Faster Data: The CDC-Funded Enhanced State Opioid Overdose Surveillance Program

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Disclosures

- Puja Seth, PhD; Alana Vivolo-Kantor, PhD, MPH; and Julie O'Donnell, PhD, MPH, have disclosed no relevant, real, or apparent personal or professional financial relationships with proprietary entities that produce healthcare goods and services.
Disclosures

- All planners/managers hereby state that they or their spouse/life partner do not have any financial relationships or relationships to products or devices with any commercial interest related to the content of this activity of any amount during the past 12 months.

- The following planners/managers have the following to disclose:
  - Kelly J. Clark, MD, MBA, FASAM, DFAPA – Consulting fees: Braeburn, Indivior
Learning Objectives

- Describe the process to develop CDC and state case definitions.
- Identify patterns of recent nonfatal heroin and opioid drug overdoses across 12 states.
- Identify drugs involved in deaths and circumstances precipitating the deaths, based on data.
Faster Data: The CDC-Funded Enhanced State Opioid Overdose Surveillance Program (ESOOS)

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Alana Vivolo-Kantor, Ph.D.
Julie O’Donnell, Ph.D.

Division of Unintentional Injury Prevention
Centers for Disease Control and Prevention
Disclosure Statement

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- Disclaimer: The findings and conclusions are those of the presenter and do not necessarily represent the official position of the Centers for Disease Control.
Goals

- Describe CDC’s new opioid overdose surveillance program.
- Discuss how rapidly available data can be used to inform overdose response and prevention efforts.
- Overview of emergency department and emergency medical services data for use in tracking opioid overdose trends.
- Describe the development of case definitions for opioid and heroin overdose in emergency department and emergency medical services data.
- Overview of data available for fatal opioid overdoses and associated risk factors and its use in informing prevention and response recommendations.
Opioid Overdoses Treated in Emergency Departments

Opioid overdoses went up 30% from July 2016 through September 2017 in 52 areas in 45 states.

The Midwestern region saw opioid overdoses increase 70% from July 2016 through September 2017.

Opioid overdoses in large cities increased by 54% in 16 states.

Opioid overdoses continued to increase in cities and towns of all types.*

SOURCE: CDC’s Enhanced State Opioid Overdose Surveillance (ESOOS) Program, 16 states reporting percent changes from July 2016 through September 2017.

* From left to right, the categories are:
1) non-core (non-metro), 2) micropolitan (non-metro), 3) small metro, 4) medium metro, 5) large fringe metro, 6) large central metro.

2000 Rapid Increase in Drug Overdose Death Rates by County

SOURCE: NCHS Data Visualization Gallery
2005 Rapid Increase in Drug Overdose Death Rates by County

SOURCE: NCHS Data Visualization Gallery
#Rx Summit www.NationalRxDrugAbuseSummit.org
2010 Rapid Increase in Drug Overdose Death Rates by County

SOURCE: NCHS Data Visualization Gallery
#Rx Summit www.NationalRxDrugAbuseSummit.org
2016 Rapid Increase in Drug Overdose Death Rates by County

Legend for estimated age-adjusted death rate (per 100,000 population):
- <2
- 2-3.9
- 4-5.9
- 6-7.9
- 8-9.9
- 10-11.9
- 12-13.9
- 14-15.9
- 16-17.9
- 18-19.9
- 20-21.9
- 22-23.9
- 24-25.9
- 26-27.9
- 28-29.9
- 30+
RISE IN OPIOID DEATHS

Overlapping, Entangled but Distinct Epidemics

3 Waves
Almost 351,630 people have died from an opioid overdose during 1999-2016

Natural and semi-synthetic opioids like oxycodone or hydrocodone

Synthetic opioids like fentanyl

Heroin

Methadone

Deaths per 100,000 population

SOURCE: National Vital Statistics System Mortality File
CDC’s Pillars on Opioids

- Conducting surveillance and research
- Building state, local, and tribal prevention efforts
- Supporting healthcare providers and health systems
- Partnering with public safety officials
- Encouraging consumers to make safe choices about opioids; raising awareness about prescription opioid misuse and overdose.
Enhanced State Opioid Overdose Surveillance (ESOOS)

- 12 states funded in September 2016; 20 additional states and the District of Columbia funded in September 2017 (through September 2019)*

- Strategy One: Increase timeliness of non-fatal opioid overdose reporting
  - Use syndromic surveillance to establish an early warning system to detect sharp increases or decreases in non-fatal opioid overdoses.
  - Three indicators: suspected all-drug, opioid, and heroin

Enhanced State Opioid Overdose Surveillance (ESOOS)

- **Strategy Two: Increase timeliness of fatal opioid overdose reporting**
  - Capture detailed information on toxicology, death scene investigations, and other risk factors that may be associated with a fatal overdose.

