health issues. In order to mitigate these concerns, the clinical team in the UK undertook several activities including conducting in-house focus groups with patients, sharing plans for the program with mental health advocacy groups, discussing GPS monitoring at professional conferences, and demonstrating the technology at the local political council.

Participants acknowledged concerns regarding the issue of stigma, especially due to the possibility of being associated with sex offenders, and the perceived coercion of the system whereby patients may feel they are giving consent for pragmatic reasons as they recognize that withholding consent may result in shorter and less frequent leave episodes and delay discharge. Despite these issues, participants reported several benefits of GPS monitoring to different stakeholder groups. For example, it may help mental health providers to better manage risk associated with leave episodes, provide reassurances to the community about safety, assist the police in locating and returning patients as well as reducing costs associated with human resources, and lead to more favourable leave privileges and, in turn, shorter lengths of stay for patients.
The program took 6-9 months to implement in the UK and about two months in Australia, possibly because the devices were provided by Corrective Services in Australia while the clinical team had to put out a tender before they purchased the devices in the UK. Participants stated that although it was an easy system to implement, it involved a significant culture shift in how they approached leave given the pre-planning required in the new system. Participants listed negative reactions from stakeholders, costs associated with devices and monitoring, training of staff, and technical difficulties, such as connectivity and durability issues, as the biggest barriers and challenges to the implementation of their programs.

Although the program in Australia has not been evaluated yet, in the UK a qualitative evaluation of patients’ opinions and experiences has been conducted as well as a quantitative evaluation of effects on leave episodes and absconding incidents\(^1\). An economic evaluation is also underway. Participants noted several challenges with regards to evaluation. The program was implemented as a permanent program and not according to an experimental protocol, which made establishing causal links between the use of GPS monitoring and outcomes difficult. Furthermore, pre- and post-intervention comparisons on certain variables was not possible due to the lack of sufficient pre-intervention data. However, evidence from comparisons of pre-post-intervention data suggests (1) a significant increase in leave episodes, particularly unescorted leave, (2) significant decrease in escorted leave, which has cost saving implications due to fewer human resources required, and (3) a reduction in the number of incidents involving absconding and failure to return.

Finally, participants pointed out that the program is more effective at leave transition points within forensic service; for example, progressing from no leave to escorted leave, and from escorted leave to unescorted leave in the community. They added that they would not recommend extending GPS monitoring programs to non-forensic mental health patients or use them with the purpose of reducing costs associated with escorted leave.

\(^1\) Articles based on these evaluations are currently in press.
Key Informant Interview Analysis

In 2014, the Nova Scotia Health Research Foundation (NSHRF) was engaged to assist the Nova Scotia Department of Health and Wellness (DHW) in a review of the use of global positioning systems (GPS) to monitor mental health forensic rehabilitation patients. The goal of this review is to collect and summarize information, evidence and knowledge on the use of GPS tracking and other patient monitoring approaches, the effectiveness and appropriateness of these approaches for monitoring mental health forensic rehabilitation patients who are accessing the community as part of their treatment, and the impact of such monitoring on public safety.

The first part of the investigation conducted by NSHRF involved a literature scan exploring these issues. This report presents the second part of the investigation in which interviews were conducted with key informants to further understand the use of GPS monitoring for mental health forensic rehabilitation patients and to address any gaps in the literature that exist as a result of the contemporary nature of GPS monitoring among this population. Key informant interviews provide rich, contextual information on important issues in four specific areas: (1) development of a GPS monitoring program, (2) implementation of a GPS monitoring program, (3) evaluation of a GPS monitoring program, and (4) features and functionalities of the GPS device used.

Methodology

In-depth interviews were conducted with key informants to gather evidence on the use of GPS monitoring for mental health forensic rehabilitation patients. Key informant interviews involve conducting in-depth interviews with individuals who are able to provide insights into a particular topic. In addition to their knowledge, experience with and understanding of the topic, these individuals may initiate access to other sources of evidence, such as published or unpublished materials, and other key informants. Key informant interviews, are particularly useful when the researcher wishes to gather evidence on a pressing or contemporary and continually evolving topic from well-informed individuals with diverse backgrounds and opinions. In-depth interviews allow the researcher to establish rapport with the respondent and clarify questions, which results in detailed and rich qualitative data on the topic.

Key informants for this report were identified in several ways. Early in the process, a small list of key informants were identified by the DHW, based on existing knowledge. Several others were identified through a scan of the literature on the use of GPS systems to monitor mental health forensic rehabilitation patients. Finally, key informants were recruited through a snowball sampling approach whereby interview participants were asked to suggest others who might be able to shed more light on the topic. These suggestions were followed up on by the interviewer to recruit additional participants.

Key informants from mental health organizations, universities, and location and monitoring companies were contacted in the UK and Australia. These key informants either had experience in the development, implementation, and/or evaluation of a GPS monitoring program, or were in a position to comment on the use and effectiveness of GPS monitoring programs or devices.

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Fifteen individuals were contacted and telephone interviews were conducted with eight individuals. The organizations represented include:

- South London and Maudsley NHS Foundation Trust;
- Mental Health Alcohol and Other Drugs Directorate, Queensland Health;
- St. Andrews Healthcare;
- University of Nottingham; and
- Buddi, Ltd.

