An Evaluation of Firearm Injuries among Urban versus Rural Veterans: Data Validity and Early Findings

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Using Data & Information Systems in Partnered Research Cyberseminar Series

Third Tuesday of the month | 12:00 – 1:00 PM ET

*Presentations from the field focusing on VA data use in quality improvement and operations-research partnerships.*

**Topics**

- Use of VA data and information systems in QUERI Projects and Partnered Evaluation Initiatives
- Operational data resources and QI-related data
- Challenges in using and managing multiple data sources
- VA resources to support data use
- Experiences working within operations/research partnerships

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Access code: 199 009 5117

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Poll #1: What is your role in research and/or quality improvement projects?

- Investigator, PI, Co-I
- Statistician, data manager, analyst, or programmer
- Project coordinator
- Other – please describe via the chat function
Poll #2: How many years of experience working with VA data?

- None – I’m brand new to this!
- One year or less
- More than 1, less than 3 years
- At least 3, less than 7 years
- At least 7, less than 10 years
- 10 years or more
An Evaluation of Firearm Injuries among Urban versus Rural Veterans: Data Validity and Early Findings

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RURAL HEALTH LEGISLATIVE MANDATE

In cooperation with the medical, rehabilitation, health services and cooperative studies research programs of the Veterans Health Administration, assist the VA Under Secretary for Health to conduct, coordinate, promote and disseminate research into issues affecting Veterans who reside in rural communities.

Develop, refine and promulgate policies, best practices, lessons learned, and innovative and successful programs to increase access to care for rural Veterans.
Rural Health Resource Centers – There are, in the Office, Veterans Rural Health Resource Centers (VRHRC) that serve as satellite offices for the Office. Their purposes are to:

**Research**
- To improve the understanding of the Office of the challenges faced by veterans living in rural areas
- To identify disparities in the availability of health care to veterans living in rural areas

**Innovate**
- To formulate practices or programs to enhance the delivery of health care to veterans living in rural areas

**Disseminate**
- To develop special practices and products for the benefit of veterans living in rural areas and for implementation of such practices and products in the Department systemwide.

*The 2018 appropriations act recognized resource center impact, “...VA is encouraged to use some of these additional funds to increase the number of Rural Health Resource Centers as a means of increasing access to care for veterans in rural areas.”*
ORH AND ITS SATELLITE VETERANS RURAL HEALTH RESOURCE CENTERS

VRHRC, Portland, Oregon
Clinical Director: Travis I. Lovejoy, PhD
Operations Director: Sarah Ono, PhD

VRHRC, Iowa City, Iowa
Clinical Director: Carolyn Turvey, PhD
Operations Director: Samantha Solimeo, PhD

VRHRC, Salt Lake City, Utah
Clinical Director: Byron Bair, MD
Operations Director: Nancy Dailey, MSN, RN

VRHRC, White River Junction, Vermont
Clinical Director: Bradley “Vince” Watts, MD
Operations Director: Matthew Vincenti, PhD

VRHRC, Gainesville, Florida
Clinical Director: Keith Myers, DPT
Operations Director: Sergio Romero, PhD

Office of Rural Health Headquarters
Executive Director: Thomas F. Klobucar, PhD
Deputy Director: Sheila R. Robinson, DHA
VETERANS RURAL HEALTH RESOURCE CENTER – PORTLAND, OREGON

- Increase rural Veterans' access to care
- Find innovative ways to combat the pain and opioid epidemics
- Prevent Veterans' suicide
- Address disparities in vulnerable populations
Firearm Injury Project
Acknowledgements

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University of Colorado Anschutz

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VA Portland Health Care System

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Department of Veterans Affairs Office of Rural Health, Veterans Rural Health Resource Center - Portland: “Firearm Injuries among Rural Veterans in the US” (OMAT #15528)
BACKGROUND
In the 10-year period from 2010 to 2019, there were an estimated 358,946 firearm-related deaths among US adults. (Centers for Disease Control and Prevention. WISQARS, Fatal Injury Reports and Nonfatal Injury Reports, 1981-2019.)

