California State Unintentional Drug Overdose Reporting System

2020 Overview Data Brief

California Department of Public Health
Substance and Addiction Prevention Branch
Overdose Prevention Initiative

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About SUDORS

The California State Unintentional Drug Overdose Reporting System (CA SUDORS) is a public health surveillance system of drug-related overdose deaths. Overdose deaths captured by CA SUDORS include unintentional and undetermined drug-related overdose deaths occurring in participating counties in the State of California. CA SUDORS collects and combines data from death certificates, medical examiner/coroner (ME/C) investigative narratives, autopsy reports, and toxicology reports to better understand the circumstances surrounding these overdose deaths.

Executive Summary

In 2020, over 91,000 individuals in the United States died from drug-related overdoses and drug-related overdose death rates continue to rise in the United States[1] and California[2], highlighting the need to address the crisis. CA SUDORS captures drug-related overdose deaths and collects and combines data from death certificates, medical examiner/coroner (ME/C) investigative narratives, autopsy reports, and toxicology reports to better understand the circumstances surrounding fatal drug-related overdoses. In 2020, CA SUDORS partnered with 29 counties to provide data for 3,734 (42.3%) of California's 8,824 drug-related overdose deaths.

Populations of concern

- Individuals who died from a drug-related overdose were predominantly male. Male drug-related overdose deaths were over 3 times higher than female deaths, with the most deaths within each sex occurring among males ages 35-44 and females ages 45-54.
- Approximately 16% of drug-related overdose deaths occurred among persons experiencing homelessness.
- Most individuals (72%) who died of drug-related overdoses had a history of substance use or misuse. Further, nearly one fifth of individuals who died from a drug-related overdose had at least one current mental health diagnosis reported through medical records or witness reports. The most common diagnoses were depression, anxiety, bipolar disorder, and schizophrenia.

Toxicology

Opioids were detected in a majority of drug-related overdose deaths (70.7%) and listed as a cause of death (COD) in 67.3% of drug-related overdose deaths. Over half of these opioid deaths also detected at least one stimulant. Individuals ages 25-34 had the most drug-related overdose deaths with opioids alone and opioids with stimulants detected. Fentanyl and methamphetamine were detected in 50.4% and 57.9% of cases, respectively, and were listed as a COD in almost all deaths where they were detected. Approximately two-thirds of deaths detecting fentanyl also detected the presence of a least one stimulant. Scene evidence indicated that almost all fentanyl detected on post-mortem toxicology tests was likely illicitly manufactured.

Potential Intervention Opportunities

Over half of drug-related overdose deaths had at least one potential intervention opportunity before or during the fatal overdose. Target populations for interventions may include those who may witness the fatal drug use, find themselves as a potential bystander of an overdose, or individuals with a history of at least one of the following circumstances:

- Previous overdose
- Acute and/or chronic pain treatment
- Current substance use disorder treatment
- Emergency department visit in the past year
- Recent release from any institutional setting, including hospitals, detention facilities, and residential facilities related to alcohol or substance use treatment
- Current diagnosed mental health condition

Given these potential intervention opportunities, increased education and awareness surrounding substances of concern, overdose recognition, and overdose response (e.g., naloxone usage) along with additional screening for substance use and misuse may be appropriate.

CA SUDORS Participation

California has 58 counties total, each constituting its own death investigation jurisdiction. In 2020, CA SUDORS partnered with 29 county ME/Cs throughout California to collect these data.

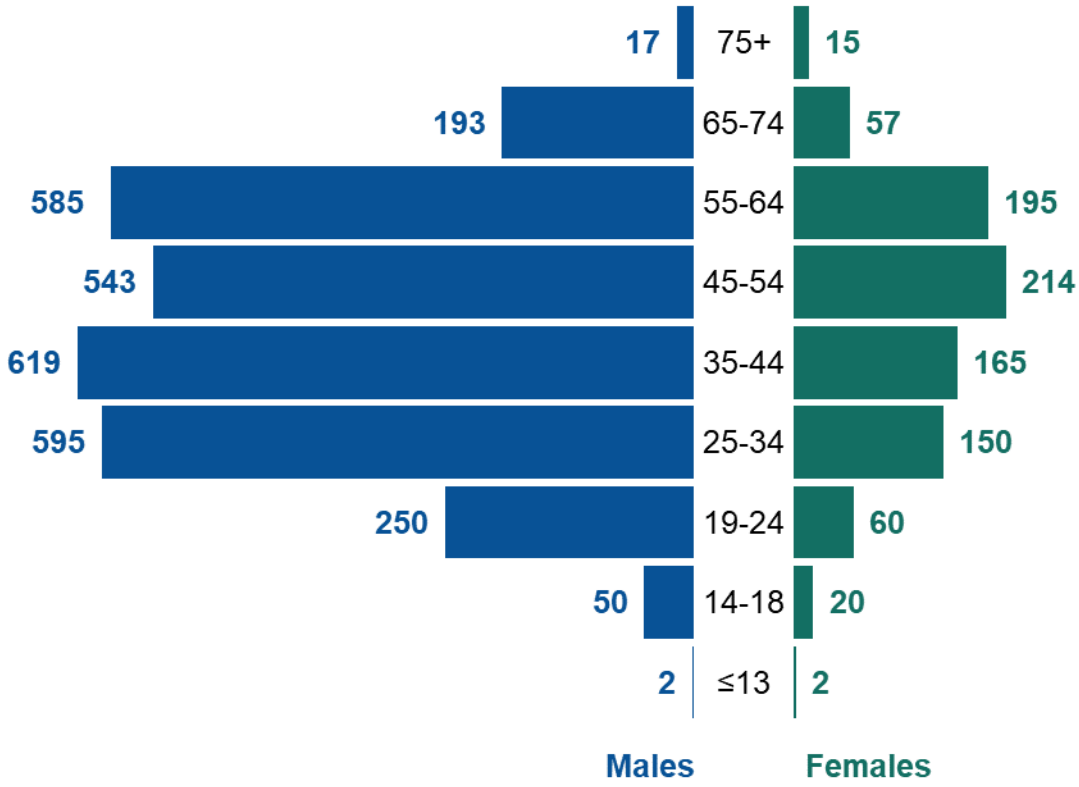
- According to California death certificate data, there were 8,824 unintentional and undetermined drug-related overdose deaths that occurred in California in 2020 based on ICD-10 codes.
- Data from 3,734 unintentional and undetermined drug-related overdose deaths ME/C investigative narratives, autopsy reports, and toxicology reports were abstracted and are included in this report. All statistics included in this report come from only these 3,734 drug-related overdose deaths and may not be generalizable to all drug-related overdose deaths in California.
- Participating counties included: Amador, Butte, Colusa, Fresno, Glenn, Humboldt, Imperial, Kern, Kings, Lake, Lassen, Los Angeles, Marin, Mono, Orange, Placer, Riverside, Sacramento, San Benito, San Francisco, San Mateo, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Tehama, Ventura, and Yolo.

