

**Hospital Security Program for Engaging Communities with Firearm
Safe Storage Devices and Interventions: Data Collection Aim 2**

Study Protocol

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1. Abstract

To prevent workplace violence, in November 2021, Penn Medicine implemented the Evolv weapons detection system in Pennsylvania Hospital (1,2). For individuals who self-disclose they are carrying a weapon, or who are identified with weapon during screening, security guards offer the individual the option to leave with their weapon, or to place it in a safe, at the hospital, for storage. Security guards return the weapon when the patient or visitor is ready to leave. Beginning in July 2022 our team piloted a program in which security guards offer a cable lock and safety brochure when the gun owner returns to retrieve their firearm at the conclusion of their visit. To date, 47% of patients and visitors who stored their firearm with security have taken a cable lock when offered, resulting in over 300 firearm safety locks and brochures distributed to firearm owners. The Aims of this study are to: (1) Elucidate barriers and facilitators to implementing a hospital security screening firearm safety program through interviews with hospital security staff; (2) Design and pilot test a method for collecting data on storage device use among patients and visitors who accept firearm safety materials; (3) Conduct a pilot of distributing lockboxes and compare acceptance and usage rates to cable locks.

This protocol is for Aim 2 of the study. The rationale for this aim is that traditional research methods for collecting data on firearm safe storage have not been optimized for use in a pragmatic setting to ensure acceptability and confidentiality. Our priority in firearm safety education and device distribution is to get the necessary information and supplies to those who need them. To achieve this, any data collection must be done in a low profile, confidential, and non-threatening way. This is particularly important not only because discussions of firearm ownership can be politically charged, but also because some community members may not be legally licensed to own or carry a firearm, and some may even be legally prohibited from doing so. The legal status of their ownership does not lessen their need for safety information and support—indeed, unlicensed firearm owners may have even fewer safety resources available for them. Our priority is therefore to reach as many individuals as possible while subjecting them to as little scrutiny as possible. Therefore, we aim to design a data collection approach that will prioritize preserving participant confidentiality. Our approach will be iterative pilot tests of data collection methods including embedding unique QR codes linked to surveys in firearm safety brochures and study poster signage. The hypothesis we are testing is if iterative pilot testing will reveal a feasible method that balances pragmatism and confidentiality.

The intended outcome of this study is development of critical evidence to facilitate the scaling of this program to our hospitals and launch a promising research program to study the acceptability, long term use, and cost-effectiveness of a scalable approach to promote safe firearm storage.

2. Overall objectives

Paralleling national trends during the Covid-19 pandemic, in 2021 in Philadelphia, there was a 600% increase in new firearm licenses, resulting in a large increase in new firearm owners (16). Effectively promoting secure storage of firearms among new and pre-existing owners could have a major impact on injury prevention, but existing educational and legislative means have had limited impact on promoting safe storage.

Firearm owners are open to talking about secure storage with healthcare providers, firearm experts, and law enforcement and security representatives (12–14,17–19). Firearm safety programs have shown greater success when they pair safety education with distribution of firearm safety devices (20,21). However, for reasons of expense and convenience, the most common device that programs distribute is a cable lock. Cable locks thread through the barrel or stock of a firearm. They require the weapon to be unloaded and they require a key to open them. Given that the number one reason for firearm ownership is fear of other people (22,23). Secure storage initiatives must be responsive to firearm owners' emphasis on

swift and easy access to their weapon in a time of emergency (6). Firearm owners rank speed and ease of use most highly when selecting storage devices and have preference for lockboxes over cable locks (5).

Building on success in reaching firearm owners in clinical and community settings, this innovative program addresses crucial gaps in firearm safety programming. First, we will expand upon a novel, successful program of firearm safety education and device distribution in the context of hospital security. Elucidating the barriers, facilitators, and opportunities in this space will allow us to scale our efforts throughout Penn Medicine and to many other health systems and settings around the country. Second, by adding a voluntary, anonymous initial survey linked via QR code within our educational materials and posted signage with the option to participate in a follow-up survey with link sent via text, we will have the opportunity to gather firearm owners' perspectives on storage and related issues to enable ongoing programmatic improvement. The study poster will test scalability and feasibility around distribution by asking individuals if and where they would like a firearm storage device shipped to them for convenience. Third, we will offer the most desirable locking device, biometric lockboxes, as an alternative to cable locks, along with firearm safety education. Providing these devices will amplify ongoing firearm safety efforts at Penn Medicine and in our partner communities.