Key informants were contacted via email to request an interview. Interviews were semi-structured and lasted between 30 and 60 minutes. The interview covered a wide range of topics related to GPS monitoring for mental health forensic rehabilitation patients, including the structure and governance of the program, potential benefits and drawbacks of the program from the perspective of various stakeholder groups, the implementation and evaluation of the program, and the features and functionalities of the devices used. Respondents varied in their familiarity with the various issues identified in the interview guide. For this reason, the interview was semi-structured in nature, and attempts were made to probe more deeply on issues with which the respondent had more familiarity. This approach allowed the interviewer the flexibility to investigate or reframe questions in order to gather additional information from respondents based on the relevancy of the topic for each individual interviewed (see Appendix A for the complete interview guide).

A thematic analysis approach was used to analyze evidence provided by key informants. Interviews were audio-recorded and Atlas.ti (a qualitative data analysis software program) was used to manage the data during the analysis. Data were first coded based on key questions incorporated into the interview guide, as well as emergent issues and key ideas of interest. As each segment of the interview was coded, notes were made to detail the analysis. Codes were synthesized into several overarching themes; broad themes were analyzed in greater depth which resulted in a number of sub-themes that emerged from the data. Emergent themes and relevant sub-themes were summarized and are presented in the findings of this report.

Limitations

There are several limitations to this report which need to be acknowledged. First, although 15 individuals were contacted, only eight interviews were conducted. The main reason for potential participants not being interviewed was the time frame for the work and the availability of key informants. Second, due to the novelty of GPS monitoring programs and devices, some participants were unable to comment on key issues identified in the interview guide. As such, some sections of the report may reflect the opinion of a single participant rather than an emergent theme based on several interviews. This has been noted throughout the report without identifying the specific participant as per the confidentiality agreement with interview participants. Third, there were significant differences between the programs in the UK and Australia. The program in the UK was implemented in 2010, involves a larger number of patients, and has since been evaluated, whereas the program in Australia was implemented in 2013, currently involves five patients, and has not yet been evaluated. Therefore, it was necessary to analyze evidence from

3 Please note that the input from the vendor was for purely technical information on how the device functions as this participant was not directly involved in the development, implementation or evaluation of the program.
the two jurisdictions separately, which is reflected in the present report. Where appropriate the
evidence has been combined as an overarching theme to present a broader perspective.

Finally, while the primary cases of GPS monitoring among mental health forensic rehabilitation
patients are in the United Kingdom and Australia, it should be noted that these programs are
being implemented in different healthcare systems and legislative contexts than Nova Scotia.
Contextual differences should be considered in applying the findings of these diverse
jurisdictions to decision making in the Nova Scotia environment.

Section I: Development of the Program

At the beginning of each interview, participants were asked specific questions regarding the GPS
monitoring program they are currently using. More specifically, they were asked to comment on
the impetus for developing a GPS monitoring program for mental health forensic rehabilitation
patients, the existing evidence on the effectiveness of such programs, the structure of the
program and the resources required, the target population of the program, the intended outcomes
of the program, the potential benefits and drawbacks of the program to various stakeholders, and
the extent to which stakeholders were involved in the decision making.

Impetus and existing evidence on the effectiveness of GPS monitoring programs

Participants in both the UK and Australia reported that the impetus for developing a GPS
monitoring program for mental health forensic rehabilitation patients occurred as a result of high
profile incidents. For example, in the UK, a patient who was attending an acute medical
appointment for chest pain managed to escape the supervision of nurses and was at large for
three months before he was finally arrested on a charge of homicide. Consequently, a security
problem was identified when patients are outside of secure parameters such as attending court or
to hospital appointments. The GPS monitoring program was developed in an effort to address
that security problem. Similarly, in Queensland, Australia, a patient who was detained in relation
to a homicide absconded to a southern state. It took the police approximately three days to
retrieve the patient. The incident, which was expensive and caused the government a great deal
of embarrassment, resulted in a political directive for the development of a GPS monitoring
program for mental health forensic rehabilitation patients.

Participants in both countries stated that although they had been aware of the use of GPS
monitoring in certain mental health settings (e.g., for elderly patients with dementia) and
criminal justice settings (e.g., sex offenders in the United States and Australia), no empirical
evidence existed regarding the use or effectiveness of such programs in forensic mental health
settings at the time they developed and implemented their programs.

Structure and Resources

While the program was implemented as a result of a political directive in Queensland, in the UK,
the initiative came from the clinicians and senior managers who were able to secure funding for
the program from the hospital. In both cases, the program was implemented in response to a
serious incident and as a solution to a problem rather than an experimental intervention. In both
the UK and Australia, the program was structured as a permanent one and as such, there was no
opportunity to conduct a pilot study with randomization or a control group. However,
participants in both jurisdictions noted that the program was approached as a pilot project in terms of evaluation. In the UK, the program was piloted for a few months with certain patients before it was implemented across the hospital unit. The program in Queensland may also be viewed as a pilot program as the devices are currently used on five patients with a view to expand the program after an evaluation has been completed.

Participants in both countries reported time and money as the main resources required in the development of a GPS monitoring program. The first step in developing the program involved a tender to select a manufacturer (UK only, in Queensland devices were provided by Queensland Corrective Services). This was followed by a series of meetings at the clinical management level within the hospital, with the manufacturer, and with members of the community who were expressing concerns about the incidents, as well as consultations with legal experts in the criminal justice system. Finally, staff was trained in the use of the system, the device, and the processes of communicating with the security company. In addition to the time and costs associated with these meetings and consultations, the GPS devices cost 350 pounds sterling each to buy - there were various options to either buy or lease devices – and costs associated with the monitoring.