Individuals who died from a drug-related overdose in CA SUDORS participating counties were predominantly:

- Male (76.5%)
- Non-Hispanic White (47.8%)
- 25-64 years old (82.9%)
- Never married (61.6%)
- Never served in U.S. armed forces (94.0%)

Drug-related overdose deaths among males were over three times that of females. Most drug-related overdose deaths occurred among individuals in the 25–64-year age range (Figure 1). The age groups with the largest counts of drug-related overdose deaths within each sex were males 35-44 years and females 45-54 years.

Figure 1. Counts of Drug-Related Overdose Deaths by Sex and Age, 2020



Gender Identity

- 0.4% of individuals who died from a drug-related overdose were transgender

Education Level

- 17.4% of individuals who died from a drug-related overdose had an education level of 12th grade or less
- 43.5% were high school graduates or had a GED completed
- 17.4% had some college, but no degree
- 12.9% had a 2-year college degree or more
- 8.8% had an unknown education level

Figure 2. Drug-Related Overdose Deaths by Race/Ethnicity, 2020

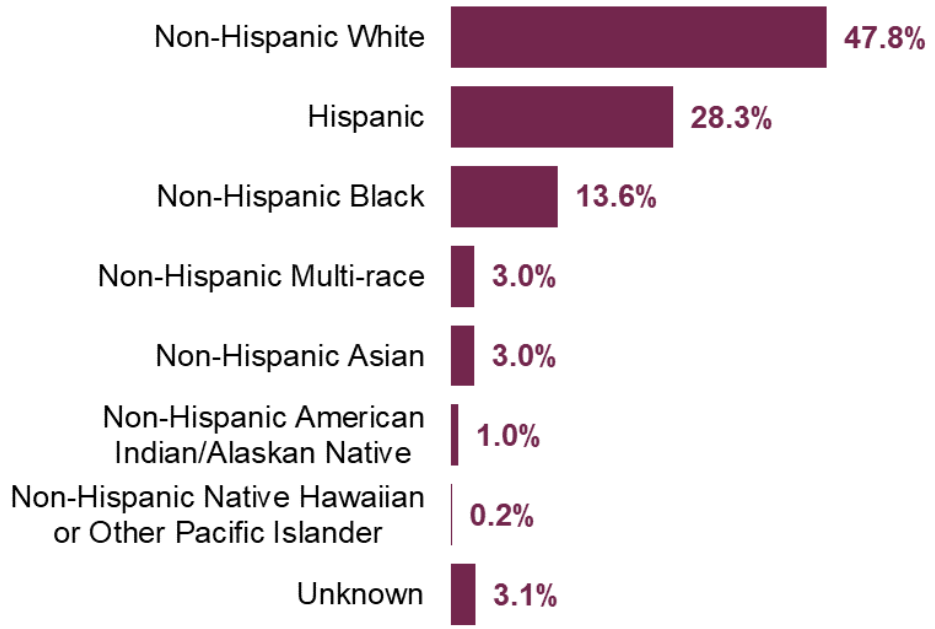
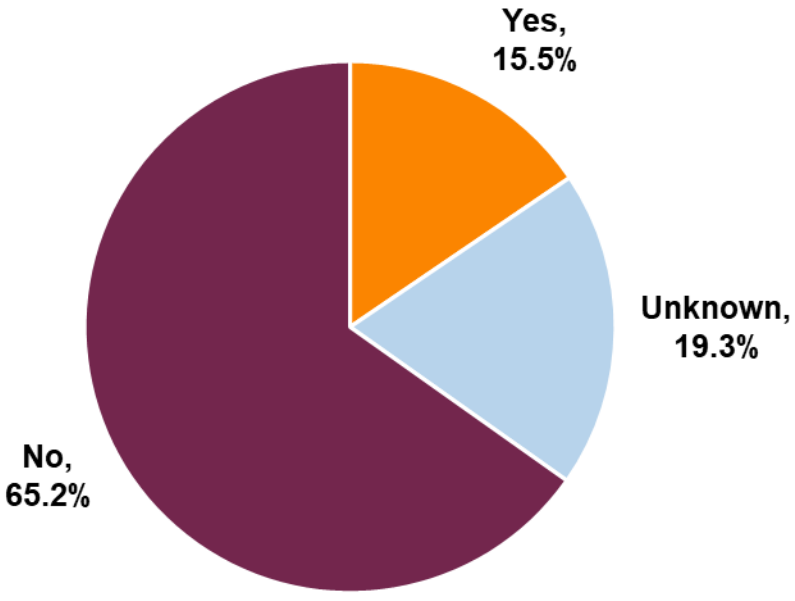


Figure 3. Drug-Related Overdose Deaths by Homeless Status, 2020



In 2020, 15.5% of individuals who died from a drug-related overdose were experiencing homelessness. This may be an underestimate since homeless status was unknown for 19.3% of individuals who died from a drug-related overdose. Persons experiencing homelessness were defined as those who 1) resided in places not designed for or ordinarily used as a regular sleeping accommodation for human beings; 2) resided in a supervised publicly or privately operated shelter or drop-in center designated to provide temporary accommodations; or 3) were identified as being a person experiencing homelessness by next of kin or the ME/C report.

Health and Substance Use Circumstances

ME/C investigative reports often include detailed information on a decedent's medical and substance use history. As a part of their death investigations, ME/C investigators may conduct interviews with witnesses and next of kin. Additionally, investigators may obtain a decedent's medical records as a part of their investigation. Relevant health and substance use circumstances are abstracted into CA SUDORS from the ME/C reports to help understand possible risk and protective factors of drug-related overdose deaths.