3. Aims

3.1 Primary outcome

The primary outcome measure is survey response rate: whether an eligible visitor or patient completed the firearm storage survey after accepting firearm safety materials or after scanning the QR code on the study poster.

3.2 Secondary outcome

The secondary outcome measures are from initial and follow-up survey responses: (1) firearm storage behavior, (2) likelihood of using cable lock within the next week (extremely unlikely to extremely likely scale).

3.3 Exploratory outcomes

To compare survey response rates between several different variations of survey distribution: web survey accessed via QR code posted in the entry hall; web survey accessed via QR code included on the safety brochure; follow-up survey link administered by text message.

4. Background

Firearm injury is the leading cause of death of children in the U.S. and Philadelphia (3). Our work shows unintentional injuries are the leading cause of nonfatal firearm injuries with rates disproportionately higher in Black communities (Figure 1). As in Philadelphia, forty percent of American adults live in a household with at least one firearm, and two thirds of these have at least one firearm that is unlocked (4–6). Secure storage of firearms can prevent youth suicide, unintentional injury, intimate partner homicide, theft, and violent crime (7–10). Education and legislation have had limited impact on promoting safe firearm storage (11–15).

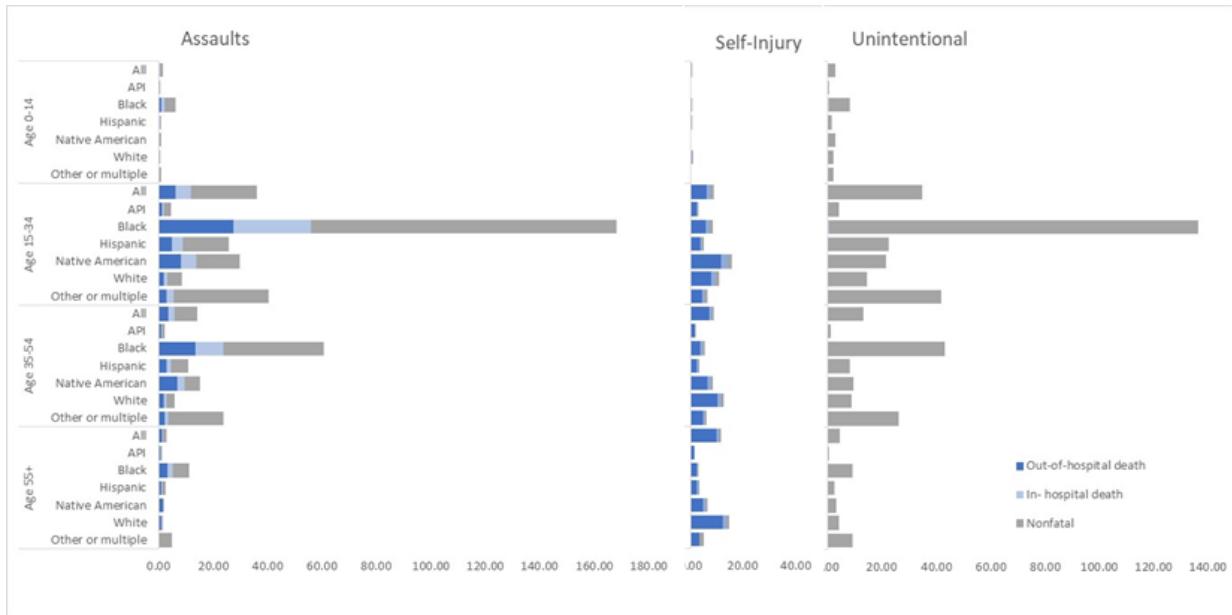


Figure 1: Annual U.S. Firearm Injury Rates per 100,000 by Intent, Age, Race, and Ethnicity, 2019-20 (Kaufman...Delgado, under review)

Penn Medicine prohibits firearms within its buildings. In November 2021, Penn Medicine implemented the Evolv weapons detection system in entrances to Pennsylvania Hospital and its medical office buildings (2). In the first 5 months of the program, there were over 300,000 screening encounters and 408 firearms identified and stored by hospital security. In July 2022 our team piloted an innovative program in which security guards offer a firearm cable lock and safety brochure when the gun owner return to retrieve their firearm at the conclusion of their visit. To date, 47% of patients and visitors who stored their firearm with security have taken a cable lock when offered, resulting in over 300 firearm safety locks and brochures distributed to firearm owners.