There were 39,707 firearm deaths in 2019—about 109 people dying per day. (WISQARS, 2021)
Fatal Firearm Injuries by **Intent**

**Firearm Deaths in the U.S., 2019**

- **Suicide**: 36%
- **Homicide**: 61%
- **Unintentional/Undetermined**: 2%
- **Legal Intervention**: 1%

Source: CDC WISQARS, 2021
• In Oregon, **566 people died** from a firearm injury in 2019 *(CDC WISQARS, 2020)*.
Oregon Fatalities by **Intent**

**Firearm Deaths in Oregon, 2019**

- **Suicide**
- **Homicide**
- **Unintentional/Undetermined/Legal Intervention**

Source: CDC WISQARS
Rural Firearm-related Fatalities

- In the 10-year period from 2010 to 2019, of the **358,946 firearm-related deaths**:
  - 292,373 were among US adults living in metro counties
  - 66,573 living in non-metro counties

<table>
<thead>
<tr>
<th>Rates of Fatal Firearm Injuries in the United States, 2010-2019, per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>All firearm deaths</td>
</tr>
<tr>
<td>Firearm suicide</td>
</tr>
<tr>
<td>Firearm homicide</td>
</tr>
<tr>
<td>Unintentional firearm death</td>
</tr>
</tbody>
</table>

(CDC WISQARS, 2020)
Urban vs Rural Fatalities by Intent

Metro (Urban) Firearm Deaths, 2019
- Suicide: 3%
- Homicide: 40%
- Unintentional/Undetermined/Legal Intervention: 57%

Non-Metro (Rural) Firearm Deaths, 2019
- Suicide: 5%
- Homicide: 22%
- Unintentional/Undetermined/Legal Intervention: 73%

(CDC WISQARS, 2020)
Nonfatal Firearm Injuries

- There are more than twice as many nonfatal (than fatal) firearm injuries treated in EDs each year.

WHO, 2021
On average, each day, an estimated **2,688 Americans** are treated for a *nonfatal* injury with a firearm.
Veterans’ Firearm Injuries

- Veterans had **26% increased risk of fatal injury** during the first 5-7 years deployment, and increased risk of **hospitalized injuries** after deployment.  
  (Kang et al., 2001; Knapik et al., 2009; Gray et al., 1996; 2000)

- Veterans have more training with firearms than most US citizens, and a **higher prevalence of firearm ownership.**  
  (General Social Survey, 2021; Cleveland et al., 2017)
Veterans’ Firearm Injuries

• More than half of Veteran firearm owners owned **multiple firearm types**. The average number owned was 6 (95% CI: 4.2-7.9). (Cleveland et al., 2017)

• One third of Veteran firearm owners stored firearm **loaded and unlocked**. (Simonetti et al., 2018)

• Although some variation across studies, firearm ownership and storage practices were associated with **risky alcohol use**, and risk of **suicide**. (Smith et al., 2020; Goldberg et al., 2019; Simonetti et al., 2019)
Veteran Suicide

- Veterans are more likely to die from suicide, and **firearm suicide**, than non-Veterans.

### Method of Suicide Among Veterans and Non-Veterans who Died from Suicide, 2018

<table>
<thead>
<tr>
<th>Method</th>
<th>% of non-Vet Suicide Deaths</th>
<th>% of Vet Suicide Deaths</th>
<th>% of Male Non-Veteran Suicide Deaths</th>
<th>% of Male Veteran Suicide Deaths</th>
<th>% of Female Non-Veteran Suicide Deaths</th>
<th>% of Female Veteran Suicide Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firearm</td>
<td>48.2</td>
<td>68.2</td>
<td>53.5</td>
<td>69.4</td>
<td>31.7</td>
<td>41.9</td>
</tr>
<tr>
<td>Poisoning</td>
<td>13.8</td>
<td>9.5</td>
<td>8.5</td>
<td>8.5</td>
<td>30.3</td>
<td>31.6</td>
</tr>
<tr>
<td>Suffocation</td>
<td>29.5</td>
<td>17.1</td>
<td>29.8</td>
<td>16.9</td>
<td>28.4</td>
<td>20.3</td>
</tr>
<tr>
<td>Other</td>
<td>8.5</td>
<td>5.2</td>
<td>8.2</td>
<td>5.2</td>
<td>9.6</td>
<td>6.2</td>
</tr>
</tbody>
</table>
Prevention of Veterans’ Firearm Injuries