Table 1. Health and substance use circumstances of individuals who died of a drug overdose, 2020

Circumstances	n	% of total deaths
History of substance use/misuse*	2,690	72.0%
History of an alcohol problem	706	18.9%
Current perceived depressed mood	139	3.7%
Current treatment for a substance use disorder	109	2.9%
No current treatment, but treated in the past for a substance use disorder	174	4.7%
Current mental health diagnoses†	690	18.5%

- Among individuals with at least one mental health diagnosis, the top four diagnoses were§:
  - Depression (7.6%)
  - Anxiety (5.4%)
  - Bipolar Disorder (3.9%)
  - Schizophrenia (3.3%)

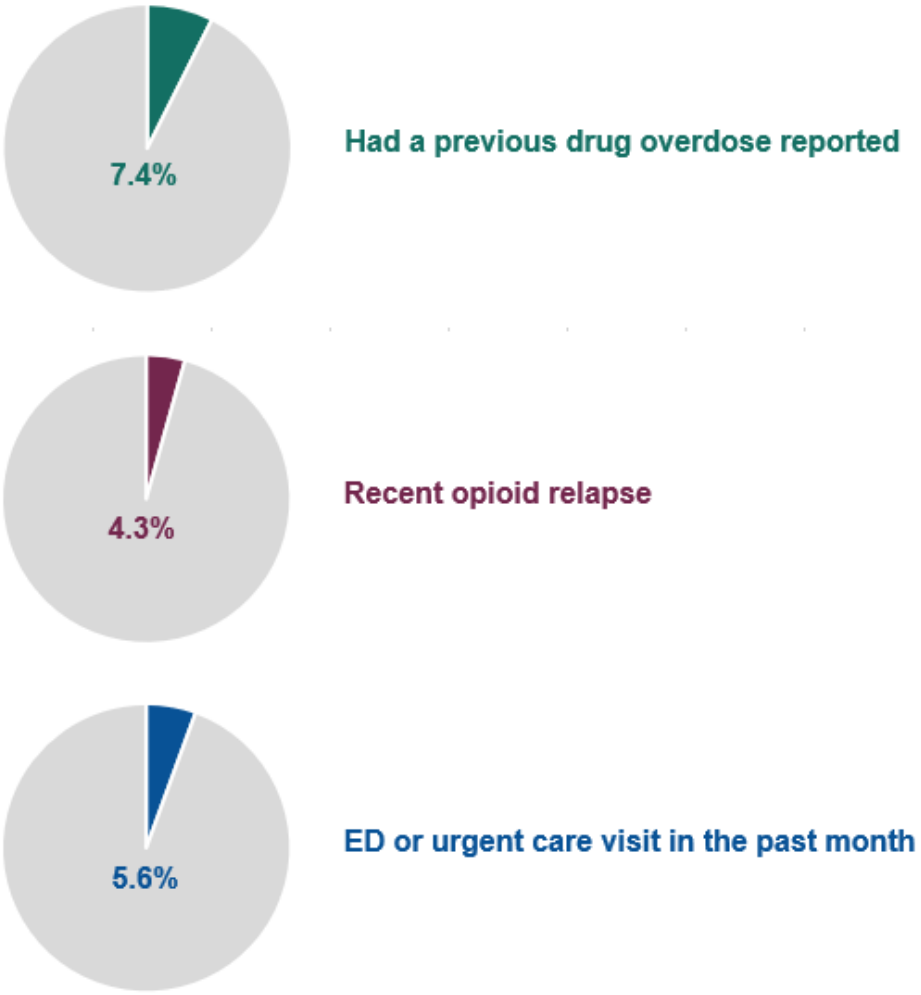
Less than ten percent (7.6%) of individuals who died from a drug-related overdose had ever been treated for a substance use disorder (2.9% were in current treatment, 4.7% were not undergoing current treatment, but were treated in the past)

* Substance use/misuse refers to the use of illicit drugs and/or misuse of prescription medications based on the ME/C reports. It does not include alcohol as a substance or use of marijuana.
† Information on diagnoses may come from an individual's medical record or from a witness statement that is included in the ME/C report.
§ Percentages are not mutually exclusive.

Health and Substance Use Circumstances

Known Medical History:

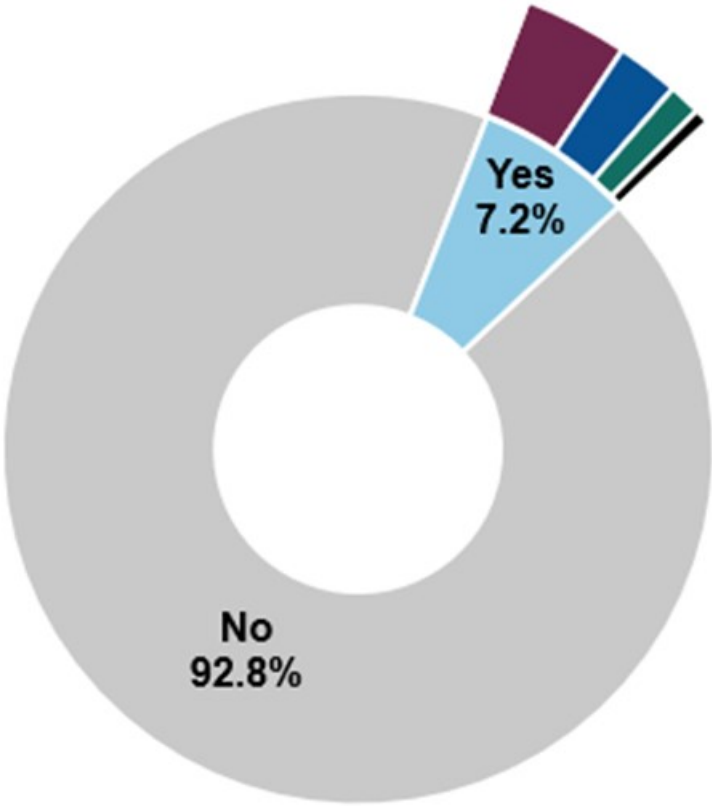
- 5.1% of individuals who died from a drug-related overdose had a history of major injury, 4.0% had a history of back pain, and 10.7% had a history of other chronic pain
- Other known medical conditions included: heart disease (18.6%), obesity (12.4%), COPD (6.0%), hepatitis C (5.3%), asthma (4.8%), other breathing problem(s) (2.3%), HIV/AIDS (2.5%), sleep apnea (2.0%), and migraine (0.5%)
- 1,031 (27.6%) individuals who died from a drug overdose had only one of the above medical conditions, 427 (11.4%) had two, and 261 (7.0%) had three or more



Most individuals who died from a drug-related overdose (92.6%) had no previous overdose reported by next of kin or other witness reports to the ME/C during their investigation. Among those with a previous drug-related overdose reported, 52.0% had a previous overdose that occurred in the last year.

Within the 30 days preceding death, 7.2% of individuals who died from a drug-related overdose were recently released from any institution. Nearly half (48.7%) were recently released from a hospital. Individuals must have stayed overnight in one of these institutions within the 30 days preceding death to be included. Individuals at risk of overdose who stay overnight in a hospital, jail, prison, detention center, or supervised residential facility may be a target population for substance use resources and education.