**Target Population and Risk Assessment**

Forensic services in the UK are delivered through three levels of security: high, medium, and low. Medium-secure units are locally based units with a secure perimeter and a strict security protocol, and consist of about 80 to 100 inpatients who have committed a crime and were sent to the unit by the court. Patients’ progression and discharge are co-managed by a clinical team and the Ministry of Justice. The target population of the program currently used in the UK consists of three groups of medium-secure mental health forensic rehabilitation patients. The first group consists of patients who are beginning leave into the community, either having their first escorted leave or unescorted leave from the inpatient service. The second group involves patients who are going to court, and the third group includes patients going to a pre-arranged or emergency medical appointment at hospitals.

In Queensland, the device is intended for use on a small number of high-risk offenders who have been “ruled insane” in relation to their offences. As in the UK, the device is being used for inpatients who are going on leave. Participants reported that the device is not currently used for patients who reside in the community or general mental health patients in the UK or Australia.

In the UK, all patients are required to have an Historical Clinical Risk – 20 (HCR-20) performed before they are granted leave privileges. This instrument is used specifically to assess the risk of violence and includes a risk management plan for evaluators. Participants reported that there are currently no validated, structured tools to assess the risk of absconding in the literature; therefore, the assessment of that risk is based primarily on the clinical judgment of a multiprofessional team, led by the responsible commission, usually a consultant psychiatrist. At South London and Maudsley NHS Foundation Trust, an instrument, namely the Leave/Abscond Risk Assessment Tool (LARA), was developed to assess the risk specifically around leave.

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4 When the program was first implemented in the UK, devices were provided by a company called Buddi, Ltd., and monitoring was provided by a separate company called Reliant. Currently, Buddi, Ltd. provides both.
helping evaluators to determine high-, medium-, and low-risk ratings of patients’ abscondment. Those in the medium- and high-risk group based on the LARA are considered to be high risk and are not permitted to leave the secure unit without a GPS monitoring device. Patients considered to be low-risk based on that assessment are given the option of wearing a GPS device. Those who choose to wear the device are granted leave more quickly, which incentivizes patients to consent to wearing the device.

In Queensland, for anyone who has been detained on a forensic order to an inpatient unit, the Director of Mental Health’s office needs to be notified of the plan to exercise a period of leave after it has been approved by the Mental Health Review Tribunal. The Director then makes a decision based on the magnitude of the patient’s offence and the patient’s history of compliance with the conditions of leave.

**Intended outcomes and potential benefits and drawbacks to stakeholders**

Participants both in the UK and Australia reported that the main intended outcome of their program is reduction in leave violations (risk management); that is, to reduce the number of attempted efforts to abscond when patients are on pre-agreed leave or emergency leave from the secure perimeter of the hospital. In the UK, a secondary intended outcome is to give patients increased access to leave, which may help them progress more quickly through the stages of supervised and unaccompanied leave, and to discharge them more rapidly.

Participants were asked to comment on the potential benefits and drawbacks of GPS monitoring programs to various stakeholders, including mental health providers, community, police, families/friends/loved ones of patients, and patients themselves. These stakeholders were consulted to inform decision making around the program in the UK. For example, in-house focus groups were held with patients, plans for the program were brought to the attention of some of the voluntary sector organizations that provide advocacy for people with mental illness (e.g., Mind, Rethink), the use of GPS monitoring was discussed at professional conferences, and the technology was also demonstrated at the local political council. Participants in the UK stated that the stakeholder groups generally did not object to the use of GPS monitoring devices as long as they were only used to track forensic patients in the management of high-risk cases.

According to participants both in the UK and Australia, GPS monitoring programs for mental health forensic rehabilitation patients have several potential benefits to mental health providers. First, GPS monitoring may help mental health providers to better manage the risk associated with absconding and failure to return. Second, it may lower the organization’s costs due to human resources hours associated with escorted leave. Third, patients who use the device may have shorter lengths of stay by speeding up patients’ progress through the system.

Several participants stated that GPS tracking of mental health forensic rehabilitation patients may provide assurances to the community and make people who live near mental health facilities feel safer in knowing that the hospital is taking all the necessary precautions when patients are given access to the community. Furthermore, GPS tracking allows hospitals to put boundaries around where patients can go when they are on leave (e.g., inclusion and exclusion zones) and enables

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5 Traditionally, the use of handcuffs was imposed. Handcuffs are still occasionally used in addition to GPS monitoring if there is a high risk of violence.
them to actively monitor any breaches, which may mitigate the risk certain individuals may feel from patients, such as previous victims and family members.

Participants pointed out that one of the stakeholder groups that receives the most direct benefits from the use of GPS monitoring devices for mental health forensic rehabilitation patients is the police. This is due to the high level of cost associated with a high-risk patient going absent without leave (AWOL) and the resources required to locate them. With the use of GPS monitoring devices, locating AWOL patients now only involves coordinating with the police to pick a patient up from a particular location and return them to the hospital.

GPS monitoring may have some benefits for patients as well. Normally, patients, especially those co-managed by the Ministry of Justice in the UK, lose their leave privileges for a period of time should they fail to comply with the conditions of their leave. Participants in the UK suggested that the device may serve as a deterrent during the vulnerable period of leave and help patients to control their impulsivity, which has been reported in the literature as one of the major reasons for why patients abscond or fail to return. Furthermore, patients who comply with the conditions of their leave are more likely to access leave more quickly. As such, GPS tracking of mental health forensic patients may reduce the therapeutic risk associated with the patient’s leave privileges, which one participant described as “gambling on the patient’s future.” Getting longer leave, in turn, may change patients’ focus from the reasons they do not want to be in the hospital to what they want to do in the future when they are released. Finally, some mental health forensic rehabilitation patients who may not otherwise be given access to the community may be granted community access if they consent to wearing a device.

