Surveillance 101 - National Violent Death Reporting System (NVDRS) Summary and access to data

2018 GL Smith Memorial Act suicide prevention Conference
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Disclosure Statement

- The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:
  - No financial relationship to disclose

- The content of this presentation does not endorse any proprietary healthcare products or services.
The Public Health Approach to Prevention

- Assess the Problem
  - What’s the problem?

- Identify the Causes
  - Why did it happen?

- Develop & Evaluate Programs & Policies
  - What works?

- Implementation & Dissemination
  - How do you do it?

Why Is Surveillance Important?

- Collecting data is merely one step
- Critical goal is to control and/or prevent diseases or adverse health conditions
  - Any data collected must be organized and carefully examined
  - Any results need to be communicated to public health and medical communities
Why Is Surveillance Important?

• Vital to communicate results
  • During potential outbreak so public health and medical communities can help with disease prevention and control efforts
  • During non-outbreak times to provide information about baseline levels of disease
    • Baseline provides information to public health officials monitoring health at community level, serves as reference in future outbreaks
### Uses of Public Health Surveillance

- Estimate the magnitude of illness
- Determine the geographic distribution of illness
- Detect epidemics
- Generate hypotheses to stimulate public health research
- Capture the natural history of a disease
- Evaluate control measures
- Detect changes in health/medical practices
- Facilitate public health resource planning

Source: Thacker and Stroup 1998. Public Health Surveillance and Health Services Research

### History of NVDRS

- **1999:** Institute of Medicine report cited the need for a national fatal intentional injury surveillance system
- **2000:** National Violent Injury Statistics System (NVISS) piloted at 12 sites, mostly universities
- **2000:** Meeting with Harvard and the Joyce Foundation to suggest that CDC direct a publicly funded system
- **2000:** CDC begins planning
- **2002:** First appropriation from Congress for NVDRS
- **2003:** NVDRS data collection begins with six states
- **2004 - 2014:** More states added
- **2016:** Funding for additional expansion
National Violent Death Reporting System

- State-based surveillance system
- Funding began in 2002
- Now funded in 40 states, DC, and Puerto Rico
- Eventual expansion to 50 states

The Need for NVDRS

- Ongoing surveillance needed to monitor violent deaths and to support planning and evaluation for prevention
- Information on violent deaths contained in multiple sources
  - Death certificates
  - Coroner/medical examiner reports (including toxicology reports)
  - Law enforcement reports
- Information collected at state, county, and city level
The Need for NVDRS

- Information not integrated, standardized, or focused on prevention
  - Suicide – Limited to counts and demographic descriptions
  - Homicide – Limited to law enforcement information or death certificates

- Results in incomplete and fragmented descriptions of violent deaths; we need the full picture

- NVDRS combines multiple sources to get the full picture (e.g., information about victims, suspects, circumstances)

What is NVDRS?

- Active, ongoing state-based surveillance system
- Data collected by states through partnerships
- Information abstracted using a web-based application
- Provides comprehensive information on all violent deaths within participating states to fully characterize incidents
### Operational Definition for NVDRS Case Ascertainment

- Suicide
- Homicide
- Deaths of undetermined intent
- Unintentional firearm deaths
- Legal intervention (excluding executions)
- Deaths due to terrorism

### Use of Definitions

- NVDRS case definition used to:
  - Collect manner of death information in a standardized way
  - Select cases for reporting at the national level
- States can use broader definitions to identify and collect non-NVDRS cases (e.g., unintentional drug overdoses)
  - Check “not an NVDRS case” in the Case Status field
**Scope of NVDRS**

- **Intentional Injury Deaths:**
  - Suicide (including terrorism)
  - Homicide (including terrorism)
  - Legal intervention (excluding legal executions)

- **Unintentional Injury Deaths**

**NVDRS Data Sources**

- **Primary required sources:**
  - Death certificates
  - Coroner or medical examiner (CME) reports (including toxicology) (have narratives)
  - Law enforcement (LE) reports (have narratives)