• Healthcare systems are initiating new efforts to address firearm safety with patients. (Simonetti & Brenner, 2020; Prater et al., 2021)

• VA programs are under development to improve communication with Veterans about means safety. (Valenstein et al., 2019; Dobscha et al., 2021; Newell et al., 2021; Fix & Linsky, 2021; Hoyt et al., 2021;

• Suicide prevention is #1 priority!
Prevention of Veterans’ Firearm Injuries

3 Es of Injury Prevention

- **Education**
- Dissemination
- Attitudes
- Behaviors

**Environment/Engineering**
- Physical environment
- Social environment
- Product design

**Enforcement**
- Policy
- Legislation
- Implementation

Haddon’s Matrix/Strategies

**Pre-event phase**
1. Prevent the creation of the hazard
2. Reduce the amount of the hazard
3. Prevent the release of the hazard.

**Event phase**
4. Modify the rate or spatial distribution of the hazard
5. Separate in time or space the hazard from persons to be protected
6. Separate the hazard from persons to be protected by means of a mechanical barrier
7. Modify the hazard to reduce the potential for injury
8. Make what is to be protected more resistant to damage from the hazard

**Post-event phase**
9. Counter the damage that has already been done by the hazard
10. Stabilize, repair, and rehabilitate the damaged objects

Source: Roberts & Brasel, 2017
Prevention of Firearm Injuries among Rural Veterans

• >9 million Veterans use the VA healthcare system; 5.3 million rural/highly-rural.
• Knowledge gaps:
  • Veterans’ nonfatal firearm injuries.
  • Differences in risk between those residing in urban versus rural regions.
    • Different access to healthcare, including trauma care.
    • Different experiences/cultures/relationships with firearms.
  • Differences in attitudes and beliefs about VA addressing firearm safety
Addressing the knowledge gaps…

- We are examining **firearm-related injuries** among Veterans receiving VA healthcare from 2010-present.
  - Firearm-related **deaths** from 2010-most recent data available
- We have compared Veterans in **US** to those in **Oregon** by **urban/rural residence** and **intent of injury**
METHODS
Step 1: Administrative Data Analysis

- Examining firearm injuries among all VA healthcare users, 2010-present
  - Current analyses based on 2010-2019
- Linking VA healthcare users to national mortality data repository
  - Current analyses based on 2010-2017
- Categorized Veterans’ residence as **urban versus rural** based on RUCA coded zip codes
Step 2: Chart Review

- Identified firearm injury-related deaths, hospital stays, or outpatient encounters using **ICD cause-of-death or diagnosis codes** as used by the CDC.
- Conducting chart reviews to: 1) examine **circumstances** surrounding Veterans’ firearm injuries, and 2) **evaluate the validity of using ICD codes** to identify true incident firearm injuries in VA encounters
  - Comparing chart review results to ICD-coded data by firearm injury (yes/no) and firearm injury intent (intentional [assault, self-harm], unintentional, legal intervention, undetermined)
RESULTS
Step 1: Administrative Data Results

- 9.0 million Veterans contributing 53.2 million Veteran-years.
- In Oregon, 144,091 Veterans contributing 898,846 Veteran-years.
Step 1: Administrative Data Results

- Nationally, on average, 23.6 Veterans per 100,000 Veteran-years had at least one firearm-related visit to a VA healthcare facility per year.