At the same time, GPS monitoring is a controversial issue and may attract negative criticism if its benefits are not well-communicated. For example, the amendments made to the Mental Health Act 2000 to allow the Director of Mental Health to order monitoring conditions in Queensland were met with a significant amount of community backlash. Some view the use of GPS monitoring devices for mental health forensic rehabilitation patients as an infringement on rights and as a needless restriction as many individuals with mental health issues are not violent. Perhaps the biggest concern, however, is the issue of stigma. Opponents of GPS monitoring programs are concerned that it may worsen the stigma that surrounds people with mental health issues. Some of these concerns stem from the fact that one of the other groups that is subject to this kind of monitoring are sex offenders. There are concerns that due to the visibility of GPS monitoring devices, especially in the summer, mental health forensic rehabilitation patients may be confused with this group. One participant pointed out that the issue of stigma may be more salient for the families, friends and loved ones of patients compared to patients themselves because for patients having a practical reason for wearing the device, such as access to more leave, may make the issue of stigma less important.

Patient concerns, consent, and unintended consequences

In addition to the issue of stigma associated with mental health issues and the possibility of being associated with sex offenders, patients in the UK have raised concerns about the perceived coercion of the system, questioning the validity of their consent. Some patients may feel they are giving consent for pragmatic reasons; that is, they recognize the device might help them progress faster through their treatment, or by withholding consent they may delay discharge. Therefore, they may be making these decisions under a certain amount of duress.
A few patients have raised legal challenges about the use of GPS devices in both jurisdictions. In the UK, the applications were rejected at the screening stage. In Queensland the case is still pending. Participants in the UK also noted that in some situations, for example when a high-risk patient is being taken to court, the use of a GPS device can be enforced under the *Mental Health Act* without the patient’s consent. Finally, a few patients in both jurisdictions have raised concerns about the devices causing discomfort and making them feel not trusted and self-conscious.

Participants in the UK stated that they have addressed these issues primarily through educational measures that target the patients and staff. Patients are provided with information leaflets about the devices, where it is made clear to the patients that participation is voluntary and they do not have to use the devices; although in some cases patients may not fully grasp that point.

Participants did not report any unintended treatment consequences of using GPS monitoring for mental health forensic rehabilitation patients.

**Section II: Implementation of the Program**

This section summarizes the findings in relation to the implementation of the program. Participants were asked about when they implemented their program, the steps involved, their approach to implementation, changes to leave privileges, the barriers and challenges they encountered, and the governance of the program.

**Steps involved in implementation**

The program in the UK was implemented in February 2010, while the program in Queensland was implemented in October 2013. While the devices were provided by Corrective Services in Queensland, in the UK, the hospital put out a tender and invited companies to apply to provide the service. Out of the three companies that applied, Buddi, Ltd. was selected by the senior staff. This was followed by a series of meetings with Buddi, Ltd. to discuss how the device worked, the design of the secure ankle strap, and the monitoring of the GPS device. After these consultations, devices were purchased by the hospital. In the UK, the device was used 20-30 times during the first month, and about 70 times during the second month. Since April 2010, it has been in full use for all medium-secure patients. In Queensland, the program currently involves only five high-risk offenders but will be expanded to Northern Queensland soon. In the UK, staff were trained by Buddi, Ltd. in the first three months of 2010 on the use of the device, how to put it on, take it off, how the system worked, and the processes of communicating with the security company. The program in Queensland took about two months to implement, while the program in the UK took about six-nine months, and about a year before it was properly up and running. This may be because the devices were provided by Corrective Services in Australia while the clinical team had to put out a tender before they purchased the devices in the UK.

Participants in the UK stated that although it was an easy system to implement, it involved a significant culture shift in how the staff approached leave. Following the implementation of the program, all leave privileges had to be pre-programmed as the parameters of the leave, such as zones and curfews, had to be entered into the system and uploaded onto the device. Participants view this change as a positive one as the hospital has more structure around leave now, which
involves forms to be filled in, emails to be sent to the monitoring company, and carefully prepared files with patients’ information to be shared with the police in case they abscond.

**Leave privileges**

Participants in the UK reported that the use of GPS monitoring has been implemented in conjunction with program policy changes that resulted in patients gaining access to escorted and unescorted leave more quickly. Patients value leave in the community and once they are granted leave privileges, they strive to reach the next level of leave, which may involve more frequent, longer, and unescorted leave. Participants in both jurisdictions noted that there are a lot of benefits in terms of treatment and recovery by allowing patients more access to the community in a safer way. For example, as one participant noted, a high-risk patient in Queensland is currently undertaking educational and sporting activities, neither of which he would be able to do without a tracking device.

**Barriers and challenges, and changes to the system**

When asked to comment on the barriers and challenges they have experienced with respect to their GPS monitoring program, participants mentioned several challenges associated with the opposition from some stakeholder groups, cost, staff, and the device itself.

Participants in both countries reported that they faced opposition from several human rights advocacy groups when they first announced they were considering the use of GPS trackers for mental health forensic rehabilitation patients, due to issues surrounding stigma and infringement of rights. To address the concerns raised by these groups in the UK, participants stated that they gave conference presentations, as well as organizing their own events and inviting individuals from advocacy groups. At these events, they explained that the program was going to use the devices in a positive way, and not as a ‘big brother’-type surveillance method.