- **Strategy Three: widespread dissemination**
  - Rapidly disseminate surveillance findings to key stakeholders working to prevent or respond to opioid overdoses

- **ESOOS program expansion in September 2017**
  - At least 60% for comprehensive toxicology testing for opioid-involved deaths
Funded ESOOS states
Enhanced State Opioid Overdose Surveillance (ESOOS)

Nonfatal Opioid Overdoses Reported Quarterly
- Emergency Department Visits/EMS Transports

Fatal Opioid Overdoses Reported within 8 months of death
- Death Certificates
- ME/C reports
- Toxicology reports
Next Two Presentations…

- The Utilization of Emergency Department Syndromic Surveillance and Emergency Medical Services Data to Monitor Nonfatal Opioid Overdoses – Dr. Alana Vivolo-Kantor

The utilization of emergency department syndromic surveillance and emergency medical services data to monitor nonfatal opioid overdoses

Presenter: Alana Vivolo-Kantor, PhD
Behavioral Scientist
Centers for Disease Control and Prevention

Co-authors: Christine Mattson, Puja Seth, Julie O’Donnell, R. Matthew Gladden
Disclosure Statement

- Alana Vivolo-Kantor, PhD, has disclosed no relevant, real or apparent personal or professional financial relationships with proprietary entities that produce health care goods and services.

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Why Emergency Department and Emergency Medical Service Data for Surveillance?

- **Need**
  - Identify areas experiencing rapid increases in opioid overdoses to inform responses
  - More quickly identify promising practices to reduce opioid overdoses

- **Proven utility to public health and scalable**
  - Local jurisdictions already using it to track and respond to drug overdoses
  - Findings from Epi-Aid investigations and collaborative work with states
  - Leverage existing state and national resources (BioSense/ESSENCE)

- **Action at local and national level**
  - Track quarterly trends across the nation to inform national policy
  - Improve more rapid local and state public health response
Our Philosophy

- **Focus on detecting change**
  - Pushing system by looking at trend data over quarters
  - Some jurisdictions may be able to get and report preliminary burden estimates

- **Jurisdiction-driven definitions will outperform national definitions**
  - Local flexibility enhances quality and utility by accounting for large variance in text entries and coding

- **National guidance**
  - National definition will provide a good starting place
  - Guidance to encourage common conceptual definition (e.g., no withdrawal/detox) and learn from previous work
Our approach

Non-fatal overdoses

Emergency Department

Near real-time ED collection (i.e. syndromic, ESSENCE)

Emergency Medical Services

Discharge/Billing Data

Case-level or aggregate data shared through ESSENCE (BioSense) or directly with CDC

Case-level or aggregate data shared directly with CDC

Includes breakdown by sex, age group, and county of residence. Race/ethnicity is optional
Emergency Department Data

- **Two sources:**
  - Near real-time syndromic data (visit information within 24-48 hours)
  - Lagged hospital billing or claims data (usually within 3-4 weeks)

- **Different variables used:**
  - Discharge diagnosis codes (e.g., ICD-10-CM) – available in billing data and sometimes in syndromic
  - Free text fields (e.g., chief complaint provided by Doctor) – available only in syndromic
Case definitions for suspected overdose

- **If syndromic...**
  - Uses both discharge codes (i.e., ICD-9-CM, ICD-10-CM, and SNOMED) and free text fields such as chief complaint or triage notes
  - Free text searches use common terms, slang, and misspellings (e.g., herion instead of heroin)

- **If hospital billing or claims...**
  - Uses only discharge codes (i.e., ICD-9-CM, ICD-10-CM, and SNOMED)