<table>
<thead>
<tr>
<th></th>
<th>Urban (n=33,016,353 Veteran-years)</th>
<th>Rural (n=20,185,967 Veteran-years)</th>
<th>Total US (n=53,202,320 Veteran-years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Firearm Injuries</td>
<td>24.1</td>
<td>22.9</td>
<td>23.6</td>
</tr>
<tr>
<td>Intentional</td>
<td>9.3</td>
<td>7.5</td>
<td>8.6</td>
</tr>
<tr>
<td>Self-Inflicted Assault</td>
<td>3.7</td>
<td>4.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Assault</td>
<td>5.5</td>
<td>3.1</td>
<td>4.6</td>
</tr>
<tr>
<td>Unintentional</td>
<td>15.0</td>
<td>15.6</td>
<td>15.2</td>
</tr>
<tr>
<td>Undetermined</td>
<td>3.1</td>
<td>2.6</td>
<td>2.9</td>
</tr>
</tbody>
</table>
Step 1: Administrative Data Results

- Veterans in Oregon had a higher rate of firearm injuries than Veterans nationally.
  - 25.8 versus 23.6 per 100,000 Veteran-years.
- Rural Veterans had a higher rate than urban Veterans in Oregon, but not nationally.
  - Oregon: 29.3 versus 22.1 per 100,000 Veteran-years.
  - National: 22.9 versus 24.1 per 100,000 Veteran-years.

<table>
<thead>
<tr>
<th></th>
<th>Urban US</th>
<th>Urban Oregon</th>
<th>Rural US</th>
<th>Rural Oregon</th>
<th>Total US</th>
<th>Total Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Firearm Injuries</td>
<td>24.1</td>
<td>22.1</td>
<td>22.9</td>
<td>29.3</td>
<td>23.6</td>
<td>25.8</td>
</tr>
</tbody>
</table>
Step 1: Administrative Data Results

- Unintentional firearm injuries were treated more frequently, overall.
- Rates of unintentional injuries were substantially higher among rural than among urban Veterans in Oregon, but not nationally.
  - Oregon: 23.1 versus 15.6 per 100,000 Veteran-years.
  - National: 15.6 versus 15.0 per 100,000 Veteran-years.

<table>
<thead>
<tr>
<th></th>
<th>Total Firearm Injuries</th>
<th>Intentional  Self-Inflicted Assault</th>
<th>Unintentional</th>
<th>Undetermined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US</td>
<td>Oregon</td>
<td>US</td>
<td>Rural</td>
</tr>
<tr>
<td>Total Firearm Injuries</td>
<td>24.1</td>
<td>22.1</td>
<td>22.9</td>
<td>29.3</td>
</tr>
<tr>
<td>Intentional</td>
<td>9.3</td>
<td>7.2</td>
<td>7.5</td>
<td>6.2</td>
</tr>
<tr>
<td>Self-Inflicted Assault</td>
<td>3.7</td>
<td>4.3</td>
<td>4.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Assault</td>
<td>5.5</td>
<td>3.1</td>
<td>3.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Unintentional</td>
<td>15.0</td>
<td>15.6</td>
<td>15.6</td>
<td>23.1</td>
</tr>
<tr>
<td>Undetermined</td>
<td>3.1</td>
<td>2.6</td>
<td>2.6</td>
<td>2.1</td>
</tr>
</tbody>
</table>
Step 1: Administrative Data Results

- 11,807 Veteran VA users died from firearm-related injuries (0.9% of all 1.2 million deaths), 2010-2017
- Nationally, on average, 26 per 100,000 Veteran VA users died each year from firearm-related injuries; rates were higher among rural-residing Veterans.