Another challenge mentioned by participants in both jurisdictions was changing staff perceptions. Especially in Australia, some of the staff had significant reservations that GPS monitoring was the direction they should go in. Participants in Queensland stated that they addressed these concerns by reassuring their staff that the program would include only those patients who have committed serious offenses and added that the staff now see the benefit of the GPS monitoring program and understand that these patients were not going to have access to leave otherwise.

Several participants also drew attention to some issues related to cost and staff. First, the devices and monitoring services may be costly, and, as one participant stated, it may be difficult to get commissioners of health care to pay for the additional cost even when the public safety issues are pointed out. Therefore, it may be a cost that the clinical service (i.e., the hospital) has to absorb. However, the different options available to buy or lease the devices, may make the systems more affordable. Second, participants in the UK reported that training of staff in the use of the technology and communication with the monitoring company took a long time and putting the devices on patients became a time-consuming activity for nurses. To address these challenges, participants recommend hiring a project manager for six months during the implementation stage and putting security staff in charge of putting the device on patients instead of nursing staff.
Lastly, participants in the UK brought up some challenges stemming from the technology and the device. The implementation of the protocol requires the patient to have the strap put on and wait until the hospital receives confirmation from the security monitoring company that the GPS tracker is working. Partially due to device durability issues, establishing a connection between the device and the monitoring company sometimes took up to an hour, resulting in some patients missing their appointments. At times the situation was worsened by weather conditions as patients had to wait outside in the garden until confirmation was received. These issues resulted in a loss of trust in the device and for patients this meant that it stopped being a deterrent to abscondment. These challenges were overcome by re-tendering the monitoring process and awarding it to the same company that provided the devices (i.e., Buddi, Ltd.). Now the hospital has access to the website that the devices are on and is able to set up the patient information themselves whereas previously it was contracted out to the monitoring company. The hospital now has greater involvement and more control over the process.

**Governance**

Participants in the UK stated that early on, a group consisting of senior level directors, which involved the Director of Strategy, Service Director, Deputy Director, and the Security Team Leader from the hospital met regularly to monitor the progress of the program. Currently the program is monitored by the deputy director and the security team leader, who also set up a research group to evaluate the program. Although no new staff was hired in the UK, participants recommend hiring new staff, especially a program manager, during the first 6 months of the program.

**Section III: Evaluation**

This section presents results of participants’ responses when they were asked to comment on how they evaluated their program, how successful they thought their program has been to date, the barriers and challenges they have experienced in relation to evaluation, and whether the program has changed their relationship with the police.

**Evaluation process**

Although the program in Queensland has not been evaluated yet, the program in the UK has been evaluated in a number of ways. A qualitative evaluation of patients’ opinions and experiences has been conducted, as well as a quantitative evaluation of effects on leave episodes and absconding incidents. An economic evaluation is also underway\(^6\).

In the evaluation process in the UK, both escorted and unescorted leave rates from all units were compared in the year before and after the technology was introduced. Additionally, data on adverse incidents, primarily leave violations, were collected. In Queensland, participants stated that they intend to evaluate the utility of the device based on the experiences of patients and staff with the device through qualitative and quantitative reviews.

\(^6\) Articles based on these evaluations are currently in press.
Success of the Program

In the UK, participants deemed the program to be successful based on the data showing:

- a significant increase in leave episodes, particularly unescorted leave;
- a significant decrease in escorted leave, which has cost saving implications due to fewer human resources required; and
- a reduction in the number of incidents involving absconding and failure to return.

These findings indicate that the device may serve as a deterrent for patients and help them to better manage their impulsivity during leave episodes. The program has not been evaluated yet in Australia.

Barriers and challenges to evaluation

Participants stated that they have experienced some challenges with the evaluation of their program. Several participants in the UK pointed out that because it was introduced as a permanent program to solve a problem and not according to an experimental protocol, they had to work backwards to carry out the evaluation. Although the data they have collected indicate that the program has been effective in increasing unescorted leave episodes and decreasing escorted leave and absconding/failure to return, they cannot establish causality for two reasons: the lack of a control group and random assignment along with the high number of potential confounders that may affect the outcomes. Because the program was not designed as an experiment, evaluation involves a comparison of pre- and post-intervention data. A potential problem participants pointed out in relation to comparing pre- and post-intervention data is the lack of comparable data prior to the intervention due to the infrequent nature of incidents.

Contextual Considerations

Participants were asked to comment on situations when GPS monitoring programs may be more effective than others and situations when they would not recommend the use of such programs.

Some of the situations in which participants stated that they would recommend the use of GPS monitoring were with high-risk patients and with repeat absconders who do not pose a risk to the public. Several participants in the UK stated that low-risk repeat absconders tend to get “stuck in the system” because of their absconding, and as wearing the device can act as a deterrent, it may help them to access longer periods of leave as time progresses and to get discharged sooner. According to one participant in the UK, using the device may also help to change the focus of difficult patients (e.g., those who self-harm) away from the negative experiences inside the unit to positive experiences in the community. Finally, participants in both jurisdictions stated that some patients who may not otherwise be given access to the community may be granted community access if they consent to wearing a device.

One participant in the UK pointed out that the program is more effective at leave transition points within forensic services, such as progressing from no leave to escorted leave, and from escorted leave to unescorted leave in the community. These are the points that are associated with the highest risk of abscondment; therefore, a level of reassurance may be necessary. These participants suggested that there may be several other uses for these programs. For example, the
devices may be used as an alternative to admission, or the device may be used but the patient may be admitted to a lower-secure rather than a medium-secure facility.

