

SURVEILLANCE & SHARING OF OVERDOSE DATA FOR ACTION SUMMIT

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“I believe that the best way to address the opioid crisis is to work towards achieving better health through better partnerships.”

**- Jerome M. Adams, MD, MPH
Vice Admiral, U.S. Public Health Service
U.S. Surgeon General**

Key Messages

- In 2017, over 72,000 Americans died from a drug-related overdose – 47,600 of them opioid overdoses.
- 15 states mandate reporting of overdoses, all 50 states and the District of Columbia have increased access to naloxone, and 46 states and the District of Columbia have Good Samaritan laws that provide some protection for individuals that report an overdose in good faith.
- Overdose-related data collection practices are not consistent across the United States and a collaborative, multiagency approach to obtaining, quantifying, and releasing data on fatal and nonfatal drug overdoses is needed to accurately assess and respond to the epidemic we face as a nation.
- Outlining a successful overdose surveillance program and the stakeholders involved and unifying our approach to overdose surveillance can help us improve a response-centric approach to one that furthers treatment and overdose prevention.

Quick Facts

Nonfatal Overdose Statistics

- Nonfatal drug-related poisonings accounted for 547,543 Emergency Department (ED) visits in 2015; 140,077 of them were opioid-related.¹
- Approximately 45% of opioid users experience a nonfatal overdose and approximately 70% witness a drug overdose.²
- Nonfatal opioid overdoses are between 2 and 20 times more common than fatal opioid overdoses.^{2,3}
- Of individuals that have previously had a nonfatal opioid overdose, approximately 30% will have another nonfatal opioid overdose and approximately 1% will have a fatal opioid overdose in the year following the initial overdose.⁴
- Adult survivors of opioid overdoses are at greater risk of death in the year following the incident, commonly from associated diseases, infectious disease, cancer, or suicide.⁵

Fatal Overdose Statistics

- Overdose is the leading cause of injury death in the United States.⁶
- Every day, more than 130 people in the United States die from an opioid-related overdose.⁷
- In 2017, the age-adjusted rate of drug overdose deaths in the United States was 9.6% higher than the rate in 2016.⁸
- The CDC has reported that for every unintentional overdose death related to an opioid analgesic, nine people are admitted for substance use disorder treatment, 35 visit EDs, 161 report drug misuse or dependence, and 461 report nonmedical uses of opioid analgesics.⁹
- Bystanders are present in approximately 40% of opioid overdose deaths, but naloxone is rarely administered.¹⁰
- Of drug overdose deaths in 2017, 68% involved some form of opioids, a 12% increase from 2016.¹¹
- In the United States, approximately two thirds of opioid overdose decedents tested positive for fentanyl.¹²
- The drug-poisoning death rate more than tripled between 2000 and 2016 (from 6.2 to 19.8 per 100,000). It's reported that drugs account for 90% of all poisoning deaths.¹³
- A former inmate's risk of death within the first 2 weeks of release is more than 12x that of other individuals, with the leading cause of death being a fatal opioid overdose.¹¹
- United States veterans have nearly two times the risk of fatally overdosing compared to the general population.¹⁴

Response, Treatment, Prevention Statistics

- Of the nearly 57 million adults in the United States with a mental or substance use disorder, nearly 40 million did not receive any treatment in the previous year.¹⁵
- More than 92 percent of those 12 and older did not receive treatment for a substance use disorder.¹⁵
- In 2018, the number of naloxone prescriptions reached a record high in the United States to more than 598,000 prescriptions, a 107 percent increase from 2017 and a 338 percent increase from 2016.¹⁶
- The Centers for Disease Control and Prevention (CDC) estimates that the total "economic burden" of prescription opioid misuse in the United States is \$78.5 billion a year, including the costs of healthcare, lost productivity, addiction treatment and criminal justice involvement.⁷
- Between 2012-2016, the rate of EMS naloxone administration events increased 75% (from 574 to 1004 administrations per 100,000 EMS events).¹⁷

"In order to inform coordinated public health and safety responses, drug overdose surveillance must move from a reactive to a proactive mode, utilizing the infrastructure for electronic health records."