Figure 4. Recent Release from Any Institution among Drug-Related Overdose Deaths, 2020¶



Among the 7.2% (267) recently released:

48.7% were released from a hospital

29.2% were released from a jail, prison, or a detention facility

15% were released from a supervised residential facility related to alcohol or substance abuse treatment

7.1% were released from other or unknown institution type

Note: Each category in the figure is displayed in the same order as the key.

¶ Recent release from an institution is defined as an overdose death that occurred within a month of the decedent being released from institutional settings such as prisons/jails, residential treatment facilities, and psychiatric hospitals.

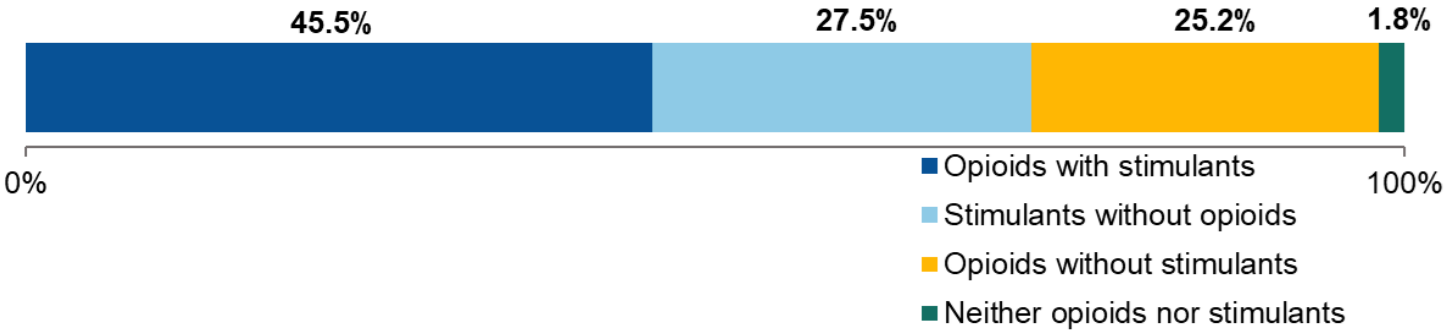
Toxicology

Toxicology reports and death certificates include information about the substance(s) detected in a decedent's system and which substance(s) caused the drug-related overdose death. Drug-related overdose deaths may be attributed to multiple substances, and it is important to note that these substance categories are not mutually exclusive.

Among the 3,734 drug overdose deaths in this report, 97.7% (3,649) had available toxicology information.

- Opioids were detected in 70.7% of drug-related overdose deaths.
- Stimulants were detected in 73.0% of drug-related overdose deaths.
    - More specifically, methamphetamine was detected in 57.9% of cases and was listed as a COD for 54.5% of drug-related overdose deaths.
- Fentanyl, including its metabolites, was detected in 50.4% of overdose deaths and scene evidence indicated that almost all of these deaths were classified as illicitly manufactured fentanyl**.

Figure 5. Percentages of Drug-Related Overdose Deaths by Opioid and Stimulant Detection, 2020

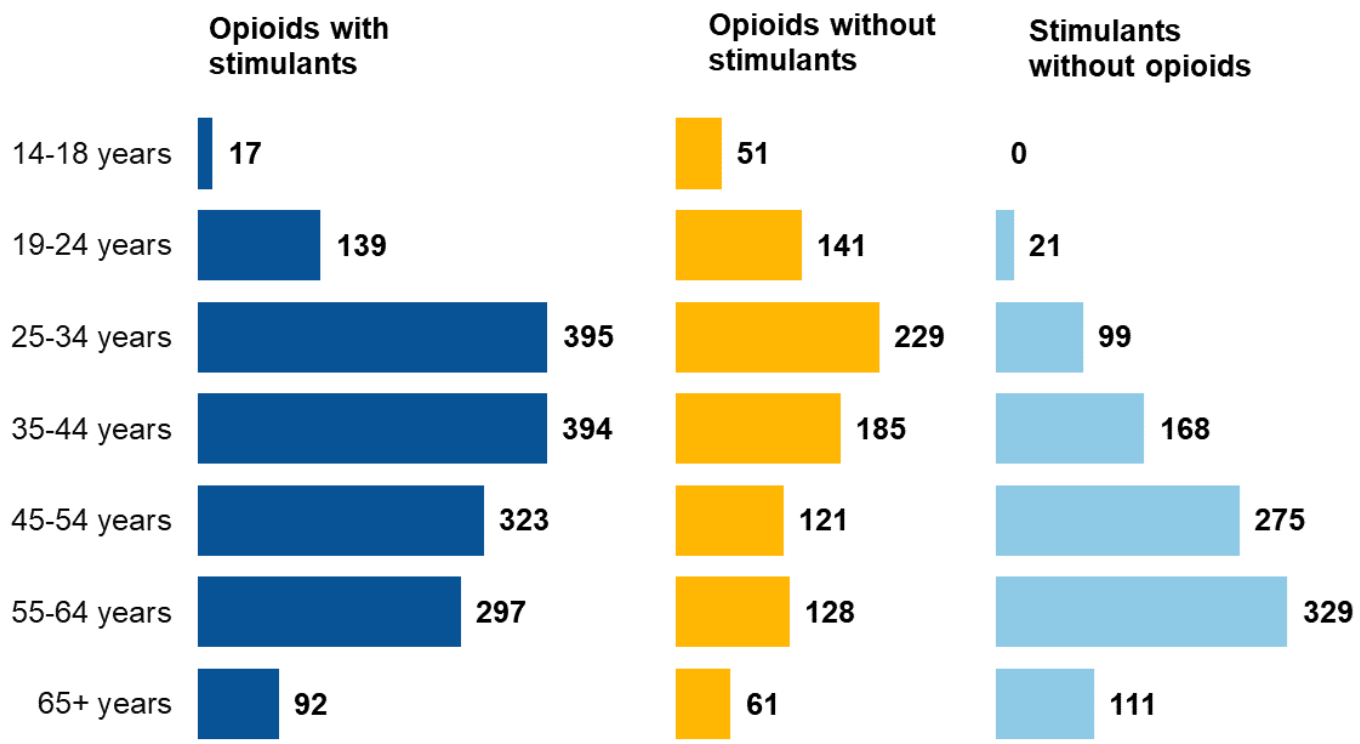


Note: Each category in the figure is displayed in the same order as the key.

A little less than half (45.5%) of all drug-related overdose deaths detected opioids with stimulants, 27.5% detected stimulants without opioids, 25.2% detected opioids without stimulants, and 1.8% detected neither opioids nor stimulants (Figure 5).