- **Secondary optional sources:**
  - Child Fatality Review (CFR) team data
  - Intimate Partner Violence (IPV) Review team data
  - Crime lab data
  - Supplementary Homicide Reports
  - Hospital data
NVDRS Data Uses

- Inform communities
  - Documents circumstances of all violent deaths
  - Who, what, when, and where?
  - Insight as to why

- Guide and target violence prevention programs, policies, and practices
  - Support planning and implementation of activities at the local, state, and federal levels

- Monitor and evaluate prevention programs and strategies
NVDRS - Linking Data to Save Lives

- Pools data on violent deaths
  - Homicide
  - Suicide

- Uses multiple sources
  - Medical examiner/coroner
  - Law enforcement
  - Toxicology
  - Vital statistics

- Informs prevention efforts

Suicide Variables*

- Current depressed mood
- Current mental health problem
- Other mental health diagnosis
- Current treatment for mental illness
- Ever treated for mental illness
- Alcohol problem
- Other substance problem
- Other addiction
- Job problem
- School problem
- Financial problem
- Anniversary of a traumatic event
- Person left a suicide note
- Disclosed intent to commit suicide
- History of suicide attempts
- Crisis in past 2 weeks
- Physical health problem
- Intimate partner problem
- Other relationship problem
- Suicide of friend or family in past 5 years
- Other death of friend or family in past 5 years
- Recent criminal legal problem
- Eviction/loss of home

*Source: Nat’l Violent Death Reporting System
Health/Behavior information for suicide decedents by sex* - 18 states, 2014

<table>
<thead>
<tr>
<th>Health or behavior category</th>
<th>Percentage</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intimate partner problem</td>
<td>15.0%</td>
<td>20.0%</td>
<td>10.0%</td>
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<tr>
<td>Physical health problem</td>
<td>10.0%</td>
<td>15.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Financial problem</td>
<td>30.0%</td>
<td>35.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Left suicide note</td>
<td>40.0%</td>
<td>50.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>History of suicide attempts</td>
<td>25.0%</td>
<td>30.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Crisis in past 2 wks</td>
<td>30.0%</td>
<td>35.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Recent criminal legal problem</td>
<td>15.0%</td>
<td>20.0%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

Source: Nat'l Violent Death Reporting System
* Categories are not mutually exclusive

Mental Health information for suicide decedents by sex* - 18 states, 2014

<table>
<thead>
<tr>
<th>Mental health category</th>
<th>Percentage</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current depressed mood</td>
<td>40.0%</td>
<td>50.0%</td>
<td>30.0%</td>
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<tr>
<td>Current mental health problem</td>
<td>30.0%</td>
<td>40.0%</td>
<td>20.0%</td>
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<tr>
<td>Current mental health treatment</td>
<td>25.0%</td>
<td>30.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Alcohol problem</td>
<td>15.0%</td>
<td>20.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Other substance abuse problem</td>
<td>10.0%</td>
<td>15.0%</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

Source: Nat'l Violent Death Reporting System
* Categories are not mutually exclusive
Precipitating circumstances of suicide among persons aged 10-17 years – 16 states, United States, 2005-2015

Source: CDC’s National Violent Death Reporting System
17 states = AK, CA, CO, GA, KY, MD, MA, NJ, NC, MA, OR, RI, SC, UT, VA, and WI
*) Includes those suicides with 1 or more precipitating circumstances
Percentages may add to more that 100 since a suicide may have had >1 precipitating circumstance

Trends in precipitating circumstances among persons dying by suicide – U.S. 16 states