This program is fully supported by health system leadership (Co-Is Ahya, Anthony) in the context of the larger goal of scaling weapons detection to all Penn Medicine hospitals in Philadelphia. However, contextual evidence is needed to optimize the design of the program for widespread implementation. And to measure its impact, novel methods are needed to assess long term firearm storage device use. Lastly, there are known tradeoffs in acceptability and costs of cable locks vs. Lockboxes. Our long-term research goals are to conduct randomized trials to: (1) quantify whether there is increased sustained safe storage of firearms with lockboxes to assess the incremental cost-effectiveness; and (2) test different behavioral engagement strategies to promote sustained use of safe storage devices.

5. Study design

5.1 Design

Aim 2 of this research study is to design and pilot test a method for collecting data on storage device use among patients and visitors who accept firearm safety materials or are interested in receiving a firearm storage device shipped to their address. The study design is an iterative pilot test of survey data collection methods and determination of scalability and feasibility for distribution of firearm storage devices. The study population and sample will be (a) individuals who are patients or visitors to PAH who are screened

for a firearm, screen positive, and accept a firearm safety brochure and storage device OR (b) individuals interested in receiving a firearm storage device and self-scan the unique QR code on the study poster in the entry hall of PAH with minimal or no security supervisor engagement. A unique QR code linking directly to the initial survey will be embedded into the firearm safety brochure as well as the poster in the entry hall of PAH next to the distribution area. Individual group (a) will be informed by security that survey participation is optional, but that it is helpful for our efforts, and that participation will be compensated with a \$10 Amazon gift card for the initial survey and a \$20 Amazon gift card for completing the follow-up survey. Individual group (b) will not be actively engaged by security, and will self-enroll in the study by viewing the posted signage and completing the QR code linked survey. Individuals who decline the device will also be eligible for the initial survey via the poster QR code, but they will not be eligible for the follow-up survey.

The primary outcome measure is survey response rate: whether an eligible visitor or patient completed the firearm storage survey after accepting firearm safety materials or after scanning the QR code on the poster. This will be measured through Qualtrics survey completion rate and PAH Evolv security system foot traffic. We will use the survey completion rate as the numerator and the number of people scanning positive for a firearm as the denominator for this rate.

The secondary outcome measures are from initial and follow-up survey responses: (1) firearm storage behavior, (2) likelihood of using cable lock within the next week (extremely unlikely to extremely likely scale). These outcomes are directly tied to questions asked in both surveys.

Lastly, as exploratory outcomes, we will compare survey response rates between several different variations of survey distribution: web survey accessed via QR code posted in the entry hall; web survey accessed via QR code included on the safety brochure; follow-up survey link administered by text message.

5.2 Study duration

The aim of this study is expected to take 8 months including planning, 6-month active phase of the study, and then analysis and dissemination of results.

Activity	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Aim 1												
IRB approval	Blue											
Data collection & analysis		Blue	Blue									
Manuscript				Blue	Blue							
Aim 2												
IRB approval	Green											
Initial design	Green											
Iterative data collection		Green	Green	Green	Green	Green						
Aim 3												
Lockbox vendor contract					Yellow	Yellow	Yellow					
IRB approval								Yellow				
Direct lockbox distribution									Yellow			
Lockbox voucher distribution										Yellow		
Lockbox shipping distribution										Yellow		
Analysis, manuscript, network dissemination											Yellow	

5.3 Target populations

Pennsylvania Hospital visitors and patients who (a) screen positive for carrying a firearm and who accept a firearm safety brochure and storage device OR (b) are interested in receiving a firearm storage device and self-select to complete the initial QR code survey linked on the study poster.