Participants in both jurisdictions stated that they would not recommend extending GPS monitoring programs to non-forensic mental health patients, or to those within the forensic population who have not committed serious offenses. Some participants in Australia recommended that use of the device should be restricted to those forensic mental health rehabilitation patients who have committed serious offenses, have a history of non-compliance with the conditions of their leave, and have shown themselves to be less than reliable at managing their care. Participants also mentioned that they would not recommend the use of GPS monitoring devices to simply save money or reduce the amount of escorted leave, as escorted leave provides patients with one-on-one time with the staff and therefore has therapeutic value.

Relationship with Police

Participants in both jurisdictions stated that the GPS monitoring program has not changed their fundamental relationship with the police; however, it has enabled them to provide the police with useful information when needed. The police have used the information from the device to recover some patients who have absconded or not returned from leave. Participants in the UK reported that they have had some inquiries from the police about certain patients’ whereabouts when on leave when a crime had occurred in an area and the hospital has been able to demonstrate that the patient was not near the site of that offence.

Section IV: Device

In both the UK and Australia, ankle straps are used as a GPS tracking device, although participants said they were aware of other options such as wrist watches and bracelets, which they may consider in the future. In Queensland, ankle straps are used because Corrective Services has an agreement with the manufacturer. In the UK, participants stated that they use this option because the device is small and lightweight, and can be concealed under pants.

The size of the device is two inches square and it is attached to a strap that is 1.5 inches wide. The device works with a key and is easy to remove for staff; however, as the straps are made of steel cable, it would require industrial strength to remove it without a key. The device may fall off if it is not correctly fitted and one patient in the UK managed to remove it using tools provided by her boyfriend.

Although Corrective Services provides the devices and monitoring services in Australia, both the device and the monitoring are supplied by Buddi. Ltd in the UK\(^7\). The hospital worked with the company to determine how the device would operate in real time, what would trigger alerts, what information would be released and to whom if an alert was raised. When patients violate the conditions of their leave, this triggers an alert and information about the patient is released to pre-agreed key parties, which may include the police and certain members of the clinical team. The monitoring company has an agreed plan of what to do in case of a violation and retains key information on their system which can then be released.

\(^7\) Monitoring used to be provided by Reliant but this changed due to cost and connection issues.
When the ankle strap is put on the patient, the five “check marks” on the device turn green, indicating that the device is connected to the mobile phone network, it has enough battery charge, GPS is working (two check marks), and the strap is on properly. Participants from the UK reported that due to durability issues, the check marks would not turn green in some cases, which resulted in a loss of confidence in the system among staff and patients and higher absconding rates among patients. The monitoring process was then re-tendered. The hospital now has access to the website that all the devices are on and is able to retrieve patient information themselves.

Devices cost around 350 pounds sterling to purchase (although the cost may change depending on the number of devices purchased); however, there are different options available where the devices can be rented and different payment plans may have monitoring and support costs included. If leased, the cost is 100 pounds sterling per device. The device can be customized for each patient in terms of the alerts, where the patient can and cannot go, and when the patient should be back. If updates are set to longer intervals (e.g., 2 minutes as opposed to 30 seconds), the battery will last longer (up to 3-4 days as opposed to 48 hours).

Conclusion

Due to some high-profile incidents, risk management of forensic mental health rehabilitation patients has attracted a great deal of attention in the media in recent years. One way the UK and Australia have endeavoured to improve risk management in forensic mental health systems is the implementation of GPS monitoring programs whereby forensic mental health rehabilitation patients are fitted with a GPS tracking device prior to leave episodes. The purpose of this report was to provide insight into the development, implementation, and evaluation of these programs.

Based on interviews with eight key informants in the UK and Australia, it is clear that the use of GPS monitoring programs has drawn criticism due to concerns over infringements of human rights and stigma. At the same time, those in charge of executing these programs report benefits to stakeholder groups including mental health providers, community, police, friends and families of patients, and patients themselves.

Participants report that GPS monitoring may be related to a reduction in the number of incidents involving absconding and failure to return. Furthermore, participants suggest that it leads to an increase in leave episodes and shorter lengths of stay by allowing decision makers to take risks that might be difficult to take in the absence of the device. In general, this is viewed by participants as beneficial to the patient.

“It seems like we used to put vulnerable people in a really enticing situation when the outcomes for them could be very bad, which is more unethical to me than using a GPS tracker, whereas now we are protecting them from a vulnerable phase to help them get to where they want to be.”
Appendix A – Interview Guide (Program)
Evidence on the Effectiveness of GPS Monitoring for Mental Health Forensic Rehabilitation Patients

Interview Guide

Introduction

Thank you for agreeing to participate in this interview. The Nova Scotia Department of Health and Wellness has asked for assistance from the Nova Scotia Health Research Foundation (NSHRF) in collecting and summarizing a wide range of existing information, evidence and knowledge on (1) the use of GPS tracking and other patient monitoring approaches, (2) the effectiveness and appropriateness of these approaches for monitoring mental health forensic rehabilitation patients who are accessing the community as part of their treatment, and (3) the impact of such monitoring on public safety.

You have been identified as someone who has valuable insight into the issue of GPS or other electronic monitoring for mental health forensic rehabilitation patients in your jurisdiction. You may feel you are in a position to speak to some or all of the questions in this interview guide. Any information that you are able to provide is of value to us.