<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>Trend 1</td>
<td>Trend 2</td>
</tr>
<tr>
<td></td>
<td>Years</td>
<td>APC*</td>
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<tr>
<td>Mental health problem</td>
<td>0.96b</td>
<td></td>
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<tr>
<td>Depressed mood</td>
<td>-1.38b</td>
<td>2005-2007</td>
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<tr>
<td>Physical health problem</td>
<td>0.41</td>
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<tr>
<td>Hx of Suicide Attempts</td>
<td>-0.29</td>
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<tr>
<td>Alcohol problem</td>
<td>0.06</td>
<td></td>
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<tr>
<td>Substance abuse problem</td>
<td>1.04</td>
<td>2005-2010</td>
</tr>
<tr>
<td>Job problem</td>
<td>-0.24</td>
<td>2005-2010</td>
</tr>
<tr>
<td>Other relationship problem</td>
<td>0.94</td>
<td>2005-2009</td>
</tr>
</tbody>
</table>

* APC, annual percent of change.
 b The APC is statistically significantly different from 0 (P <0.05).
Military and Veteran Suicide Surveillance

- Findings and Impacts
  - Intimate partner problems are just as important as mental health problems
    - Impact: Submitted DoD proposal to evaluate "Strength at Home" program re suicide-related outcomes
  - Military/Veteran suicides mostly involve firearms and are highly concentrated in small % of counties
    - Impact: Informed 2017 DoD Safe Firearm Storage Policy

NVDRS: Future

- Identify ways to expand to all 50 states, the District of Columbia, and U.S. territories, funding permitting
- Enhance technical assistance to new and existing states
- Strengthen relationships with partners
- Improve system infrastructure
- Disseminate useful, actionable data
Accessing NVDRS Data

1. **Restricted Access Dataset**

2. **CDC NVDRS WISQARS**
   - Available online

3. **NVDRS Surveillance Summary**
   - 2005 - 2013 data published in MMWR surveillance summary series: [www.cdc.gov/mmwr](http://www.cdc.gov/mmwr)

4. **Collaboration with CDC scientists**

5. **Collaboration with state scientists**
NVDRS Restricted Access Dataset (RAD)
http://www.cdc.gov/ViolencePrevention/NVDRS/RAD.htm

- Case level data
- Restricted to PhD/MD level researchers and their research partners
- Application
  - Abstract
  - Primary investigators and partner affiliations
  - Study questions/hypotheses
  - PH benefit
  - Methods
  - Anticipated products/reports/manuscripts
  - Data security assurance
  - Variables

NVDRS Restricted Access Dataset (RAD)
http://www.cdc.gov/ViolencePrevention/NVDRS/RAD.html

- Submit to CDC
- Reviewed by scientific approval committee
- Collaboration between CDC and applicant on questions
- CDC
  - develops file specifications
  - creates dataset
  - sends data set via FTP
- Email confirmation of receipt is requested
- Consultation with researcher if assistance is requested
Web-Based Statistics

- www.cdc.gov/ncipc/wisqars/default.htm
- Injury mortality and leading cause of death statistics available by:
  - Intent, Method
  - Year
  - State
  - Demographics
    - Age, Sex, Race
  - Injury morbidity
    - Hospital emergency dept events

Data Limitations

- Toxicology testing is not done on all decedents
- Circumstances are not available for all cases
- Temporal pattern of circumstances not always clear
- Mental and physical health data not necessarily from medical records
- May be other circumstances not captured
- Not nationally representative
### Overlap of spheres of influence for suicidal behavior

- Individual
  - Age
  - Sex
  - Mental illness
  - Substance misuse
  - Stressful life events

- Peer/Family
  - Family history of interpersonal or self-directed violence
  - Exposure to violence
  - Spirituality
  - Incarceration
  - Social isolation vs support

- Society
  - Inappropriate access to lethal means
  - Geography
  - Economy
  - Cultural values

- Community
  - Spirituality
  - Incarceration
  - Social isolation vs support

### Conclusion

- Assessment is a foundation for public health action
- Existing systems for assessing injury are useful but have limitations
- Need exists for improved and expanded surveillance systems regarding injury

For more information please contact
Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov/injury
Acknowledgments

• NVDRS Grantees

• Vital Statistics, Coroner/Medical Examiner and Law Enforcement staff in NVDRS States

• Surveillance Branch, Office of the Chief

• Mortality Surveillance Team

Thank You

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Questions and Comments