5.4 Accrual

This is an evaluation of data collection methodologies. We will assess response rates every (1) week and tabulate responses on the acceptability of data collection methods. We will iteratively refine data collection methods over the course of 6 months to achieve the highest possible response rate.

5.5 Key inclusion criteria

Individuals who are visitors or patients at Pennsylvania Hospital, are identified through the Evolv system as carrying a firearm, and who accept firearm safety materials OR any patient or visitor interested in receiving a firearm storage device who self-selects into the study by scanning the QR code on the study poster. For eligibility of the follow-up survey, participants must have responded yes to taking a cable lock

in the initial brochure survey or yes to receiving a firearm storage device shipped to their address from the poster survey.

5.6 Key exclusion criteria

None.

6. Subject recruitment

Since this aim is a trial of data collection methods within an existing hospital program, individuals will not be recruited or enrolled individually, but instead eligible individuals will be offered the option to participate in the survey upon receipt of firearm safety materials or self-selection via scanning the QR code linked to the initial study survey. The former option will be presented to individuals alongside the existing distribution workflow of the program.

7. Subject compensation

Total potential compensation per participant is \$30 in the form of Amazon gift cards. Individuals will receive a \$10 Amazon gift card for completing the initial survey. If participants choose to complete the follow-up survey, they will receive a \$20 Amazon gift card. The gift card will be shared manually via text message with the participants within 1-2 weeks of survey completion. Participants who elect to have a firearm storage device shipped to their address will receive a free device (either a cable lock and/or lock box).

8. Study procedures

8.1 Consent

The study is an evaluation of how data can be collected on storage device use among individuals who accept firearm safety materials while visiting PAH as a visitor or as a patient. Since this is an existing program and workflow within PAH, people who elect to participate in the survey will not be consented individually but rather upon initiation of the survey with an electronic statement (see below). Upon opening the survey participants will immediately be prompted to agree or disagree with the following informed consent language:

“We appreciate your interest in our survey. Your insights are valuable for our research. Before you proceed, please take a moment to review the consent form. If you have any questions or concerns, feel free to outreach to us at jane.maguire@pennmedicine.upenn.edu or Penn Medicine IRB at 215-898-2614.

1. The information shared in this survey will be used exclusively for research purposes and will be kept confidential.
2. The purpose of this survey is to better understand firearm storage device preferences and storage use.
3. Participants’ phone numbers will be used to deliver a digital Amazon gift card as a token of appreciation for survey completion and for re-contact with invitation to participate in the follow-up survey.
4. Your personal information will be stored securely. [For poster survey only: Your address will only be

used as shipping information for the firearm storage device.]

5. You may stop the survey at any point without providing a reason.
6. Participation is totally voluntary, and you will not face any consequences for not participating.
7. The data from this survey will not be shared with anyone outside of the study team and will remain anonymous. The data will be used to inform future firearm safety programs at Penn Medicine.
8. By selecting agree, you confirm that you've read and understand the items above and agree to participate in this survey and that you may be contacted for an opportunity to complete a follow-up survey.
9. By agreeing to participate in this survey, you acknowledge and agree that only one individual should complete the survey. We value the integrity of the survey responses provided. Any attempt to manipulate or falsify responses, or engage in suspicious activities aimed at circumventing the participation guidelines, will result in disqualification from any associated incentives or rewards.

If participants agree to participate in the survey, they will continue forward in the survey. If participants disagree with the terms and consent statement, they will not be able to progress in the survey and no additional information will be collected from the individual.

8.2 Procedures

Study procedure. A unique QR code linking directly to the survey will be embedded into our firearm safety brochure and study poster available in the entry hall of PAH. Participants who scan positive for a firearm and are offered safety materials (inclusive of the brochure) will be informed that survey participation is optional, but that it is helpful to our efforts, and that participation will be compensated with a \$10 Amazon gift card for completing the initial survey and a \$20 Amazon gift card for completing the follow-up survey. Individuals who decline the device will also be eligible for the initial survey via the poster QR code. Gift cards will be distributed digitally via text in accordance with the participants consent to share their phone number. Only eligible participants will receive a text with a link to complete the optional follow-up survey.