Rate of Firearm-related Deaths per 100,000 Veteran VA Users, 2010-2017

Slopes:
- Urban: +0.48
- Rural: +0.53
Step 1: Administrative Data Results

- In an analysis of death data, we found that Veterans with a previous firearm injury were more likely to die from suicide a year or more after their incident injury than Veterans without a treated firearm injury.
  - 5.5% of all Veterans treated for firearm injury vs. 1.1% of those who were not
    - OR = 5.1; 95% CI: 3.8-6.9
      - Rural Veterans: OR = 5.6 (95% CI: 3.4-9.2)
      - Urban Veterans: OR = 3.8 (95% CI: 2.2-6.4)
Step 2: Chart Review Results

- Reviewing EHR records of Veterans with ICD code for firearm injury

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>474 (5.4)</td>
<td>329 (6.6)</td>
<td>803</td>
</tr>
<tr>
<td>2011</td>
<td>571 (6.6)</td>
<td>407 (8.1)</td>
<td>978</td>
</tr>
<tr>
<td>2012</td>
<td>646 (7.4)</td>
<td>385 (7.7)</td>
<td>1,031</td>
</tr>
<tr>
<td>2013</td>
<td>792 (9.1)</td>
<td>497 (10.0)</td>
<td>1,289</td>
</tr>
<tr>
<td>2014</td>
<td>1,131 (13.0)</td>
<td>622 (12.4)</td>
<td>1,753</td>
</tr>
<tr>
<td>2015</td>
<td>1,267 (14.5)</td>
<td>680 (13.5)</td>
<td>1,947</td>
</tr>
<tr>
<td>2016</td>
<td>924 (10.6)</td>
<td>473 (9.4)</td>
<td>1,397</td>
</tr>
<tr>
<td>2017</td>
<td>969 (11.1)</td>
<td>515 (10.3)</td>
<td>1,484</td>
</tr>
<tr>
<td>2018</td>
<td>954 (10.9)</td>
<td>529 (10.5)</td>
<td>1,483</td>
</tr>
<tr>
<td>2019</td>
<td>989 (11.4)</td>
<td>589 (11.7)</td>
<td>1,578</td>
</tr>
<tr>
<td>Total</td>
<td>8,717</td>
<td>5,026</td>
<td>13,743</td>
</tr>
</tbody>
</table>
Step 2: Chart Review Results

- By ICD-coded firearm injury *intent*:

<table>
<thead>
<tr>
<th>Year</th>
<th>Intentional (n=3,323 visit-yrs)</th>
<th>Unintentional (n=5,516 visit-yrs)</th>
<th>Undetermined (n=1,124 visit-yrs)</th>
<th>Intentional (n=1,654 visit-yrs)</th>
<th>Unintentional (n=3,433 visit-yrs)</th>
<th>Undetermined (n=581 visit-yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>281 (31.90)</td>
<td>163 (18.50)</td>
<td>78 (8.85)</td>
<td>167 (18.96)</td>
<td>140 (15.89)</td>
<td>52 (5.90)</td>
</tr>
<tr>
<td>2011</td>
<td>338 (30.02)</td>
<td>227 (20.16)</td>
<td>97 (8.61)</td>
<td>191 (16.96)</td>
<td>215 (19.09)</td>
<td>58 (5.15)</td>
</tr>
<tr>
<td>2012</td>
<td>363 (30.96)</td>
<td>284 (24.21)</td>
<td>87 (7.42)</td>
<td>181 (15.43)</td>
<td>204 (17.39)</td>
<td>54 (4.60)</td>
</tr>
<tr>
<td>2013</td>
<td>332 (22.51)</td>
<td>474 (32.14)</td>
<td>103 (6.98)</td>
<td>185 (12.54)</td>
<td>306 (20.75)</td>
<td>75 (5.08)</td>
</tr>
<tr>
<td>2014</td>
<td>301 (15.28)</td>
<td>867 (44.01)</td>
<td>108 (5.48)</td>
<td>146 (7.41)</td>
<td>492 (24.97)</td>
<td>56 (2.84)</td>
</tr>
<tr>
<td>2015</td>
<td>323 (14.77)</td>
<td>983 (44.98)</td>
<td>111 (5.08)</td>
<td>149 (6.81)</td>
<td>547 (25.01)</td>
<td>74 (3.38)</td>
</tr>
<tr>
<td>2016</td>
<td>353 (22.22)</td>
<td>598 (37.63)</td>
<td>105 (6.61)</td>
<td>138 (8.68)</td>
<td>345 (21.71)</td>
<td>50 (3.15)</td>
</tr>
<tr>
<td>2017</td>
<td>367 (21.61)</td>
<td>640 (37.69)</td>
<td>112 (6.60)</td>
<td>157 (9.25)</td>
<td>380 (22.38)</td>
<td>42 (2.47)</td>
</tr>
<tr>
<td>2018</td>
<td>322 (18.89)</td>
<td>652 (38.24)</td>
<td>145 (8.50)</td>
<td>165 (9.68)</td>
<td>377 (22.11)</td>
<td>44 (2.58)</td>
</tr>
<tr>
<td>2019</td>
<td>343 (18.77)</td>
<td>628 (34.37)</td>
<td>178 (9.74)</td>
<td>175 (9.58)</td>
<td>427 (23.37)</td>
<td>76 (4.16)</td>
</tr>
</tbody>
</table>
Step 2: Chart Review Results