** Fentanyl and fentanyl analogs were classified as likely illicitly manufactured using toxicology, scene, and witness evidence.

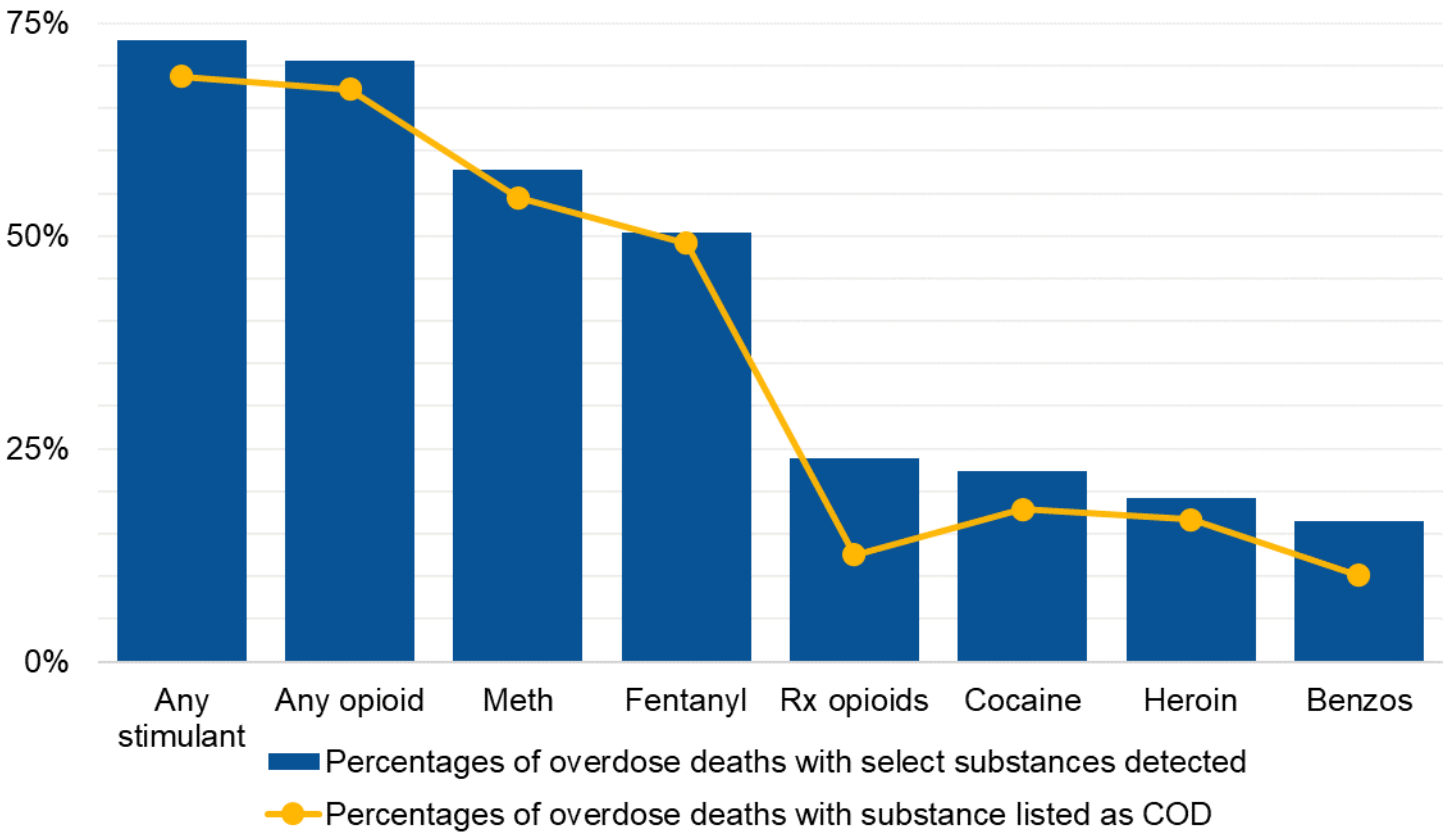
Figure 6. Drug-Related Overdose Death Counts by Age and Opioid and Stimulant Detection, 2020



The number of drug-related overdose deaths that detected the presence of opioids with stimulants, opioids without stimulants, and stimulants without opioids varied by age (Figure 6).

- Individuals in the age groups 45-54 and 55-64 had the highest count of drug-related overdose deaths that involved stimulants without opioids, compared to the other age groups.
- The age group 25-34 had the highest count of drug-related overdose deaths for the category opioids without stimulants.
- Individuals in the age groups 25-34 and 35-44 had the highest counts of drug-related overdose deaths that involved opioids with stimulants.
- The age group 14-18 had the lowest counts of drug-related overdose deaths than the other age groups, regardless of category.
- The age group ≤13 had 4 deaths total and was excluded from Figure 6.

Figure 7. Involved and Cause of Death (COD) Substances, 2020[§]



At least one stimulant was detected in the majority (73.0%) of drug-related overdose deaths and at least one stimulant was listed as the COD for 68.8% of drug-related overdose deaths. Further, at least one opioid was detected in the majority (70.7%) of drug-related overdose deaths and at least one opioid was listed as the COD for 67.3% of drug-related overdose deaths.

For most substances, the percentage of drug-related overdose deaths where the substance was detected and the percentage where the substance was listed as a COD were similar (Figure 7). For example, among the 1,840 drug-related overdose deaths where toxicology detected fentanyl, 1,795 (97.6%) also listed fentanyl as a COD. Notably, prescription opioids and benzodiazepines were more likely to be detected in a drug-related overdose death than to be involved as the COD. Similarly, alcohol was detected in 974 (26.7%) drug-related overdose deaths and was listed as a COD in 13.2% of drug-related overdose deaths.