-Slavova et al. (Int J Drug Policy, 2017)

Introduction

“Overdose can affect anyone – our friends, our parents, our siblings, our children and even ourselves.”¹⁸ The epidemic of drug-related overdose, and opioid-related overdose, continues in the United States. In 2017, the U.S. Department of the Health and Human Services declared the opioid crisis a nationwide public health emergency and unveiled a new five-point Opioid Strategy. The strategy includes “strengthening public health data reporting and collection” as a priority.^{19,20} Experts note that near real-time data are needed to drive rapid, coordinated community responses to increases in opioid overdoses.²¹ Since policies and programs are not consistent in states and communities, working collectively with a unified mission is challenging.

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Currently, national surveillance efforts include fatal overdose data,²² however, relying on fatality data alone can result in an incomplete picture of the ongoing and evolving overdose epidemic. Timely, nationally representative data related to nonfatal overdoses currently do not exist.²³ Effectively implementing optimal policies, prevention strategies, and interventions, will require coordination of stakeholders and accurate, timely, and actionable information on both fatal and nonfatal overdoses.

Epidemiology Overview

Case Reporting

Reportable and notifiable conditions are those for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the condition. There are several important distinctions between a reportable condition and a nationally notifiable condition. It is mandatory, under a jurisdiction's laws and regulations, that *reportable cases* be reported to state and territorial jurisdictions when identified by a healthcare provider (HCP), hospital, or laboratory. This type of required reporting uses personal identifiers and enables the states to identify cases where immediate disease control and prevention is needed. It is voluntary that *notifiable cases* be reported to the Centers for Disease Control and Prevention (CDC) by state and territorial jurisdictions (without direct personal identifiers) for nationwide aggregation and monitoring of data. Regular, frequent, timely information on individual cases is considered necessary to monitor trends, identify populations or geographic areas at high risk, formulate and assess prevention and control strategies, and formulate public health policies. Every nationally notifiable condition is not necessarily reportable in each state and not every state reportable condition is nationally notifiable. Each state has its own laws and regulations defining what conditions are reportable and the list varies among states and over time. Similarly, the list of notifiable conditions is reviewed and modified annually by the Council on State and Territorial Epidemiologists (CSTE) and CDC.²⁴

Surveillance case definitions – the uniform criteria used to define a condition for public health surveillance – enable public health officials to classify and count cases consistently across jurisdictions. Standardized case definitions aid in monitoring the health of the nation consistently and help facilitate interactions between HCPs and public health investigators. Recently, an interim case definition for nonfatal opioid overdose standardized surveillance was developed by CSTE.²³ The aim of this case definition is to assist stakeholders, including HCPs, hospitals (especially Emergency Departments), emergency medical services (EMS), poison control centers, laboratories, harm reduction and syringe services programs, and law enforcement, in identifying survivors of

opioid overdose and linking them to care and other interventions. The designation of overdose or opioid-related cases as reportable conditions varies across the country.

At risk users

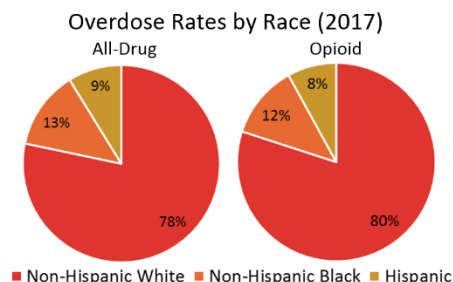
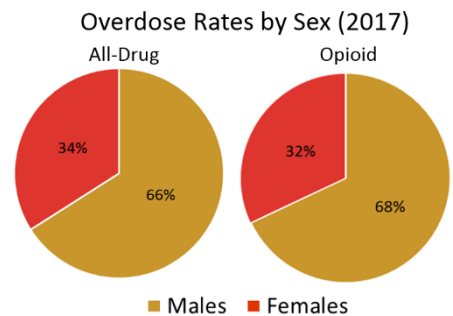
A drug overdose can happen to anyone, but there are certain populations that are at an increased risk. One of the most reliable predictors of a fatal overdose is a prior nonfatal overdose.²⁵ Of individuals that have previously had a nonfatal overdose, approximately 30% will have another nonfatal overdose and approximately 1% will have a fatal overdose in the year following the initial overdose.⁴ These individuals are also at an increased risk of death in the year following the overdose due to associated diseases, infectious diseases, cancers and suicide.⁵ Those recently released from an institutional setting, such as prison, are also at an increased risk of overdosing. The leading cause of death among people recently released from jail or prison is opioid-related overdose and U.S. veterans face nearly two times the risk of fatally overdosing compared to the general population.^{14,26}