- Discharge codes use are for acute unintentional or undetermined drug poisoning (e.g., T40.1X1A in ICD-10-CM) and may also include some substance use/abuse codes (i.e., F11 in ICD-10-CM)
Emergency medical services data

- Capture potential EMS transports to EDs
  - Excludes instances where individual is pronounced deceased on the scene, inter-facility transports, and when EMTs provide no “treatment” (e.g., patient refused or required no treatment or transport)

- Different variables used:
  - Chief Complaint; Secondary complaint
  - Narrative
  - Provider Impression
  - ICD-1O-CM codes
  - Medication administered (i.e., Naloxone)
  - Response to medication administered (i.e., awake following Naloxone administration)
Challenges in EMS data

- Transition to newer versions of NEMSIS
  - Some states working in up to three versions (v2.2.1, v3.3.4, & v3.4.0)

- Different case definitions in different versions

- Missing data feeds

- Not all EMS agencies share data

- Varying time frame in when data is received
  - <24 hours to 6 months
Data submission process

04/16
Data submission due to CDC

04/18
Within 48 hours of data submission, CDC will send an email with receipt of successful data submission

04/23
By 04/23
CDC runs quality control checks and will send feedback to states indicating data is fully accepted or needs revision and re-submission

04/30
By 04/30
If needed, states re-submit data (re-submission window is 04/24-04/30) fixing errors identified in quality control

05/14
By 05/14
CDC to send states site reports for validation

05/07
By 05/07
CDC merges all final data in three datasets (sex, age group, and county)

05/21
By 05/21
States to send CDC approval of data

05/31
By 05/31
Data ready for dissemination

April

May
# Sample quality control report

<table>
<thead>
<tr>
<th>Obs</th>
<th>STATE</th>
<th>YEAR</th>
<th>QUARTER</th>
<th>ERROR_TEXT</th>
<th>TOTAL ED VISITS (GENDER)</th>
<th>TOTAL ED VISITS (AGE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>XX</td>
<td>2017</td>
<td>1</td>
<td>ED Visits mismatch</td>
<td>98287</td>
<td>98309</td>
</tr>
<tr>
<td>2</td>
<td>XX</td>
<td>2017</td>
<td>2</td>
<td>ED Visits mismatch</td>
<td>98195</td>
<td>98230</td>
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<tr>
<td>3</td>
<td>XX</td>
<td>2017</td>
<td>3</td>
<td>ED Visits mismatch</td>
<td>99167</td>
<td>99205</td>
</tr>
</tbody>
</table>
Sample site report

Emergency Department Visits Site Report
The results from the January 15, 2018 Emergency Department data submission: Enhanced Opioid Overdose Surveillance

Purpose
The purpose of this document is to provide estimates of suspected opioid and heroin overdose Emergency Department (ED) visits as derived from the data submitted on January 15, 2018. Once validated by states, the percent change estimates across quarters will be shared with CDC leadership and select estimates at the state level will be shared externally with the public health community through the web or reports, such as MMWR. CDC will suppress data with fewer than 5 cases and rates calculated with fewer than 50 cases because of possible instability of estimates. States will be provided advance notification before CDC releases any public reports.

Frequency of State Reports
These reports will be generated by CDC within 45 days of each data submission.

<table>
<thead>
<tr>
<th>Dates Data Shared with CDC</th>
<th>Dates Suspected Overdose Occurred</th>
<th>Dates State Reports Shared the State</th>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 15, 2017</td>
<td>January 15 to June 15, 2017</td>
<td>November 30, 2017</td>
<td>☑️</td>
</tr>
<tr>
<td>January 15, 2018</td>
<td>April 15, 2017 to September 15, 2017</td>
<td>February 28, 2018</td>
<td>☑️</td>
</tr>
<tr>
<td>April 15, 2018</td>
<td>July 15, 2017 to December 15, 2017</td>
<td>May 31, 2018</td>
<td>☑️</td>
</tr>
<tr>
<td>July 15, 2018</td>
<td>October 15, 2017 to March 15, 2018</td>
<td>August 31, 2018</td>
<td>☑️</td>
</tr>
<tr>
<td>October 15, 2018</td>
<td>January 15, 2018 to June 15, 2018</td>
<td>November 30, 2018</td>
<td>☑️</td>
</tr>
<tr>
<td>January 15, 2019</td>
<td>April 15, 2019 to September 15, 2019</td>
<td>February 28, 2019</td>
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<td>May 31, 2019</td>
<td>☑️</td>
</tr>
<tr>
<td>July 15, 2019</td>
<td>October 15, 2019 to March 15, 2019</td>
<td>August 31, 2019</td>
<td>☑️</td>
</tr>
<tr>
<td>August 31, 2019</td>
<td>April 15, 2020 to May 2020*</td>
<td>September 30, 2020</td>
<td>☑️</td>
</tr>
</tbody>
</table>