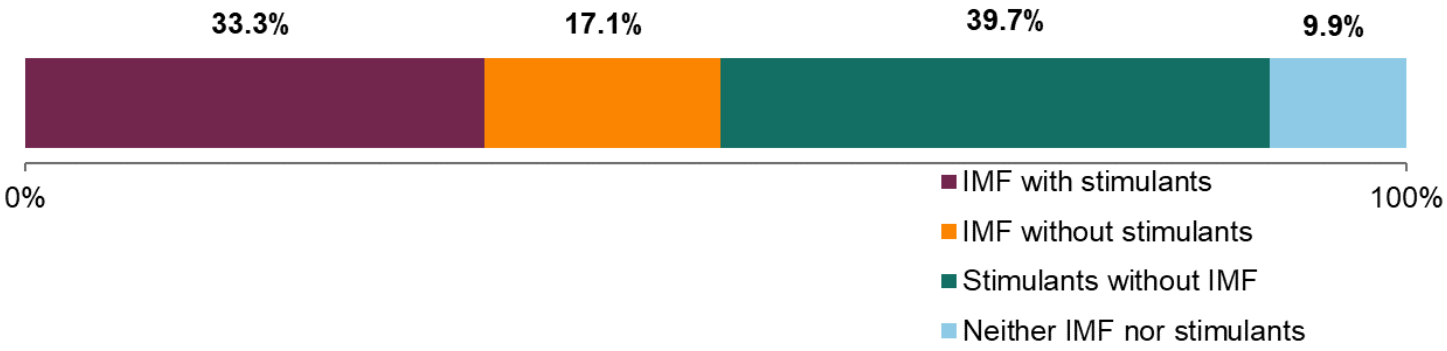
[§] Percentages are not mutually exclusive.

Fentanyl

Fentanyl, including its metabolites, was detected in 50.4% of cases and listed as a COD in 49.2% of drug-related overdose deaths.

- Among the drug-related overdose deaths where fentanyl or fentanyl analogs were present, almost all (99.9%) were classified as illicitly manufactured fentanyl (IMF)**.
- Approximately two-thirds (66.1%) of all cases detecting IMF also detected the presence of stimulants.

Figure 8. Percentages of Drug-Related Overdose Deaths by Fentanyl and Stimulant Detection, 2020



Note: Each category in the figure is displayed in the same order as the key.

A third (33.3%) of all drug-related overdose deaths detected IMF with stimulants, 17.1% detected IMF without stimulants, while 39.7% detected stimulants without IMF (Figure 8). Only 10% of all drug-related overdose deaths contained neither IMF nor stimulants.

** Fentanyl and fentanyl analogs were classified as likely illicitly manufactured using toxicology, scene, and witness evidence.

Scene Evidence

ME/C investigators often include a detailed description of the scene where the decedent was found as a part of their investigative narratives. Patterns and trends in paraphernalia types and substances found on scene may inform prevention and harm reduction efforts to prevent additional drug-related overdose deaths.

It is important to note that some drug-related overdose deaths occur in emergency departments or hospitals and therefore overdose scene information may be unavailable as a part of the investigation.

- Alcohol use was suspected in 455 (12.3%) of drug-related overdose deaths. Suspected alcohol use is determined by scene evidence or witness reports.
- Evidence of drug use was reported in 2,068 (55.4%) drug-related overdose deaths. Evidence of drug use is determined by scene evidence, including evidence of drugs or paraphernalia, and witness reports of the decedent using drugs. It is not based off toxicology results.
- Among overdose deaths with reported drug use evidence, 672 (32.5%) had no evidence of any route of drug administration, 1,106 (53.5%) had evidence of one route of administration, and 290 (14.0%) had evidence of two or more routes of administration.

Table 2. Scene evidence among those with any evidence of drug use, 2020

Scene evidence among those with any evidence of drug use	%	male %	female %
Evidence of route of drug administration			
Evidence of injection	23.0%	80.4%	19.6%
Evidence of ingestion	14.7%	64.8%	35.2%
Evidence of snorting/sniffing	13.4%	78.3%	21.7%
Evidence of smoking	31.5%	76.7%	23.3%
Evidence of rapid overdose††	9.1%	79.4%	20.6%
Evidence of prescription drugs	35.4%	67.3%	32.7%
Evidence of illicit drugs	49.5%	78.0%	22.0%
Evidence of both prescription and illicit drugs	12.4%	76.7%	23.3%

Among all individuals who died of a drug-related overdose with evidence of drug use reported, 31.5% had evidence of drug use via smoking (Table 2). The majority (76.7%) of the individuals who had evidence of smoking drug use were males and 23.3% were females. Of the scenes with evidence of drug use, 49.5% had evidence of illicit drugs, 35.4% had evidence of prescription drugs, and 12.4% had evidence of both prescription and illicit drugs.

†† A rapid overdose is defined as a drug overdose that appeared to occur within 10 minutes of using the drug.

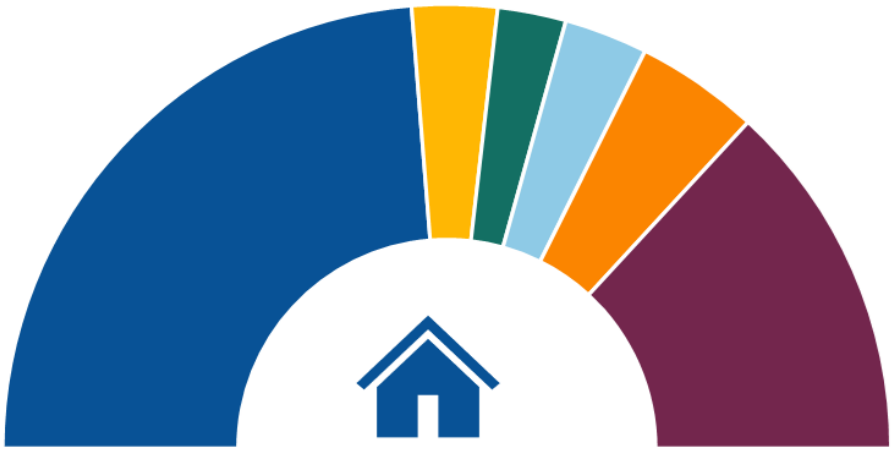
Fatal Overdose and Response

ME/C investigators document details pertaining to the fatal drug-related overdose response in their reports. When available, this information can include details on naloxone administration, presence of a potential bystander(s), and the fatal overdose location. This additional context can help inform response-focused interventions, such as expanded naloxone access. This report details the response to drug-related overdose deaths and does not contain information on non-fatal overdoses with successful resuscitation; therefore, these results are not generalizable to all overdoses.

Houses and apartments represented almost half (47.5%) of overdose locations among those who died of a drug-related overdose (Figure 9).

- Among those who overdosed in a house or apartment the majority, 83.4%, were in their own home.
- Among those who overdosed at a house or apartment, 67.2% had an opioid listed as a substance causing the overdose death.