In the United States, more than 6.5 million persons have injected drugs, more than 750,000 currently use injection drugs, and the number of persons who inject drugs (PWID) has grown sharply in recent years with the rise of the opioid epidemic; opioids and methamphetamine are the most commonly injected drugs.^{27,28} PWID have increased incidence of blood-borne infections, including viral hepatitis, human immunodeficiency virus (HIV), and bacterial and fungal infections, as well as, psychiatric disorders.²⁹

Although preliminary data from the CDC suggests that the number of overdose deaths may have fallen in 2018, overdose deaths from synthetic opioids, such as illicit fentanyl and fentanyl analogs, are still trending up (synthetic opioid overdose deaths excluding methadone were estimated at approximately 32,000 in 2018, an increase from over 29,000 in 2017). Deaths linked to cocaine and psychostimulants are also increasing.³⁰ The drop in overall overdose deaths is likely linked to a decrease in prescription opioid overdose deaths. Between 2013 and 2018, the number of opioid prescriptions decreased by more than 80 million, a 33 percent decrease nationally. Every state has seen a decrease in opioid prescriptions over the last five years.¹⁶

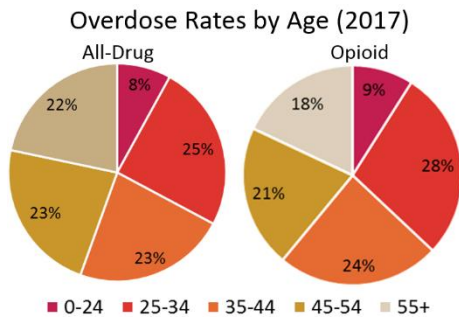
Demographics

Drug overdose deaths occur at differing rates depending on an individual’s sex, race and age. Both sexes have seen an increase in overdose deaths over time, but males continue to have higher rates of fatal drug-related overdoses. Of the approximately 72,000 overdose deaths in 2017, males accounted for 66% of deaths, while females made up 34%. When looking specifically at opioid-related overdose deaths, males comprised 68% of deaths compared to females at 32%.³¹ From 2016 to 2017, males experienced a 13% increase (28,498 to 32,337 deaths) in fatal opioid-related deaths, while females had a 11% increase (13,751 to 15,263 deaths).³¹



Overdose rates also differ by race, with non-Hispanic whites accounting for 78% of overdose deaths in 2017, followed by non-Hispanic blacks at 13% and Hispanics at 9%. Opioid-related overdose deaths reflect a similar trend with 80% of overdose deaths occurring in non-Hispanic whites followed by 12% in non-Hispanic blacks and 8% in Hispanics.³¹ While non-Hispanic whites make up the majority of opioid-related overdose deaths, this population experienced the lowest percent increase from 2016 to 2017 at 11% (33,450 to 37,113 deaths).

Meanwhile, non-Hispanic blacks had the largest increase at 26% (4,374 to 5,513 deaths) and Hispanics experienced a 14% increase (3,440 to 3,932 deaths).³¹