Participants who self-select into the study via the study poster will be linked to the initial survey in Qualtrics with one re-worded question based on context. Individuals will receive \$10 Amazon gift card for completing the initial survey and a \$20 Amazon gift card for completing the follow-up survey. Only eligible participants will receive a text with a link to complete the optional follow-up survey.

Initial Survey via Brochure. Upon scanning the QR code on the brochure, an individual will be brought directly to the initial Qualtrics survey. The first question of the survey is a statement outlining that the individual's participation is voluntary and informed. The individual must select agree or disagree before proceeding with the survey. If the individual chooses to agree, they will then begin the initial survey. After completion of the survey, they will receive a text message with their Amazon giftcard information within 1-2 weeks. The text will read, "Hello, this is Penn Medicine. Thank you for participating in our survey. As an appreciation for your time, please see below for your gift card information: [INSERT GIFT CARD #]"

This initial survey will focus on the following elements. Survey language may be refined during the research process:

- 1.
2. To receive an Amazon gift card and participate in future follow-up surveys, please enter your phone number.
3. Most recent visit to Penn Medicine (mm/dd/yyyy)
4. Did you get a cable lock today?
 - a. Yes
 - b. No
5. [IF NO #3] What's the reason you didn't accept one?
 - a. Already have one
 - i. [LOGIC] How often do you use it?
 1. Every time I store my device
 2. Almost every time I store my device
 3. Almost never when I store my device
 - ii. [LOGIC] What's your preference for storing your firearm? [text field]
 - b. Prefer different storage device
 - i. [LOGIC] Which of the following storage devices would you prefer?
 1. Lock box
 2. Trigger lock
 3. Gun safe
 4. Calmshell / "life jacket"
 5. Gun cabinet
 6. In-vehicle lock
 7. Other/key/PIN/biometric (please specify):
 - c. Don't want one
 - d. Not offered or not available
6. [IF YES #3] If you have accepted a device today, how likely are you to use it in the next week?
 - a. Extremely likely
 - b. Somewhat likely
 - c. Neither likely nor unlikely
 - d. Somewhat unlikely
 - e. Extremely unlikely
7. How do you usually store your firearm?
 - a. In a locked safe or gun cabinet
 - b. With a trigger lock or cable lock
 - c. Unlocked (not secured with a lock, in a locked container, or not stored in a locked cabinet)
 - d. Other (please specify)

Initial Survey via Poster. Upon scanning the QR code on the poster next to the distribution area, an individual will be brought directly to the initial Qualtrics survey. The first question of the survey is a statement outlining that the individual's participation is voluntary and informed. The individual must select agree or disagree before proceeding with the survey. If the individual chooses to agree, they will

then begin the initial survey. After completion of the survey, they will receive a text message with their Amazon giftcard information within 1-2 weeks. The text will read, "Hello, this is Penn Medicine. Thank you for participating in our survey. As an appreciation for your time, please see below for your gift card information: [INSERT GIFT CARD #]"

This initial survey will focus on the following elements. Survey language may be refined during the research process:

1. To receive an Amazon gift card and participate in future follow-up surveys, please enter your phone number.
2. Most recent visit to Penn Medicine (mm/dd/yyyy)
3. Are you interested in receiving a firearm storage device shipped to your address?
4. [IF NO #3] What's the reason you don't want one?
 - a. Already have one
 - i. [LOGIC] How often do you use it?
 1. Every time I store my device
 2. Almost every time I store my device
 3. Almost never when I store my device
 - ii. [LOGIC] What's your preference for storing your firearm? [text field]
 - b. Prefer different storage device
 - i. [LOGIC] Which of the following storage devices would you prefer?
 1. Lock box
 2. Trigger lock
 3. Gun safe
 4. Calmshell / "life jacket"
 5. Gun cabinet
 6. In-vehicle lock
 7. Other/key/PIN/biometric (please specify):
 - c. Don't want to share my address
 - i. [LOGIC] Please select which of the following you'd be open to:
 1. Returning to Penn Medicine to pick up a free cable lock
 2. Receiving a free cable lock locally
 3. Other (please specify)
5. [IF YES #3] What is the best US shipping address for you?
 - a. [Text box fields for street, apt, city, zip, name]
6. How do you usually store your firearm?
 - a. In a locked safe or gun cabinet
 - b. With a trigger lock or cable lock
 - c. Unlocked (not secured with a lock, in a locked container, or not stored in a locked cabinet)
 - d. Other (please specify)
7. Once you receive your cable lock, how likely are you to use it in the next week?
 - a. Extremely likely

