Nonfatal Drug Overdoses Treated in Emergency Departments — United States, 2016–2017

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In 2017, drug overdoses caused 70,237 deaths in the United States, a 9.6% rate increase from 2016 (1). Monitoring nonfatal drug overdoses treated in emergency departments (EDs) is also important to inform community prevention and response activities. Analysis of discharge data provides insights into the prevalence and trends of nonfatal drug overdoses, highlighting opportunities for public health action to prevent overdoses. Using discharge data from the Healthcare Cost and Utilization Project’s (HCUP) Nationwide Emergency Department Sample (NEDS), CDC identified nonfatal overdoses for all drugs, all opioids, nonheroin opioids, heroin, benzodiazepines, and cocaine and examined changes from 2016 to 2017, stratified by drug type and by patient, facility, and visit characteristics. In 2017, the most recent year for which population-level estimates of nonfatal overdoses can be generated, a total of 967,615 nonfatal drug overdoses were treated in EDs, an increase of 4.3% from 2016, which included 305,623 opioid-involved overdoses, a 3.1% increase from 2016. From 2016 to 2017, the nonfatal overdose rates for all drug types increased significantly except for those involving benzodiazepines. These findings highlight the importance of continued surveillance of nonfatal drug overdoses treated in EDs to inform public health actions and, working collaboratively with clinical and public safety partners, to link patients to needed recovery and treatment resources (e.g., medication-assisted treatment).

The 2017 HCUP NEDS data set is a nationally representative, stratified sample of ED visits from nonfederal, hospital-based EDs in 36 U.S. states and the District of Columbia. Hospital discharge data represent the reference standard in nonfatal overdose surveillance and allow generation of population-level estimates to examine rate changes over time. Using 2016 and 2017 NEDS data, six drug overdose indicators were classified using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) discharge diagnosis codes: 1) all-drugs, 2) all opioids, 3) nonheroin opioids, 4) heroin, 5) benzodiazepines, and 6) cocaine. All diagnosis fields were searched for initial encounter visits for intent (i.e., unintentional, intentional self-harm, assault, and undetermined). Polysubstance overdoses could be classified under multiple overdose indicators; thus, groups are not mutually exclusive.

Annual rates for drug overdose per 100,000 population were calculated by sex, age group, U.S. Census region of facility, county urbanization level of facility, and intent. All rates, except age group, were age-adjusted. Absolute and relative rate changes were calculated from 2016 to 2017 by patient, facility, and visit characteristics for each overdose indicator; tests were used to compare changes that occurred from 2016 to 2017 and for pairwise comparisons between groups for 2017 rates, with p-values <0.05 considered statistically significant. Only selected comparisons were tested for statistical significance, and all results presented were statistically significant. Analyses were conducted using SAS (version 9.4; SAS Institute) to account for HCUP’s complex survey design and weighting.

In 2017, there were 967,615 nonfatal drug overdose ED visits (300.2 per 100,000 population) (Table 1). From 2016 to 2017, rates for nonfatal overdoses increased for those involving all drugs (4.3%), all opioids (3.1%), nonheroin opioids (3.6%), heroin (3.6%), and cocaine (32.9%), whereas the rate for overdoses involving benzodiazepines decreased 5.2% (Table 1) (Table 2) (Table 3).

In 2017, the highest overdose rates for all drugs were among females (308.2); persons aged 15–34 years.

† Facility geographic regions were derived from U.S. Census regions: https://www.hcups-us.ahrq.gov/db/vars/hosp_region/nedsnote.jsp. Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

** County urbanization levels for facilities were determined using the 2013 NCHS Urban-Rural Classification Scheme for Counties. https://www.cdc.gov/nchs/data_access/urban_rural.htm.

†† Age-adjusted rates were calculated using the 2000 U.S. Census standard population age distribution. All rates were calculated per 100,000 population. Crude rates were rounded to one decimal place before age-adjusting, and statistical testing was completed using rates rounded to one decimal place and standard errors rounded to three decimal places.

§§ Absolute rate change is the difference in rates from 2016 to 2017. Relative change is the absolute rate change divided by the 2016 rate, multiplied by 100.

††† Absolute and relative rate changes were calculated from 2016 to 2017 by patient, facility, and visit characteristics for each overdose indicator; tests were used to compare changes that occurred from 2016 to 2017 and for pairwise comparisons between groups for 2017 rates, with p-values <0.05 considered statistically significant. Only selected comparisons were tested for statistical significance, and all results presented were statistically significant. Analyses were conducted using SAS (version 9.4; SAS Institute) to account for HCUP’s complex survey design and weighting.