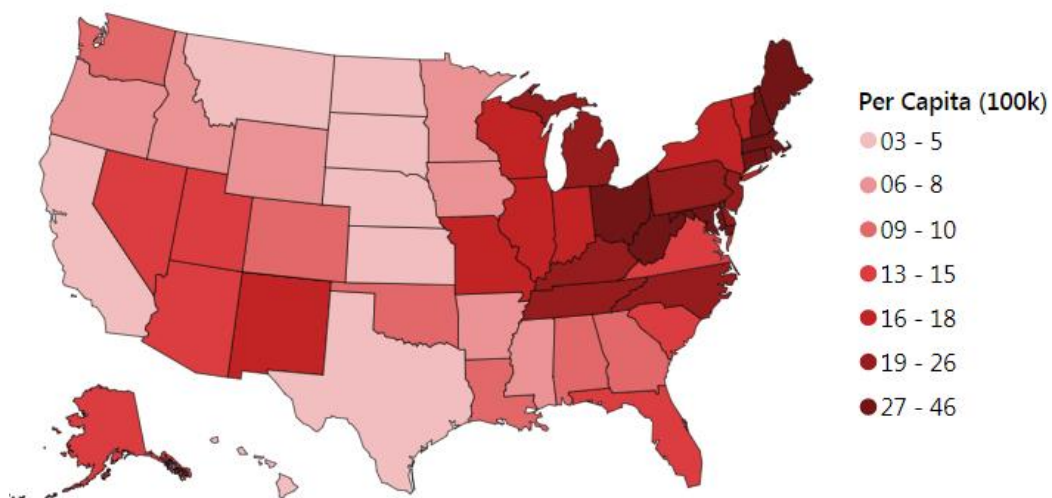
Fatal overdoses also occur at different rates by age. Those in the 25-34-year-old age group have the highest percentage of overdose mortality (25%), followed by both the 35-44 and 45-54 age groups (23%), the 55+ group (22%) and the 0-24 group (8%). A similar pattern appears in opioid-related overdose mortality with individuals between the ages of 25-34 years old making up the largest proportion of deaths (28%), followed by those aged 35-44 (24%), 45-54 (21%), 55+ (18%) and 0-24 (9%).³¹ While all age groups experienced an increase in the number of fatal opioid-related overdoses from 2016 to 2017, those

between the ages of 35-44 had the highest increase at 13.4% (9,731 to 11,033 deaths), followed closely by the 25-34 group at 13.3% (9,731 to 11,033 deaths), 45-54 at 11.2% (9,048 to 10,062 deaths), 55+ at 12.0% (7,754 to 8,682 deaths) and 0-24 at 1.3% (4,074 to 4,128 deaths).³¹

Geographic patterns

Overdose deaths affect Americans across the country. In 2017, the states with the highest proportion of overdose deaths were West Virginia (57.8 per 100,000), Ohio (46.3 per 100,000) and Pennsylvania (44.3 per 100,000). Similarly, the states with the highest opioid overdose mortality rates were West Virginia (45.9 per 100,000), Ohio (36.8 per 100,000), Maryland (32.8 per 100,000), and New Hampshire (31.6 per 100,000).³¹ The states with the highest statistically significant percent increase of opioid overdose death from 2016 to 2017 were New Jersey (29.3%), Indiana (22.5%), North Carolina (22.3%) and Delaware (20.1%).³¹ Certain states may also be affected by the differing rates of overdose death between urban and rural areas. By the end of the 20th century, urbanized areas experienced higher rates of opioid related death (6.4 vs. 4.0 per 100,000 respectively); however, in 2004 the rates converged and by 2015 rural areas experienced higher overdose death rates compared to urban areas for the first time (17.0 vs. 16.2 per 100,000 respectively).³²

Opioid Overdose Deaths by State (2017)



Naloxone

Naloxone is a potentially lifesaving opioid antagonist that can reverse the effects of an opioid-related overdose. It has no potential for abuse. Naloxone is a 40-year old medication used mainly by first responders and medical staff. However, due to its history of safe and effective use, states have enacted standing orders and other laws that permit anyone to obtain a naloxone prescription with the aim of providing civilian bystanders who witness an overdose the ability to save a life. A 2017 study found that while bystanders were present at 40% of opioid overdoses, naloxone was rarely administered until first responders arrived.¹⁰ Between 2012 to 2016, the rate of EMS administered naloxone events increased by 75.1% (from 573.6 to 1004.4 administrations per 100,000 EMS events).¹⁷ It is not known how often EMS or others administer multiple doses to a person experiencing an opioid-related overdose. Additionally, in 2018, the number of naloxone prescriptions reached a record high in the United States to more than 598,000 prescriptions, a 107 percent increase from 2017 and a 338 percent increase from 2016.¹⁶ While it has been documented that naloxone can save lives, it is unknown how often it is used or the number of filled prescriptions that are saving lives.³³