- b. Somewhat likely
- c. Neither likely nor unlikely
- d. Somewhat unlikely
- e. Extremely unlikely

Follow-up Survey: Participants who complete the initial survey and who agree to provide contact information will be contacted via text message 1 month after enrollment for a follow-up survey that adds questions about if and how participants have changed their storage behavior. The text language will read:

“Hello, this is Penn Medicine. Thank you for completing our initial survey. If you’re interested in taking the follow-up survey, please click the survey link below: [INSERT LINK]”

Participants will receive the second Amazon gift card incentive 1-2 weeks after completion of this survey. “Hello, this is Penn Medicine. Thank you for participating in our survey. As an appreciation for your time, please see below for your gift card information: [INSERT GIFT CARD #]”

The follow-up survey questions are subject to be amended based on the principal investigators’ discretion. Eligible participants from the initial survey, those who answered yes to accepting a cable lock, will be asked the following questions to understand if their behavior changed:

1. Since you’ve visited Penn Medicine, how have you stored your firearm? [option selection]
 - a. Participants select [a] in a locked safe or gun cabinet, b) with a trigger lock or cable lock, c) unlocked (not secured with a lock, in a locked container, or not stored in a locked cabinet), d) other (please specify) with an open comment box]
2. Have you used the firearm storage device from Penn Medicine to secure your firearm? [Yes/No]
3. Have you made any other changes in your firearm storage? [write in]

Iterative Analysis and Refinement of Data Collection Methods: We will assess response rates every (1) week and tabulate responses on the acceptability of data collection methods. We will iteratively refine data collection methods over the course of 6 months to achieve the highest possible response rate. The participant data collected will be their phone number and/or their address for individuals completed the survey via the study poster. No identifying information or demographics will be collected to uphold anonymity. Cell phone number will be used to distribute the gift card via the Nudge Unit’s Google Voice account and re-contact with invitation to participate in the follow-up survey. Their address will only be used to ship the firearm storage device to individuals who self-enrolled in the study via the study posters.

9. Analysis plan

The primary outcome is survey response rate. This will be monitored via Qualtrics by looking at response volume by week. These responses will be compared to security department reports on the number of firearms identified/stored to allow us to calculate the proportion of eligible individuals who responded per week. The secondary outcome measures are: (1) firearm storage behavior among a) locked safe/gun cabinet, b) trigger lock or cable lock, c) unsecured, d) other (write in), (2) likelihood of using cable lock within the next week (extremely unlikely to extremely likely scale).

10. Human research protection

10.1 Data confidentiality

Participant data from the Qualtrics survey will include a cell phone number as an identifier and address for participants who self-enrolled via the study poster and are interested in receiving a firearm storage device shipped to their address. The data will be transferred and then stored, managed, and analyzed on a secure, encrypted server behind the University of Pennsylvania Health System (UPHS) firewall. All study personnel that will use this data are listed on the IRB application and have completed training in HIPAA standards and the CITI human subjects research. Data access will be password protected. Whenever possible, data will be de-identified for analysis. Computer-based files will only be made available to personnel involved in the study through the use of access privileges and passwords. Wherever feasible, identifiers will be removed from study-related information. Precautions are already in place to ensure the data are secure by using passwords and HIPAA-compliant encryption.

Participant cell phone numbers will be used for the distribution of the Amazon gift card and sharing the link to the follow-up survey. The gift card will be distributed via text using the Nudge Unit's Google Voice account.