Figure 9. Overdose Location of Drug-Related Overdose Deaths, 2020



- House, apartment (47.5%)
- Street/road, sidewalk, alley, highway, freeway, parking lot/public parking garage (6.2%)
- Motor vehicle (5%)
- Hotel/motel (6%)
- Other (9%)
- Unknown (26.3%)

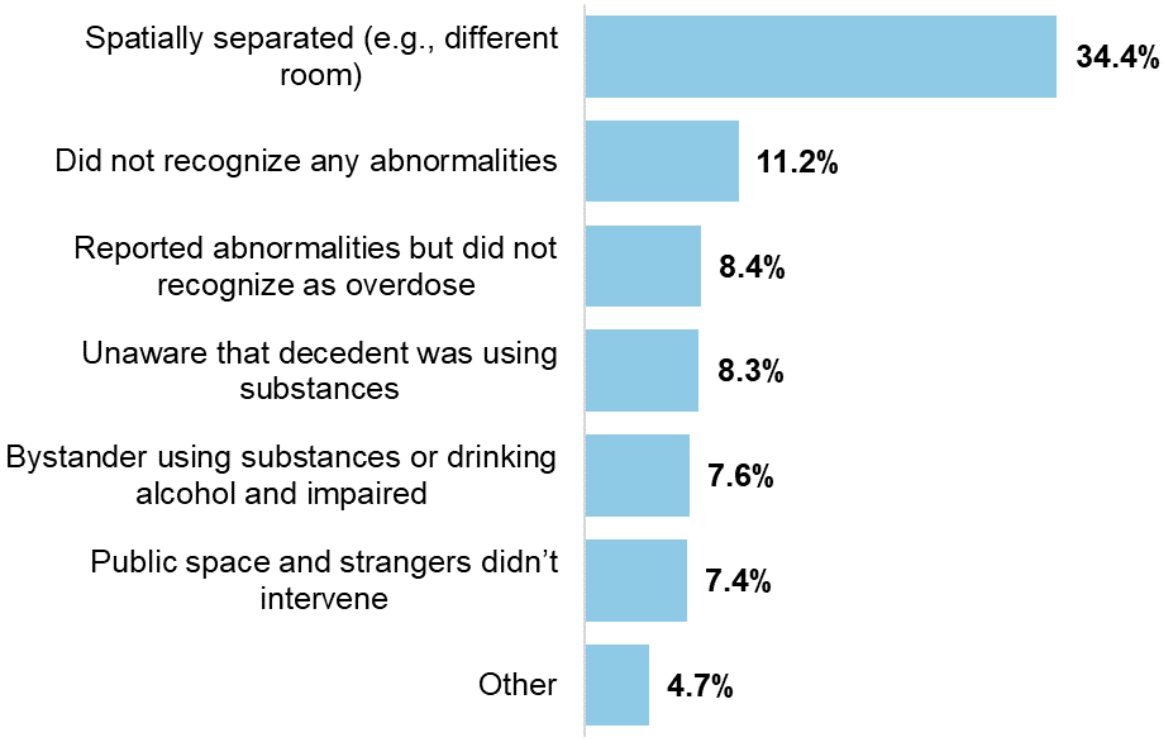
Note: Each category in the figure is displayed in the same order as the key.

- Emergency Medical Services were present at the overdose scene in 85.6% of overdose deaths, they were not present at 6.3% of scenes, and it was unknown if they were present at 8.1% of scenes.
  - 4.8% of individuals who died from a drug-related overdose had a documented pulse on first responder arrival
  - Based on the ME/C report, it was unknown if 51.5% of individuals who died from a drug-related overdose had a pulse present on first responder arrival

Fatal Overdose and Response

- 94.7% of the drug-related overdose deaths were related to substance use/misuse[§§]
- 11.6% of individuals who died from a drug-related overdose had known naloxone administration as a part of the response. Naloxone administration status was unknown in 51% of drug-related overdose deaths.
    - Among those with any opioid as a cause of death, 14.8% had naloxone administered as a part of the response.
- A layperson (someone who is not a first responder or medical health professional) administered naloxone in 1.7% of all cases and in 14.5% of cases where naloxone administration occurred.
    - Among those with any opioid as a cause of death, 2.3% had naloxone administered by a layperson.
- 16.8% of individuals who died of a drug-related overdose were seen in the emergency department as a part of the fatal overdose response
    - 7.0% of individuals who died of a drug-related overdose were admitted to inpatient care
- About a third of overdose deaths (34.9%) had a potential bystander[¶¶] present

Figure 10. Reasons for No Response or Delayed Response to Drug-Related Overdose Deaths with a Bystander Present, 2020[§]



Among the drug-related overdose deaths that did have a potential bystander nearby there was sometimes no response or a delayed response by the potential bystander. The most common reason for no response or a delayed response by a potential bystander was spatial separation. If a bystander response was made with no noted delay, none of the options in Figure 10 would be indicated for that overdose death.

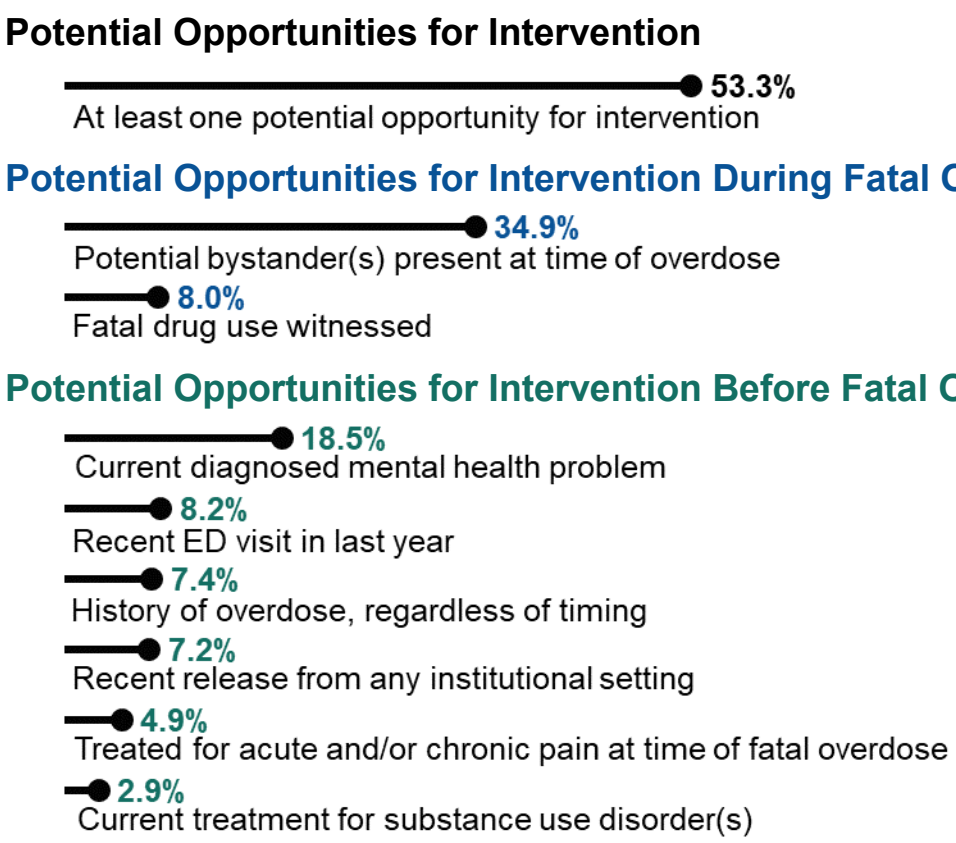
[§§] Type of overdose categories: Overdose related to substance use/misuse (overdose involving misuse of prescription drugs or use of illicit drugs for the feelings the drugs provide), victim unintentionally takes a drug or wrong dosage, overmedication (taking more than the prescribed dosage), took prescribed dosage, other, and unknown.
[¶¶] A bystander is defined as an individual greater than 11 years old who was physically nearby either during or shortly preceding a drug overdose who potentially had an opportunity to intervene and respond to the overdose.
[§] Percentages are not mutually exclusive.