Stakeholders

The image below illustrates many of the stakeholders that interact with individuals experiencing overdose in the short to long term, but is a non-comprehensive list. Each stakeholder plays an important role in the fight to end the drug overdose epidemic, but when stakeholders collaborate – and share a unified mission – the impact is far greater. This is true for preventative and treatment measures, policies surrounding overdoses, and surveillance efforts. It is important to identify how each stakeholder uniquely interacts with others in their respective group, as well as with the other groups, and how a collective impact approach can be successfully initiated. Through this process, barriers and gaps can be identified that are preventing the unification needed to enhance efforts toward ending the epidemic of overdose and death.

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State Policies

Laws have been introduced and/or enacted in several states that would permit or require overdoses to be reported. However, no standardized surveillance approach exists that integrates the multiple potential data sources that might be used for overdose surveillance. The lack of consistency can make national comparisons of the epidemic, as well as evaluation of prevention efforts, challenging.²²

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With synthetically manufactured opioids prominent in the illicit drug supply, it is increasingly important for state health departments, HCPs, law enforcements, EMS, and other stakeholders to have accurate and timely information on drug-related overdoses. Policymakers have introduced legal interventions, such as Good Samaritan laws and naloxone standing orders, to reduce overdose mortality. It is unclear how surveillance data is connected to the provision of treatment services or prevention opportunities.

Mandatory Reporting

All 50 states and the District of Columbia have a system in place for mandatory case reporting to health departments within a timely manner, allowing state health departments to track potential outbreaks and rising epidemics. Most states do not have laws that require timely reporting of drug overdoses or that recognize adverse drug reactions and overdoses as reportable conditions. In general, 35 states and the District of Columbia require reporting of “unusual outbreaks or clusters of diseases and conditions” and/or “unexplained death,” leaving it to the discretion of mandated reporters to report overdoses under these umbrella categories.³⁴ Arizona, Colorado, Connecticut, and New Mexico include “conditions related to exposure to a prescription drug, over-the-counter medications or remedy, or controlled substance,” and/or “drug overdoses” on their statewide list of required reportable conditions.

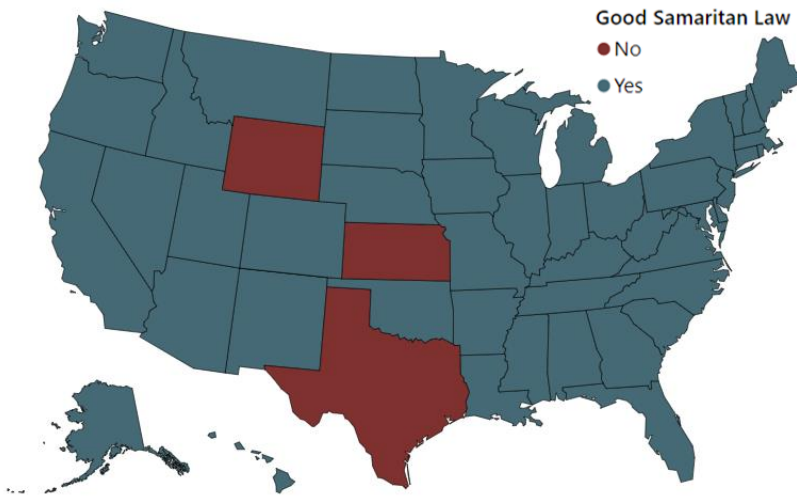
Fifteen states require reporting of nonfatal and fatal overdoses: Arizona, Colorado, Connecticut, Illinois, Kentucky, New Mexico, Oklahoma, Nevada, Rhode Island, Tennessee, Texas, Utah, West Virginia, Wisconsin, and Wyoming.³⁴ Requirements for who is mandated to report and receive data vary by state. Arizona requires first responders, HCPs, administrators of health care institutions, and law enforcement agencies to report suspected overdose cases to the Department of Health Services, while Oklahoma requires HCP and laboratory directors to report non-fatal overdoses to the state’s Bureau of Narcotics.^{35,36} What qualifies as a “suspected overdose” varies by state and it is unclear if any states are using standardized case definitions. The information to report varies as well. For example, Kentucky requires patient identifiers to be reported, while Illinois prohibits disclosing the name, address, or other identifying patient information.^{37,38} Four states require reports to be made immediately following or within 24 hours of a suspected overdose.³⁴ Texas has required immediate reporting of overdoses since September 1999, followed by New Mexico in 2016 and Nevada in 2018. The effects of these laws are not clear as to how the information is used, how it may be shared between stakeholders, and whether there have been unintended consequences.