The Qualtrics response will be monitored daily and is placed in a folder in a UPHS secure shared drive. Access is granted only for staff with HIPAA and CITI training. The file created is saved onto a secure UPHS drive only accessible by the team on this protocol (via password protection) or using the Penn Secure Share encrypted document sharing mechanism. There will be no individual demographic information collected. Qualtrics tracked data includes time and location of survey completion. This information will not be used as part of the study except for ensuring there aren't imposter participants with completion rates that are outside the daily average cable lock distribution at PAH. The dataset will remain on this secure shared drive until the project is complete. It will be removed at the end of that initiative, unless a separate protocol request for access to this dataset is approved by the IRB before it is removed.

Every effort will be taken by the research staff to protect patient confidentiality by keeping this information on a secure UPHS shared drive (which requires institutional privileges and manual approval by administrators for access). The file will be password protected.

10.2 Subject confidentiality

The only personal information collected will only be their cell phone number and shipping address in the case of participants enrolling via the study poster. Any information that is obtained will be used for research purposes only. All study staff will be reminded of the confidential nature of the data collected and contained in these databases. All study personnel that will use this data are listed on the IRB application and have completed training in HIPAA standards and the CITI human subjects research. Data access will be password protected. Whenever possible, data will be de-identified for analysis. The only identifier in the file will be their cell phone number and will remain on the secure shared drive for the purposes of distributing compensation in the form of digital gift cards.

10.3 Subject privacy

All efforts will be made by study staff to ensure subject privacy. Data will be evaluated in a de-identified manner whenever possible.

10.4 Data disclosure

Information on individual participants will not be disclosed to anyone outside of the study team.

10.5 Data safety and monitoring

The investigators will provide oversight for the study evaluation of this study. All unanticipated problems or adverse events will be reported to the primary PI for the duration of the study. The PI is responsible for identifying potential unanticipated problems experienced by study participants, adjusting the intervention accordingly and reporting the experience to the IRB.

10.6 Risk/benefit

10.6.1 Potential study risks

The potential risks associated with this study are minimal given the research is focused on testing data collection methodologies in a low-profile and non-threatening way. Breach of data is a potential risk that will be mitigated by using HIPAA compliant and secure data platforms for analysis as previously described.

10.6.2 Potential study benefits

The main potential benefit is development of critical evidence to facilitate the scaling of this program to our hospitals and launch a promising research program to study the acceptability, long term use, and cost-effectiveness of a scalable approach to promote safe firearm storage. Study participants may benefit from receiving a firearm storage device as a result. However, it is possible that participants will receive no benefit from this study.

10.6.3 Risk/benefit assessment

The risk/benefit ratio is favorable given the potential benefit of knowledge that could be gained on how to launch and scale a successful safe firearm storage program. Efforts have been put into place to minimize the risk of breach of data. If favorable outcomes are found, then there is a potential to broadly disseminate findings to other hospitals and health systems.

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Brief Description for ClinicalTrials.gov

This study aims to enhance workplace safety by implementing a firearm safety program at Penn Medicine's Pennsylvania Hospital. The option to store firearms securely during visits is offered to firearm

owners. The study focuses on understanding barriers and facilitators to this program and piloting methods to collect data on firearm storage device use. The approach prioritizes participant confidentiality and pragmatism. The study design involves iterative pilot testing of data collection methods and comparison of acceptance and usage rates between cable locks and lock boxes through randomization. The intended outcome is to provide evidence supporting the scalability and effectiveness of the program. The study population includes patients and visitors who accept firearm safety materials or express interest in receiving a firearm storage device. The primary outcome measure is survey response rate, with secondary outcomes including firearm storage behavior and likelihood of using a gun safety device. Additionally, the study explores variations in survey distribution methods.

Detailed Description for ClinicalTrials.gov

To prevent workplace violence, in November 2021, Penn Medicine implemented the Evolv weapons detection system in Pennsylvania Hospital (1,2). For individuals who self-disclose they are carrying a weapon, or who are identified with weapon during screening, security guards offer the individual the option to leave with their weapon, or to place it in a safe, at the hospital, for storage. Security guards return the weapon when the patient or visitor is ready to leave. Beginning in July 2022 our team piloted a program in which security guards offer a cable lock and safety brochure when the gun owner returns to retrieve their firearm at the conclusion of their visit. To date, 47% of patients and visitors who stored their firearm with security have taken a cable lock when offered, resulting in over 400 firearm safety locks and brochures distributed to firearm owners. The Aims of this study are to: (1) Elucidate barriers and facilitators to implementing a hospital security screening firearm safety program through interviews with hospital security staff; (2) Design and pilot test a method for collecting data on storage device use among patients and visitors who accept firearm safety materials; (3) Conduct a pilot of distributing lockboxes and compare acceptance and usage rates to cable locks.