*Report only includes 2 months due to funding ending in September 2019

Review and Approval Process
We ask that you review these estimates and provide feedback to CDC for validation. The estimates provided below were based on the most recent and final case definition developed in collaboration with your CDX data support team. For states who provided aggregate or case-level files, counts were pulled from the Excel file provided for each indicator and estimates were created (see below for more information). Please review the counts for the indicators as well as the counts for total ED visits for sex and age that you provided CDC in the original files and compare with the counts and total ED visits provided in this document below (see “Counts and Denominators” section). For those states who provided CDC access to ESSENCE, case definition queries prior to data submission were used. Case-level files were generated and counts were populated in the aggregate ESSENCE queries associated codes using the instructions and guidance provided by CDC and analyzed outside ESSENCE to corroborate estimates. We understand that running queries outside ESSENCE will generate different total ED visits. If the total ED visits are different than those provided below or if the data below, please consult with your assigned Science and Project Officer and email the Helpdesk (questions@surveillance.cdc.gov) within 7 business days estimates that cannot be validated by states.

Table 10: Change from Quarter 1 2016 to Quarter 1 2017 and Quarter 2 2016 to Quarter 3 2017, Annual change, All ESUOS States* for Suspected Opioid Overdose*

<table>
<thead>
<tr>
<th>Quarter</th>
<th>ED Visits/Total Visit Visits*10,000</th>
<th>%Δ from past year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter 1 2016</td>
<td>24.47</td>
<td>29.56</td>
</tr>
<tr>
<td>Quarter 2 2016</td>
<td>26.36</td>
<td>33.82</td>
</tr>
<tr>
<td>Quarter 3 2016</td>
<td>24.29</td>
<td>30.88</td>
</tr>
<tr>
<td>Quarter 1 2017</td>
<td>20.95</td>
<td>36.24</td>
</tr>
<tr>
<td>Quarter 2 2017</td>
<td>23.25</td>
<td>37.52</td>
</tr>
<tr>
<td>Quarter 3 2017</td>
<td>35.32</td>
<td>30.01</td>
</tr>
</tbody>
</table>

*Report only includes 2 months due to funding ending in September 2019
ED results: All drug (11 sites*)

* Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Mexico, Ohio, Pennsylvania, Rhode Island, West Virginia, Wisconsin
ED results: Opioid (11 sites*)

* Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Mexico, Ohio, Pennsylvania, Rhode Island, West Virginia, Wisconsin
ED results: Heroin (11 sites*)

* Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Mexico, Ohio, Pennsylvania, Rhode Island, West Virginia, Wisconsin
Annual percentage changes (11 sites*)

* Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Mexico, Ohio, Pennsylvania, Rhode Island, West Virginia, Wisconsin
Summary

- **Stable increases for all drug and heroin from Q1 2016 to Q3 2017**
  - Opioid had stable increases from Q3 2016 to Q2 2017

- **Moderate decreases from Q2 to Q3 2017**
  - 9% for all drug, 9% for opioid, and 12% for heroin

- **Annual percentage changes were above 15% increases**
  - Q1 to Q1: 89% all drug, 30% heroin, & 21% opioid
  - Q2 to Q2: 108% all drug, 48% heroin, & 28% opioid
  - Q3 to Q3: 17% all drug, 22% heroin, & 27% opioid
Coordinated, informed efforts can better prevent opioid overdoses and deaths

- Offer naloxone and training to patient's family and friends, in case the patient has another overdose.
- Connect patients with hospital case managers or peer navigators to link them to follow-up treatment and services.
- Plan for the increasing number of patients with opioid-related conditions, including overdose, injection-related concerns, and withdrawal.