- In Oregon, among 307 completed EHR reviews, only 180 (59%) met eligibility criteria:

<table>
<thead>
<tr>
<th>Reason Ineligible</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury occurred before 2010</td>
<td>109</td>
<td>35.5</td>
</tr>
<tr>
<td>Injury occurred during military service</td>
<td>59</td>
<td>19.2</td>
</tr>
<tr>
<td>No firearm injury occurred</td>
<td>45</td>
<td>14.7</td>
</tr>
<tr>
<td>Did not occur or treated in Oregon</td>
<td>16</td>
<td>5.2</td>
</tr>
<tr>
<td>Not powder gun injury</td>
<td>10</td>
<td>6.0</td>
</tr>
</tbody>
</table>
Step 2: Chart Review Results

- Most (76.5%) first treated at non-VA ED/trauma center
  - 19.8% first treated in VA ED or other setting
- 3 Veterans died en route to hospital (2 self-directed; 1 unintentional injury)
- 8 Veterans died while hospitalized (7 self-directed; 1 legal intervention)
- 90 (53.9%) Veterans admitted to the hospital
  - Lengths of stay: mean = 6.5 (median = 2) days
### Step 2: Chart Review Results

- Overall, **x% concordance** between ICD codes and chart reviews by injury intent:

<table>
<thead>
<tr>
<th>ICD codes</th>
<th>Self-Inflicted</th>
<th>Assault</th>
<th>Unintentional</th>
<th>Legal Intervention</th>
<th>Undetermined/Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Inflicted</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Assault</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Unintentional</td>
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<td>9</td>
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<td>Legal Intervention</td>
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<tr>
<td>Undetermined</td>
<td>2</td>
<td>3</td>
<td>5</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>33 (20.3)</strong></td>
<td><strong>13 (8.0)</strong></td>
<td><strong>103 (63.2)</strong></td>
<td>7 (4.3)</td>
<td>9 (5.4)</td>
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Step 2: Chart Review Results

- According to the EHR, 35.6% of coded unintentional injuries occurred when Veterans were cleaning their firearms.

- Included *unintentionally pulled the trigger, thought firearm was unloaded, and firearm malfunctioned*
Step 2: Chart Review Results

Veteran states he forgot to take his handgun out of his pocket when he got in the car. He then pulled the gun out and it accidentally discharged down into his lower abdomen/pelvic area while he was in a sitting position.

Cleaning wife’s .22 caliber pistol. Discharged and injured Veteran in the arm.

Unpacking, sleeping bag fell and firearm in the bag dropped and discharged, injuring Veteran in the thigh. Entrance and exit wounds – bullet lodged in Veteran’s ceiling.
Step 2: Chart Review Results

- 29 (17.6%) Veterans were referred to mental health care (20 self-directed; 1 unintentional)
- 19 (11.5%) EHRs documented firearm safety intervention at the time of or after injury treatment (11 self-directed; 8 unintentional)
Step 2: Chart Review Results

Patient’s doctor had a conversation about firearm support.