This protocol is for Aim 2 and 3 of the study. The rationale for this aim is that traditional research methods for collecting data on firearm safe storage have not been optimized for use in a pragmatic setting to ensure acceptability and confidentiality. Our priority in firearm safety education and device distribution is to get the necessary information and supplies to those who need them. To achieve this, any data collection must be done in a low profile, confidential, and non-threatening way. This is particularly important not only because discussions of firearm ownership can be politically charged, but also because some community members may not be legally licensed to own or carry a firearm, and some may even be legally prohibited from doing so. The legal status of their ownership does not lessen their need for safety information and support—indeed, unlicensed firearm owners may have even fewer safety resources available for them. Our priority is therefore to reach as many individuals as possible while subjecting them to as little scrutiny as possible. Therefore, we aim to design a data collection approach that will prioritize preserving participant confidentiality. Our approach will be iterative pilot tests of data collection methods including embedding unique QR codes linked to surveys in firearm safety brochures and study poster signage. We will offer the opportunity for individuals to take home a cable lock after their visit or to scan the QR code on the brochure/poster to fill out the study survey and get a safety

device shipped to their address. Participants who fill out the study survey will be randomized to receive either a cable lock as the default or a choice between cable lock and lock box to test acceptance and usage rates. For those who accepted a cable lock at the hospital will automatically be grouped in the cable lock default group. The hypothesis we are testing is if iterative pilot testing will reveal a feasible method that balances pragmatism and confidentiality as well as compare acceptance and usage rates among cable locks and lock boxes.

The intended outcome of this study is development of critical evidence to facilitate the scaling of this program to our hospitals and launch a promising research program to study the acceptability, long term use, and cost-effectiveness of a scalable approach to promote safe firearm storage.

This research study is to design and pilot test a method for collecting data on storage device use among patients and visitors who accept firearm safety materials or are interested in receiving a firearm storage device shipped to their address. The study design is an iterative pilot test of survey data collection methods and determination of scalability and feasibility for distribution of firearm storage devices. The study population and sample will be (a) individuals who are patients or visitors to PAH who are screened for a firearm, screen positive, and accept a firearm safety brochure and storage device OR (b) individuals interested in receiving a firearm storage device and self-scan the unique QR code on the study poster in the entry hall of PAH with minimal or no security supervisor engagement. A unique QR code linking directly to the initial survey will be embedded into the firearm safety brochure as well as the poster in the entry hall of PAH next to the distribution area. Individual group (a) will be informed by security that survey participation is optional, but that it is helpful for our efforts, and that participation will be compensated with a \$10 Amazon gift card for the initial survey and a \$20 Amazon gift card for completing the follow-up survey. Individual group (b) will not be actively engaged by security, and will self-enroll in the study by viewing the posted signage and completing the QR code linked survey. Individuals who decline the device will also be eligible for the initial survey via the poster QR code, but they will not be eligible for the follow-up survey.

The primary outcome measure is survey response rate: whether an eligible visitor or patient completed the firearm storage survey after accepting firearm safety materials or after scanning the QR code on the poster. This will be measured through Qualtrics survey completion rate and PAH Evolv security system foot traffic. We will use the survey completion rate as the numerator and the number of people scanning positive for a firearm as the denominator for this rate.

The secondary outcome measures are from initial and follow-up survey responses: (1) firearm storage behavior, (2) likelihood of using gun safety device within the next week (extremely unlikely to extremely likely scale). These outcomes are directly tied to questions asked in both surveys.

Lastly, as exploratory outcomes, we will compare survey response rates between several different variations of survey distribution: web survey accessed via QR code posted in the entry hall; web survey accessed via QR code included on the safety brochure; follow-up survey link administered by text message.