Local Emergency Department:
- Get adequate supply and training for naloxone administration.
- Identify changes in illicit drug supply and work with state and local health departments to respond effectively.
- Collaborate with public health departments and health systems to enhance linkage to treatment and services.

First Responders | Public Safety | Law Enforcement Officers:

Mental Health and Substance Abuse Treatment Providers:
- Increase treatment services, including MAT for OUD.
- Increase and coordinate mental health services for conditions that often occur with OUD.

Community-Based Organizations:
- Assist in mobilizing a community response to those most at risk.
- Provide resources to reduce harms that can occur when injecting drugs, including ones that offer screening for HIV and hepatitis B and C, in combination with referral to treatment and naloxone provision.

Local Health Departments:
- Alert the community to the rapid increase in opioid overdoses seen in emergency departments and inform strategic plans and timely responses.
- Ensure an adequate naloxone supply.
- Increase availability and access to necessary services.
- Coordinate with key community groups to detect and respond to any changes in illicit drug use.

Community Members:
- Connect with organizations in the community that provide public health services, treatment, counseling, and naloxone distribution.
Emergency department data dissemination efforts

- “Opioid Overdoses Treated in Emergency Departments” - https://www.cdc.gov/vitalsigns/opioid-overdoses/index.html
Fatal Opioid Overdose Surveillance: The State Unintentional Drug Overdose Reporting System

Presenter: Julie O'Donnell, PhD MPH Epidemiologist Centers for Disease Control and Prevention

Co-authors: Christine Mattson, Puja Seth, Alana Vivolo-Kantor, R. Matthew Gladden
Disclosure Statement

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Overdose Deaths Involving Opioids, by Type of Opioid, United States, 2000-2016

- Any Opioid
- Other Synthetic Opioids (e.g., fentanyl, tramadol)
- Heroin
- Natural & Semi-Synthetic Opioids (e.g., oxycodone, hydrocodone)
- Methadone

Increase in deaths outpaces increase in use

The number of heroin users increased 2.35 fold (135%)  
Source: SAMHSA

The number of heroin deaths increased 6.33 fold (533%)  
Source: CDC National Vital Statistics System (NCHS)
Fatal opioid overdose

- Drug potency
- Polysubstance use
- Health conditions/comorbidities
- Overdose response
- Route of administration
Fatal opioid overdose surveillance

- Track specific substances contributing to overdose deaths
- Detect newly-emerging substances involved in overdose
- Determine risk factors, circumstances associated with fatal overdose
- Assess common drug combinations
- Provide more timely data on overdose deaths
State Unintentional Drug Overdose Reporting System (SUDORS)

- Death certificates
- Medical examiner/coroner reports
- Toxicology reports
SUDORS data submitted bi-annually
SUDORS leverages National Violent Death Reporting System (NVDRS) platform

- Basic descriptors
- Compare across demographics

- Mental health diagnoses
- Substance abuse treatment history

- Recent release from institution
- Overdose location
- Survival time

- Substances present
- Substances contributing to death
Overdose-specific fields
Overdose-specific fields

## Substance Abuse

**Previous drug overdose**
- Type here to search

**Recent opioid use relapse**
- Type here to search

**History of prescription opioid/heroin abuse**
- Type here to search

**Recent emergency department visit**
- Type here to search

**Treatment for substance abuse**
- Type here to search

**Type(s) of substance abuse treatment (Check all that apply)**
- Inpatient/outpatient rehabilitation
- Medication-assisted treatment, or MAT (with cognitive/behavioral therapy)
- Medication-assisted treatment, or MAT (without cognitive/behavioral therapy)
- Cognitive/behavioral therapy
- Narcotics Anonymous
- Other - specify:

128 character(s) remaining.
Overdose-specific fields

- **Evidence of Drug Use**
  - Any evidence of drug use
  - No evidence of drug use
  - Evidence of rapid overdose
  - Body position consistent with rapid overdose
  - Tourniquet around arm
  - Needle Location
    - (0) No Evidence
  - Witness report rapid overdose
    - (0) No Report
  - Other - Explain:
    - 128 character(s) remaining.