Discharge note states sister had taken possession of shotgun. Brother-in-law removed other rifles and pistol so house does not have firearms upon patient’s discharge. About 6 weeks after discharge during outpatient appt VA social worker and patient created a crisis safety plan.

ED provider counseled patient about gun safety in ED (Info found in JLV scanned note.)

VA provider and spouse discussed presence of firearms in home as part of Caregiver Program In-Home Assessment (about 2 weeks after injury, prior to patient being discharged from inpatient psychiatric program). Spouse/caregiver was recommended to search home for other weapons/firearms or knives.

VA Case Management note about 1 week after injury states that patient reported the firearm was locked, unloaded, and separated from ammunition.

Psych Social Work completed safety evaluation prior to discharge (likely bedside) and confirmed with patient’s mom that all firearms were removed from home by police.

Intervention took place in hospital during follow-up visit to hospital shortly after incident. Gun safety discussion occurred with psychiatrist included talking about how to safely store guns in home.
CONCLUSIONS
Take-homes

• Nationally, **rural Veterans** have higher rates of firearm-related deaths than urban Veterans.

• In Oregon, rural Veterans seek VA healthcare for firearm injuries, and particularly for **unintentional firearm injuries**, at a higher rate than urban-residing Veterans.

• Firearm injury treatment strongly associated with subsequent **death by suicide**.

• Comprehensive (e.g., 3Es or Haddon’s Strategies) firearm risk reduction programs are needed for implementation across both rural and urban VA settings.
Next-steps

• National chart reviews
• Improved firearm injury detection
• Site-specific risk reduction programs
  • Multiple partners
  • Community engagement
  • Experimental design
• DIPEX modules (www.healthexperiences.org)
Lethal Means Safety Counseling – Our research

• We will interview 100 Veterans and 80 health care providers at 10 sites across the country that have high rates of firearm injuries
• 8 will be in rural regions; 2 in urban areas
• Health care providers will be asked about their current firearm safety counseling practices, the difficulties they face when providing counseling, and ways to make it easier and more effective
• Veterans will be asked to share their perspectives about firearm safety counseling and ways to increase its acceptability and effectiveness
Contact information

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Additional Resources
VIReC Options for Specific Questions

**HSRData Listserv**
- Community knowledge sharing
- ~1,400 VA data users
- Researchers, operations, data stewards, managers
  - Subscribe by visiting https://vaww.virec.research.va.gov/Support/HSRData-L.htm (VA Intranet)

**HelpDesk**
- Individualized support
  - virec@va.gov
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<th>Quick links for VA data resources</th>
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<tr>
<td>VIReC:  <a href="http://vaww.virec.research.va.gov/Index.htm">http://vaww.virec.research.va.gov/Index.htm</a> (VA Intranet)</td>
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<td>VIReC Cyberseminars (overview of series and link to archive):  <a href="http://vaww.virec.research.va.gov/Resources/Cyberseminars.asp">http://vaww.virec.research.va.gov/Resources/Cyberseminars.asp</a></td>
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<td>VHA Data Portal (data source and access information):  <a href="http://vaww.vhadataportal.med.va.gov/Home.aspx">http://vaww.vhadataportal.med.va.gov/Home.aspx</a> (VA Intranet)</td>
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<td>Implementation Research Group (IRG) Archived Cyberseminars:  <a href="https://www.gotostage.com/channel/implementresearchgrpchristinekowalski">https://www.gotostage.com/channel/implementresearchgrpchristinekowalski</a></td>
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<td>Center for Evaluation and Implementation Resources (CEIR):  <a href="https://www.queriresearch.va.gov/ceir/default.cfm">https://www.queriresearch.va.gov/ceir/default.cfm</a></td>
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