Specifically, we are interested in hearing about:

1. Approaches to developing GPS or other electronic monitoring systems for mental health forensic rehabilitation patients;
2. Approaches to implementing GPS or other electronic monitoring systems for mental health forensic rehabilitation patients;
3. The impacts of using GPS or other electronic monitoring systems for mental health forensic rehabilitation patients;
4. Evaluation of initiatives using GPS or other electronic monitoring systems for mental health forensic rehabilitation patients; and
5. The opportunities and challenges associated with the use of GPS or other electronic monitoring systems for mental health forensic rehabilitation patients.

Privacy and Confidentiality

The discussion will be audio recorded to ensure accuracy during the analysis and write-up of the findings. The audio recording will not be shared with anyone outside the jurisdictional review project team, which consists of employees of NSHRF, representatives from the Health Law Institute at Dalhousie University, and the Coordinator, Mental Health from the Nova Scotia Department of Health and Wellness. The audio files will be password-protected and maintained by the review team. The interview findings will be summarized and have the potential be used to inform policy decisions. However, the original raw data including the audio recordings and interviewer’s notes will not be shared with anyone outside the jurisdictional review project team. If you have any questions, please do not hesitate to contact:
Overall experience with GPS or other electronic monitoring tools

1. What type of organization do you represent?

2. What is your current position or title
   i. How long have you been working in this position?
   ii. Can you describe for me where your position fits within your organization?

3. Describe your experience with GPS or other electronic monitoring programs. In other words, please give me an overall picture of your knowledge and expertise in this area.

4. Do you currently have/ or have you ever had a GPS or other electronic monitoring program in place for mental health forensic patients in your organization? (If not, has it been considered?)

Development of the Program

1. What was the impetus for developing a GPS or other electronic monitoring program for mental health forensic patients? OR What is the need for a GPS or other electronic monitoring program for mental health forensic patients?

2. Can you tell me about any investigation or research you did on similar programs prior to developing and implementing your program? What can you tell me about the existing evidence on the effectiveness of these types of programs? As mentioned, we’re interested in reviewing existing evidence about the effectiveness of this approach – is there any information or evidence that you think might be helpful for our review?

3. Can you tell me about how the GPS or electronic monitoring program was developed?
   i. Was it structured as a pilot/demonstration project or was it a permanent program?
   ii. What resources were involved? What supporting services were required?
   iii. Who was on the team? What skill sets were required?

4. Is there a target population of your program? (A certain type of mental health patient?) How do you define your target population (e.g., classification, assessment tools, risk levels, etc.). Who is excluded from the program?
   i. Do you think some tracking systems are better suited to certain populations of mental health forensic rehabilitation patients? Why?

5. In our literature review two intended outcomes associated with the use of GPS and other tracking systems for mental health forensic patients were commonly reported: (a) Improved ability to track, locate and return patients who have deviated from the conditions of their community access, and (b) Deterring offenses.
What are the intended outcomes for your program?

6. What are the potential benefits and drawbacks of such systems to the following stakeholders:

   i. mental health organizations,
   ii. community,
   iii. police,
   iv. families/friends/loved ones of patients
   v. Patients (Therapeutic, rehabilitative?) (Would it depend on the specific target population?)

   • What if any concerns have been raised by patients who:

     a. Refuse to consent to the monitoring?
     b. Agree to the monitoring and have undergone monitoring?

(Probe: stigma, increased liberty, public safety, limitations on social interaction/inclusion)

7. Were these stakeholders consulted to inform decision making around the system you are currently using? What were their reactions?

8. What are the unintended treatment consequences of using GPS for mental health forensic rehabilitation patients?

**Implementation**

1. Can you tell me about implementation of this program?

   i. When was the system first implemented?

   ii. What were the steps involved? (Prompts: selecting a technological solution; defining their population; risk assessment tools (how accurate are their risk assessments?); patient consent (and substitute decision makers); alert response protocols; policy development; engagement of key stakeholders (e.g., police, community), orientation, education and training, other etc.)

2. How were devices integrated into existing rehabilitation programs? Did significant aspects of programs such as patient assessment or patient leave options change with the use of these devices? Were patient leave privileges changed with the use of GPS devices, either formally (GPS used to grant extra privileges) or informally (more lenient assessment/conditions).

3. Have there been changes to the system over time? If so, why were the changes implemented?

4. Have you encountered challenges or barriers associated with the development or implementation of the system?

   i. How have you been able to address these barriers?

   ii. What lessons have you learned in addressing the barriers?

5. How long did it take to develop and implement the system you are currently using?
6. Did you use a phased or graduated approach to program implementation, or did you implement all changes at once? What were pros and cons of your approach?

7. Describe the intended scope of your program (e.g., how many participants, what % of total patient population use the tools).

8. Can you tell me about the governance of the program, i.e., the roles and responsibilities in running the program. Who does the monitoring, was this an increased workload, was new staff required, etc.

**Evaluation**

1. Do you have a system in place to evaluate your program?

2. How often have you had to track a patient using the GPS or other electronic system?

3. How successful has your program been to date in terms of achieving your goals? (Prompt: You mentioned that you use GPS tracking for mainly the purpose of …).  
   i. How effective has it been in terms of tracking, locating and returning patients?  
   ii. How effective has it been in terms of deterring offenses? How do the outcomes compare with previous recidivism rates?

4. Do you formally evaluate the program you are currently using? (If not using a system, how would you evaluate the effectiveness of a tracking system?)  
   i. What is involved in the evaluation process?  
   ii. What are some barriers and challenges to the evaluation process?