**Route of Drug Administration (Check all that apply)**

- No information on route of administration
- Evidence of injection (Check all that apply)
  - Track marks on victim
  - Tourniquet
  - Cookers
  - Needles/Syringe
  - Filters
  - Witness Report
  - Evidence of Snorting/Snifffing
  - Evidence of Smoking
  - Evidence of Transdermal
  - Evidence of Ingestion
  - Evidence of Suppository
  - Evidence of Sublingual
  - Evidence of Buccal

- Other injection evidence - Specify:
  - 128 character(s) remaining.
Overdose-specific fields

**Illicit or Prescription Drugs (Check all that apply)**

- Evidence of prescription drugs (Check all that apply)
  - Prescribed to victim
  - Not prescribed to victim
  - Unknown who prescribed for

- Evidence of illicit drugs (Check all that apply)
  - Powder
  - Witness report
  - Counterfeit pills
  - Tar
  - Crystal

**Type of prescription drug found (Check all that apply)**

- Pills/Tablets
- Prescription bottle
- Lozenges/lollipops
- Witness report of prescription use
- Other form - Specify:

**Other illicit drug - Specify:**

128 character(s) remaining.
# Overdose-specific fields

## Response to Drug Overdose

### Bystander present

<table>
<thead>
<tr>
<th>Type(s) of bystander(s) present (Check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Person using drugs</td>
</tr>
<tr>
<td>- Intimate partner</td>
</tr>
<tr>
<td>- Other family</td>
</tr>
<tr>
<td>- Friend</td>
</tr>
<tr>
<td>- Stranger</td>
</tr>
<tr>
<td>- Roommate</td>
</tr>
<tr>
<td>- Medical professional</td>
</tr>
<tr>
<td>- Other - specify</td>
</tr>
</tbody>
</table>

128 character(s) remaining.

### Drug Use Witnessed

<table>
<thead>
<tr>
<th>Drug Use Witnessed (Check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No response</td>
</tr>
<tr>
<td>- CPR</td>
</tr>
<tr>
<td>- Rescue breathing</td>
</tr>
<tr>
<td>- Sternal rub</td>
</tr>
<tr>
<td>- Stimulation</td>
</tr>
<tr>
<td>- Call 911</td>
</tr>
<tr>
<td>- Other - specify</td>
</tr>
</tbody>
</table>

128 character(s) remaining.

## Bystander response other than naloxone administration (Check all that apply)

### Reasons for no response (Check all that apply)

<table>
<thead>
<tr>
<th>Reason for no response (Check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Did not recognize any abnormalities</td>
</tr>
<tr>
<td>- Bystander using and impaired</td>
</tr>
<tr>
<td>- Public space and strangers didn't intervene</td>
</tr>
<tr>
<td>- Reported abnormalities but not recognize as overdose</td>
</tr>
<tr>
<td>- Spatially separated (i.e., different room)</td>
</tr>
<tr>
<td>- Unaware that decedent was using</td>
</tr>
<tr>
<td>- Other - specify</td>
</tr>
</tbody>
</table>

128 character(s) remaining.
# Overdose-specific fields

## Naloxone (Check all that apply)

### Naloxone Administered Or Not
- [ ] Naloxone administered
- [ ] Naloxone not administered
- [ ] Unknown whether naloxone administered

### Number of naloxone dosages administered

- Total # of naloxone dosages administered by first responders/health care: 

- Total # of naloxone dosages administered by layperson(s): 

## Who Administered?

- [ ] Unknown
- [ ] Law enforcement
- [ ] EMS/fire
- [ ] Hospital (ED/inpatient)
- [ ] Other (specify in narrative)

### Type of lay-person:

- [ ] Lay-Person
- [ ] Person using drugs
- [ ] Intimate partner
- [ ] Friend
- [ ] Other family
- [ ] Roommate
- [ ] Stranger
- [ ] Other - Specify:

128 character(s) remaining.
Overdose-specific fields

Presence of pulse on first-responder arrival

First-responder intervention(s) other than naloxone administration (Check all that apply)
- CPR
- Rescue breathing
- Epinephrine administration
- Transport to ED

- Provided oxygen
- Other - specify

128 character(s) remaining.

Medical History

Treated for pain at time of injury

Known medical conditions (Check all that apply)
- COPD
- Asthma
- Sleep apnea
- Heart disease
- Obesity

- History of major injury
- Migraine
- Back pain

- Other chronic pain-specify

128 character(s) remaining.