Good Samaritan and Naloxone

While there are inconsistencies in state requirements, most states with mandatory reporting of overdoses require first responders, HCP, and law enforcement agencies to report when an opioid antagonist is

administered. All 50 states and the District of Columbia have enacted laws to remove legal barriers to seeking medical emergency services and access to naloxone through standing orders or Good Samaritan laws.³⁹ Naloxone laws and Good Samaritan laws are associated with a 14% and 15% decrease in national opioid overdoses.³⁹ As with overdose data reporting, it is not clear how naloxone administration data has been used within states to help identify areas of highest risk for overdose and target interventions, additional naloxone supply and other efforts to increase prevention and treatment of opioid-related overdose.

Good Samaritan Law by State 2019



Standing orders eliminate the barrier of finding a physician to prescribe naloxone and commonly authorizes distribution or dispensing by a pharmacist or harm reduction organization. A standing order is written by a physician, often a department of health or state medical officer or local health official, and allows designated people to distribute and obtain naloxone.⁴⁰ As of October 2017, 43 states and the District of Columbia have standing orders that authorize non-medical personnel to distribute naloxone.

Good Samaritan laws attempt to provide some degree of protection from arrest, charges, or prosecution for individuals who report an overdose in good faith. By August 21, 2019, 47 states and the District of Columbia will have Good Samaritan laws.³⁹ These laws are intended to increase bystander willingness to seek medical services without fear of repercussions for any number of violations, such as possession of a controlled substance, paraphernalia, and noncompliance of parole conditions. However, confusion remains about who qualifies for such immunity.

Example State Narratives

The following narratives of Arizona, Rhode Island, and Tennessee provide a few examples of differing state policies and surveillance efforts.

Arizona

Arizona is one of the 15 states that require reporting of drug overdoses from first responders, HCP, and law enforcement officers. Under a public health emergency declaration, the state’s opioid surveillance system was reworked to track nonfatal and fatal overdoses, suspected cases of neonatal abstinence syndrome, naloxone kits dispensed to the public by pharmacists, and naloxone administered by first responders to overdose patients. Beginning in April 2018, the Arizona State Public Health Laboratory began testing post-mortem blood specimens from individuals suspected of experiencing a fatal overdose at no cost.

Rhode Island

Rhode Island requires that all drug overdoses be reported within a 48-hour timeframe. As a result, the Rhode Island Department of Health has up-to-date monthly overdose data.⁴¹ The Rhode Island Department of Health

also requires that data be reported on overdose related emergency department visits, medication-assisted treatment, naloxone distribution and administration, and opioid prescribing. Rhode Island is one of the first states to surveil all these types of data.

Tennessee

In 2016, Tennessee enacted a law requiring the reporting of opioid misuse, nonfatal overdose visits to emergency departments, and fatal overdoses on a weekly basis.⁴² The number of opioid related deaths has increased every year since 2012, and Tennessee now experiences rates higher than the national average. Despite their requirement to report on opioid related incidences, data on overdoses is only publicly available up to 2017.

Framing the Discussion

Policies, programs, and data collection practices are not consistent across the United States and a collaborative, multiagency approach to obtaining, quantifying, and releasing appropriate data – with patient identifier safeguards – on fatal and nonfatal drug overdoses across data sources and jurisdictional boundaries is needed to accurately assess and

“[U]nifying our approach to overdose surveillance can help us shift from “response” to “prevention.”

respond to the overdose epidemic we face as a nation. A first step in this approach is forming a unified mission for stakeholders involved that is focused on improving the public health and saving patients’ lives. Working with that mission in mind, the facilitators and barriers stakeholders face in their surveillance and data sharing efforts can be identified. Additionally, best practices, lessons learned, collaboration structures, and tools for surveillance implementation that can aid in informing prevention efforts, treatment opportunities, and policy-making, as well as harm reduction strategies can be articulated.