5. What do you consider to be a successful outcome of the program?  
   i. How is it measured?  
   ii. Do you collect any data? Why or why not? What kind of data?

6. Are there any ‘promising practices’ that emerged from the program?

7. Any there any situations when these programs may be more effective than others? (any situations when they would be recommended)  
   i. Are there any situations when they would NOT be recommended?

8. Are there particular strengths that you associate with the program you are currently using?

**Device-specific Questions**

1. What type of technologies/devices are available that you know of?
2. What made you decide on the device you are currently using? What information did you gather on the effectiveness of the device prior to implementing your program?
   
i. What are the functionalities and features of the tool they use?
   ii. Where is the device worn (i.e., wrist, ankle, etc.)? Why?
   iii. What is the size of the device?
   iv. How easy is it to remove the device?
   v. What is the percentage of devices that are removed by patients?
   vi. What is the percentage of devices that are damaged through regular wear and tear?
   vii. What is the cost per device? Can you tell me about vendor support and device replacement costs?
   viii. How does the technology work? (e.g., does it determine zones, time of day limits, can it be customized for each patient)?

**Additional Comments**

1) Is there anything else about your system more broadly that you would like to comment on?
2) Do you know of any other organizations that have GPS or electronic monitoring systems that we might benefit from talking with?
3) What is your biggest lesson you have learned from using your system that you think would provide valuable insight for others in this field?

**Additional Questions**

1. Do you think the effectiveness of a program will be different when used on mental health patients rather than those who have been involved in the criminal justice system? (OR will the outcomes be different?) – i.e., It can act as a deterrent for those who have been involved in the criminal justice system but may not for mental health.
2. What other tools, practices, or procedures exist to help police find patients when they are AWOL and a risk to public safety?
Appendix B – Interview Guide (Researcher)

Introduction
Thank you for agreeing to participate in this interview. The Nova Scotia Department of Health and Wellness has asked for assistance from the Nova Scotia Health Research Foundation (NSHRF) in (1) collecting and summarizing a wide range of existing information, evidence and knowledge on the use of GPS tracking and other patient monitoring approaches, (2) the effectiveness and appropriateness of these approaches for monitoring mental health forensic rehabilitation patients who are accessing the community as part of their treatment, and (3) the impact of such monitoring on public safety.

You have been identified as someone who has valuable insight into the issue of GPS or other electronic monitoring for mental health forensic rehabilitation patients in your jurisdiction. You may feel you are in a position to speak to some or all of the questions in this interview guide. Any information that you are able to provide is of value to us.

Specifically, we are interested in hearing about:

- The topics you research related to the use of GPS or other electronic monitoring systems for mental health and/or mental health forensic rehabilitation patients
- The impact of GPS or other electronic monitoring systems for mental health and/or mental health forensic rehabilitation patients;
- The opportunities and challenges associated with GPS or other electronic monitoring systems for mental health and/or mental health forensic rehabilitation patients

Privacy and Confidentiality
The discussion will be audio recorded to ensure accuracy during the analysis and write-up of the findings. The audio recording will not be shared with anyone outside the jurisdictional review project team, which consists of employees of NSHRF, representatives from the Health Law Institute at Dalhousie University, and the Coordinator, Mental Health from the Nova Scotia Department of Health and Wellness. The audio files will be password-protected and maintained by the review team. The interview findings will be summarized and have the potential to be used to inform policy decisions. However, the original raw data including the audio recordings and interviewer’s notes will not be shared with anyone outside the jurisdictional review project team.

If you have any questions, please do not hesitate to contact:

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Overall experience with GPS or other electronic monitoring tools

3. What type of organization do you represent?
4. What is your current position or title?
   i. How long have you been working in this position?
   ii. Can you describe for me where your position fits within your organization?
5. Describe your experience with GPS or other electronic monitoring systems. In other words, please give me an overall picture of your knowledge and expertise in this area.
   i. Does your research on GPS monitoring involve mental health forensic rehabilitation patients?
6. Is a GPS tracking program for mental health (forensic rehabilitation) patients currently in development or in use in your jurisdiction?
   i. Does your research focus on a specific program currently in development or in use in your jurisdiction?

Research Topics and Methods

The questions in this section are intended to find out how and what you research
1. What methods do you use for collecting data?
2. What kinds of data do you consider and what kinds do you not consider?
3. How much data is there to be found on your topic?
4. How can your research findings be used to inform decision making around GPS monitoring for mental health and/or mental health forensic rehabilitation patients?
5. What knowledge gaps currently exist on this topic?

3 Need for Further Research

The questions in this section are for finding out about what particular aspects of GPS monitoring are important areas of research.
1. In what areas do you think research is needed the most?
2. What do you think are the opportunities for developing GPS monitoring systems for mental health (forensic rehabilitation) patients?
3. What do you think are the barriers to developing GPS monitoring systems for mental health (forensic rehabilitation) patients?

4 Final Thoughts and Comments

1. Is there anything else you’d like to tell me about your research or issues surrounding GPS monitoring for mental health (forensic rehabilitation) patients in general that I didn’t ask you about or you didn’t get to comment on?
2. Based on your knowledge and experience in this area, what would you recommend as promising practices or key considerations for jurisdictions that are considering the use of GPS tracking systems for mental health (forensic rehabilitation) patients.
3. Do you know of specific organizations that have GPS monitoring programs or systems in place?
4. Do you know any other researchers I can talk with who focus on this area?