Potential Intervention Opportunities

At least one potential opportunity for intervention existed for 53.3% of drug-related overdose deaths. The following circumstances represent potential opportunities to provide linkages to care, treatment resources, and other life-saving interventions. The most common potential opportunity for intervention was having a bystander[¶¶] present at the time of overdose.

The percentage of drug-related overdose deaths with at least one documented potential opportunity for intervention varied depending on opioid and stimulant detection.

- Among overdose deaths where at least one opioid and no stimulants were detected, 62.6% had at least one potential opportunity for intervention.
- For opioids with stimulants overdose deaths, 48.8% had at least one potential opportunity for intervention.
- For stimulants without opioids overdose deaths, 51.2% had at least one potential opportunity for intervention.
- For neither opioids nor stimulants overdose deaths, 62.6% had at least one potential opportunity for intervention.



See next page for Resources for potential opportunities for intervention both before and during an overdose.

[¶¶] A bystander is defined as an individual greater than 11 years old who was physically nearby either during or shortly preceding a drug overdose who potentially had an opportunity to intervene and respond to the overdose. A bystander may or may not know the decedent and/or if the decedent was using drugs.

Resources

CDC Drug Overdose Prevention: Public Health Considerations for Strategies and Partnerships

Center for Disease Control and Prevention: Public Health Considerations for Strategies and Partnerships webpage

CDPH Drug Overdose Response: Partner Recommendations

California Department of Public Health (CDPH) Drug Overdose Response webpage

Interventions that could take place prior to an overdose/prevent an overdose

Resources to Help Those with Substance Use Disorder

Choose Change California webpage

Resources for People Who Use Drugs

California Department of Public Health (CDPH) Overdose Prevention Initiative Resources for People Who Use Drugs webpage

Syringe Services Programs & Harm Reduction

California Department of Public Health (CDPH) Office of AIDS Syringe Services Programs & Harm Reduction webpage

Resources for Healthcare Providers

California Department of Public Health (CDPH) Overdose Prevention Initiative Resources for Health Care Providers webpage

Resources for Adult Role Models and Schools

California Department of Public Health (CDPH) Overdose Prevention Initiative Resources for Adult Role Models and Schools webpage

Interventions during an overdose

Naloxone is a life-saving medication used to reverse an opioid overdose.
To learn more about Naloxone visit:

California Department of Public Health (CDPH) Overdose Prevention Initiative – Naloxone webpage

For additional resources and CDPH drug-related overdose data please visit:

California Department of Public Health (CDPH) Overdose Prevention Initiative (OPI) webpage

Notes on CA SUDORS data

These 2020 SUDORS data presented, represent 42.3% of all unintentional and undetermined drug-related overdose deaths in California in 2020. As such, the results presented in this data brief may not be generalizable to the entire state of California.

Changes in percentages or counts from year to year in CA SUDORS data should be interpreted with caution as county participation and coverage vary year to year. We do not recommend using and comparing 2020 CA SUDORS data in this report with 2019 or 2021 CA SUDORS data for accurate trend analyses.

Data represents circumstances and evidence reported in available source documents; these are likely underestimates as death investigators might have limited information depending on the circumstances.

Toxicology testing capacity may change over time which may lead to differences in data availability and quality of drug detected and determined to be the cause of death.

Note on California Assembly Bill 1726: CDC updated race categories in April 2024 to include more specific Asian and Pacific Islander race categories. The added categories can be included in any SUDORS data products as appropriate starting with the 2024 full year of SUDORS data.

Note on California Assembly Bill 959: SUDORS data does include the capacity to collect sexual orientation data. However, the majority of ME/C reports do not collect or note an individual's sexual orientation resulting in data missing and unable to be included in data products.

Data Sources

California State Unintentional Drug Overdose Reporting System (CA SUDORS), Substance and Addiction Prevention Branch, Center for Healthy Communities, California Department of Public Health (CDPH).

Vital Statistics (death certificate) data: California Comprehensive Death File (Dynamic) 2020 and 2021.

References

1. Hedegaard, H., Miniño, A.M., Spencer, M.R., & Warner, M. (2021). Drug overdose deaths in the United States, 1999–2020 (NCHS Data Brief No. 428). National Center for Health Statistics. https://dx.doi.org/10.15620/cdc:112340
2. California Overdose Surveillance Dashboard. Prepared by California Department of Public Health (CDPH) - Substance and Addiction Prevention Branch (SAPB). Accessed on 06/01/24. https://skylab.cdph.ca.gov/ODdash/.

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California State Unintentional Drug Overdose Reporting System (SUDORS), Substance and Addiction Prevention Branch, California Department of Public Health (CDPH). Substance and Addiction Prevention Branch webpage (http://www.cdph.ca.gov/sapb)

About the Overdose Prevention Initiative

CDPH's Overdose Prevention Initiative (OPI) works on the complex and changing nature of the drug overdose epidemic through prevention and research activities. OPI works to advance and amplify CDPH's unified response to reduce the harms from substance misuse and end the evolving drug overdose crisis in California through increased information sharing, policy development, and implementation of its seven core strategies:

- Improve CDPH and state agency coordination.
- Improve state and local surveillance.
- Support individual and community resiliency by addressing upstream drivers of health.
- Increase public awareness and education.
- Expand naloxone access, saturation, and education.
- Promote harm reduction and drug checking services.
- Promote treatment and reduce stigma

California's Approach to the Overdose Epidemic webpage

Contact: opi@cdph.ca.gov