References

1. Centers for Disease Control and Prevention. *2018 Annual Surveillance Report of Drug-Related Risks and Outcomes, United States*. CDC National Center for Injury Prevention and Control: U.S. Department of Health and Human Services; August 31 2018.
2. World Health Organization. Information Sheet on Opioid Overdose. 2018; https://www.who.int/substance_abuse/information-sheet/en/, 2019.
3. Association of State and Territorial Health Officials. Opioid-related Overdose as a Reportable Condition. Vol 2019: Association of State and Territorial Health Officials; 2017.
4. Olfson M, Wall M, Wang S, Crystal S, Blanco C. Risks of fatal opioid overdose during the first year following nonfatal overdose. *Drug Alcohol Depend*. 2018;190:112-119.
5. Kunzmann K. Nonfatal Opioid Overdose Greatly Raises Risk of Short-Term Death. *MD Magazine* 2018.
6. Winstanley EL, Clark A, Feinberg J, Wilder CM. Barriers to implementation of opioid overdose prevention programs in Ohio. *Subst Abus*. 2016;37(1):42-46.
7. National Institute on Drug Abuse. Opioid Overdose Crisis. 2019; <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis> 2019.
8. Hedegaard H, Minino A, Warner M. Drug Overdose Deaths in the United States, 1999-2017. 2018; <https://www.cdc.gov/nchs/products/databriefs/db329.htm>.
9. Hawk KF, Vaca FE, D’Onofrio G. Reducing Fatal Opioid Overdose: Prevention, Treatment and Harm Reduction Strategies. *The Yale journal of biology and medicine*. 2015;88(3):235-245.
10. Mattson C, O’Donnell J, Kariisa M, Seth P, Scholl L, Gladden R. Opportunities to Prevent Overdose Deaths Involving Prescription and Illicit Opioids, 11 States, July 2016-June 2017. *MMWR Morb Mortal Wkly Rep*. 2018;67:945-951.
11. Zarkin G. Opioids in America: A Complex Crisis. A Comprehensive Response. 2017; <https://www.rti.org/sites/default/files/brochures/rti-brochure-file-bbc71958-4aa7-4a0c-9227-cb58db04769e.pdf>, 2019.
12. Jiang Y, McDonald JV, Goldschmidt A, et al. State Unintentional Drug Overdose Reporting Surveillance: Opioid Overdose Deaths and Characteristics in Rhode Island. *R I Med J (2013)*. 2018;101(7):25-30.