- Other breathing problem-specify

128 character(s) remaining.
Overdose-specific fields

- Prescription Information

Use of Prescription Morphine

Prescription Morphine Narrative

☑ Prescribed Buprenorphine/Methadone

Optional:

Number of opioid prescriptions in the 30 days preceding injury

Number of pharmacies dispensing opioids to decedent in 180 days preceding injury

Number of doctors writing opioid prescriptions to the decedent in the 180 days preceding injury
## Toxicology information

### Toxicology Findings

<table>
<thead>
<tr>
<th>Substance</th>
<th>Tested</th>
<th>Results</th>
<th>Cause of Death</th>
<th>Person Prescribed For</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="#">Add Substance</a></td>
<td><a href="#">Apply Template</a></td>
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### Comments

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SUDORS data as good as sources allow

**Death Certificates**
- Drug specificity
- Time lag in cause of death codes

**Medical Examiner/Coroner Reports**
- Scene evidence availability
- Death scene investigation

**Toxicology Reports**
- Testing availability
- Emerging substances
Despite limitations, SUDORS data have many strengths

- Most states: census of unintentional and undetermined intent opioid overdose deaths
  - Data on count of deaths within 6 months

- Flexibility to include substances contributing to death outside of death certificate text/code fields

- Overdose-specific circumstance data collected within 8 months
Preliminary results
Number of opioid overdose deaths increasing, 2nd-half 2016 to 1st-half 2017

Cohort 1 states (N=10)*

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Number of Deaths</th>
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<tbody>
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<td>2nd half 2016</td>
<td>5,000</td>
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<tr>
<td>1st half 2017</td>
<td>6,000</td>
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*Preliminary results

*Missouri, Pennsylvania data not available
Number of opioid overdose deaths increasing, 2\textsuperscript{nd}-half 2016 to 1\textsuperscript{st}-half 2017

Cohort 1 states (N=10)*

Total deaths (2016/2017): 10,699

*Preliminary results

*Missouri, Pennsylvania data not available
Number of opioid overdose deaths by state and reporting period

*Preliminary results
Most common prescription opioids involved in opioid overdose deaths

Prescription opioids*
3,285 (30%) deaths

- Oxycodone 1,331 (41%)
- Hydrocodone 576 (18%)
- Methadone 542 (17%)
- Morphine 448 (14%)
- Buprenorphine 374 (11%)
- Oxymorphone 334 (10%)

*Substances listed as cause of death; count does not include fentanyl; categories not mutually exclusive

*Preliminary results
Redefining morphine as heroin using scene and toxicology evidence

**Morphine**
- Original: 4,569 (42%)
- Recoded: 557 (6%)

**Heroin**
- Confirmed: 3,437 (31%)
- Probable: 813 (7%)
- Suspected: 0

**Unknown**
- 386 (4%)

**Heroin**
- **Confirmed**: heroin-positive
- **Probable**: morphine-positive; evidence of injection/heroin use/illicit drug use; and no evidence of prescription morphine use
- **Suspected**: morphine-positive; no scene evidence; heroin listed as cause of death

**Morphine recoded**: morphine-positive, not confirmed/probable/suspected heroin

**Unknown**: morphine-positive, no scene evidence

*Preliminary results*
SUDORS Data

- Drug potency
- Polysubstance use
- Route of administration
- Overdose response
- Health conditions/comorbidities
- Scene evidence indicating route(s)
- All substances present
- Capturing fentanyl analogs
- Pain treatment, comorbidities
- Bystanders present, naloxone administration

Pain treatment, comorbidities

Health conditions/comorbidities

Drug potency

Polysubstance use

Route of administration

Overdose response

Scene evidence indicating route(s)

All substances present

Capturing fentanyl analogs

Bystanders present, naloxone administration

Pain treatment, comorbidities
Acknowledgments

- State health departments participating in CDC’s Enhanced State Opioid Overdose Surveillance (ESOOS) program
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  - Sabeen Bhimani
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  - Julie O’Donnell
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  - Lawrence Scholl
  - Jessica Simpson
  - Nana Wilson
Faster Data: The CDC-Funded Enhanced State Opioid Overdose Surveillance Program

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