13. Brown AM, DeFrances C, Crane E, Cai R, Naeger S. Identification of Substance-involved Emergency Department Visits Using Data From the National Hospital Care Survey. *Natl Health Stat Report*. 2018(114):1-15.
14. Bohnert AS, Ilgen MA, Galea S, McCarthy JF, Blow FC. Accidental poisoning mortality among patients in the Department of Veterans Affairs Health System. *Med Care*. 2011;49(4):393-396.
15. Center for Behavioral Health Statistics and Quality. 2017 National Survey on Drug Use and Health. *Substance Abuse and Mental Health Services Administration* 2018; <https://www.samhsa.gov/data/report/2017-nsduh-annual-national-report>. Accessed July 26, 2019.
16. American Medical Association. AMA Opioid Task Force 2019 Progress Report. 2019; <https://www.end-opioid-epidemic.org/wp-content/uploads/2019/06/AMA-Opioid-Task-Force-2019-Progress-Report-web-1.pdf>. Accessed July 1, 2019.
17. Cash RE, Kinsman J, Crowe RP, Rivard MK, Faul M, Panchal AR. Naloxone Administration Frequency During Emergency Medical Service Events - United States, 2012-2016. *MMWR Morb Mortal Wkly Rep*. 2018;67(31):850-853.
18. Sone S. Reducing the Stigma of Overdose and Increasing Awareness. Vol 2019: Ontario Brain Institute; 2017.
19. HHS 5-Point Strategy to Combat the Opioid Crisis. <https://www.hhs.gov/opioids/>. Accessed July 13, 2019.
20. Determination that a Public Health Emergency Exists. October 26, 2017; <https://www.hhs.gov/sites/default/files/opioid%20PHE%20Declaration-no-sig.pdf>. Accessed July 22, 2019.
21. Dowell D, Noonan RK, Houry D. Underlying Factors in Drug Overdose Deaths Underlying Factors in Drug Overdose Deaths. *JAMA*. 2017;318(23):2295-2296.
22. Epidemiologists CoSaT. Surveillance Indicators for Substance Abuse and Mental Health 16-SI-01. 2016; https://c.ymcdn.com/sites/www.cste.org/resource/resmgr/2016PS/16_SI_01.pdf. Accessed June 1, 2019.
23. Epidemiologists CoSaT. Nonfatal Opioid Overdose Standardized Surveillance Case Definition. 2018; https://cdn.ymaws.com/www.cste.org/resource/resmgr/ps/2019ps/Nonfatal_Opioid_Overdose_011.pdf. Accessed June 1, 2019.
24. Centers for Disease Control and Prevention. National Notifiable Diseases Surveillance System (NNDSS). 2018; <https://wwwn.cdc.gov/nndss/data-collection.html>. Accessed July 23, 2019.
25. Caudarella A, Dong H, Milloy MJ, Kerr T, Wood E, Hayashi K. Non-fatal overdose as a risk factor for subsequent fatal overdose among people who inject drugs. *Drug Alcohol Depend*. 2016;162:51-55.
26. Joudrey PJ, Khan MR, Wang EA, et al. A conceptual model for understanding post-release opioid-related overdose risk. *Addiction Science & Clinical Practice*. 2019;14(1):17.
27. Lansky A, Finlayson T, Johnson C, et al. Estimating the number of persons who inject drugs in the united states by meta-analysis to calculate national rates of HIV and hepatitis C virus infections. *PLoS One*. 2014;9(5):e97596.
28. Jones CM, Logan J, Gladden RM, Bohm MK. Vital Signs: Demographic and Substance Use Trends Among Heroin Users - United States, 2002-2013. *MMWR Morb Mortal Wkly Rep*. 2015;64(26):719-725.
29. Centers for Disease Control and Prevention. Persons Who Inject Drugs (PWID). 2018; <https://www.cdc.gov/pwid/index.html>. Accessed July 23, 2019.
30. Ahmad FB, Escobedo LA, Rossen LM, Spencer MR, Warner M, Sutton P. Provisional drug overdose death counts. *National Center for Health Statistics*. 2019.
31. CDC Wonder. Multiple Cause of Death 1999-2017. 2019; <https://wonder.cdc.gov/wonder/help/mcd.html>, 2019.
32. Mack K, Jones C, Ballesteros M. Illicit Drug Use, Illicit Drug Use Disorders, and Drug Overdose Deaths in Metropolitan and Nonmetropolitan Areas — United States. *MMWR Surveill Summ*. 2017;66(SS-19):1-12.
33. Office of U.S. Surgeon General. U.S. Surgeon General's Advisory on Naloxone and Opioid Overdose. 2018; <https://www.hhs.gov/surgeongeneral/priorities/opioids-and-addiction/naloxone-advisory/index.html>.
34. Davis C, Hernandez-Delgado H, Lieberman A. *State Non-Fatal Overdose Reporting Requirements Fact Sheet*. The Network for Public Health Law;2017.
35. ARIZ. ADMIN. CODE § 9-4-602.
36. OKLA. ST. ANN. tit. 63, § 2-105.
37. KEN. REV. STAT. ANN. § 218A.202(4).
38. 210 ILL. COMP. STAT. 85/6.14G.
39. Davis C, Chang S, Carr D, Hernandez-Delgado H, Breen S. Legal Interventions to Reduce Overdose Mortality: Naloxone Access and Overdose Good Samaritan Laws. *The Network for Public Health Law*. 2018.
40. Widening the Net of Naloxone Prescribers - The "Standing Order" Model. <http://naloxoneinfo.org/case-studies/standing-orders>.
41. Rhode Island Department of Health. Prevent Overdose RI. <https://preventoverdoseri.org/>.
42. TENN. CODE ANN. § 68-11-314.