‡‡‡ Facility geographic regions were derived from U.S. Census regions: https://www.hcups-us.ahrq.gov/db/vars/hosp_region/nedsnote.jsp. Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

§§§ County urbanization levels for facilities were determined using the 2013 NCHS Urban-Rural Classification Scheme for Counties. https://www.cdc.gov/nchs/data_access/urban_rural.htm.
### TABLE 1. Annual number and age-adjusted rate* of emergency department visits † for nonfatal overdoses involving all drugs§ and nonfatal overdoses involving all opioids,¶ by patient, facility, and visit characteristics — United States, 2016 and 2017

| Characteristic                | All drugs§ | All opioids¶ |  
|------------------------------|------------|--------------|
|                              | 2016       | 2017         | Change from 2016 to 2017** |
|                              | No. Rate (SE) | No. Rate (SE) | Absolute rate change | Relative rate change |
| All                          | 293,900     | 90.2 (0.169) | 305,623              | 93.0 (0.171) |
| Male                         | 172,609     | 107.5 (0.262) | 182,169               | 112.6 (0.268) |
| Female                       | 121,223     | 72.5 (0.213)  | 123,428               | 73.1 (0.213)  |
| Sex                          | 161,761     | 98.0 (0.229)  | 175,137               | 105.4 (0.238) |
| Age group (yrs)              | 11,613      | 5.7 (0.042)   | 12,806                | 6.7 (0.044)   |
| 0–14                         | 9,386       | 4.7 (0.038)   | 10,690                | 5.8 (0.039)   |
| 15–19                        | 2,227       | 1.2 (0.015)   | 2,816                 | 1.6 (0.017)   |
| 20–24                        | 3,120       | 1.7 (0.015)   | 3,783                 | 2.1 (0.016)   |
| 25–34                        | 3,096       | 1.7 (0.015)   | 3,783                 | 2.1 (0.016)   |
| 35–44                        | 3,096       | 1.7 (0.015)   | 3,783                 | 2.1 (0.016)   |
| 45–54                        | 3,096       | 1.7 (0.015)   | 3,783                 | 2.1 (0.016)   |
| 55–64                        | 3,096       | 1.7 (0.015)   | 3,783                 | 2.1 (0.016)   |
| ≥65                          | 3,096       | 1.7 (0.015)   | 3,783                 | 2.1 (0.016)   |
| U.S. Census region§§         | 162,663     | 293.6 (0.742) | 163,785               | 296.0 (0.741) |
| Northeast                    | 121,223     | 72.5 (0.213)  | 123,428               | 73.1 (0.213)  |
| Midwest                      | 41,440      | 7.4 (0.012)   | 42,357                | 7.8 (0.013)   |
| South                        | 179,658     | 335.5 (0.558) | 180,935               | 341.8 (0.560) |
| County urbanization level††   | 250,565     | 495.0 (0.505) | 254,375               | 508.0 (0.512) |
| Large central metro          | 193,284     | 372.0 (0.650) | 197,210               | 387.0 (0.662) |
| Medium metro                 | 214,132     | 323.1 (0.710) | 217,743               | 341.2 (0.728) |
| Small metro                  | 93,891      | 326.6 (1.091) | 92,991                | 322.5 (1.083) |
| Micropolitan (nonmetro)      | 92,509      | 352.3 (1.187) | 94,676                | 363.3 (1.210) |
| Noncore (nonmetro)           | 58,074      | 328.2 (1.409) | 59,180                | 334.8 (1.425) |
| Intent***                    | 580,671     | 178.9 (0.238) | 622,351               | 189.9 (0.245) |
| Unintentional                | 240,919     | 73.8 (0.153)  | 258,437               | 81.8 (0.282)  |
| Intentional self-harm        | 37,737      | 91.1 (0.469)  | 41,246                | 98.2 (0.484)  |
| Nonfatal drug overdose visits are not mutually exclusive because overdose visits might involve more than one drug. Summing of categories will result in greater than the total number of visits in a year.†† Facility geographic regions were derived from U.S. Census regions: https://www.cdc.gov/nchs/data_access/urban_rural.htm. **Statistically significant (p-value <0.05). †† Facility geographic regions were derived from U.S. Census regions: Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. ***In ICD-10-CM, the fifth or sixth character in the diagnosis code indicates intent. Possible values include accidental (unintentional), intentional self-harm, assault, undetermined intent, adverse effect, and underdosing. Adverse effect and underdosing are not applicable values for all of the different drug poisoning diagnosis codes. In this report, the intent was set to "Missing" for emergency department visits with multiple overdose intents listed.

Abbreviation: SE = standard error.

(Nonfatal drug overdose visits are not mutually exclusive because overdose visits might involve more than one drug. Summing of categories will result in greater than the total number of visits in a year.)
In the Northeast, the overdose rate for all drugs remained stable, and the overdose rate for all opioids decreased 5.8%.

Overdose rates for nonheroin opioids and heroin were highest among males (44.5 and 66.7, respectively), persons aged 25–34 years (63.7 and 44.5, respectively), persons in the Midwest (51.2 and 77.0, respectively), and those in medium metro counties (51.6 and 57.8, respectively) (Table 2). Increases in rates for heroin overdose were observed among males (4.1%) and females (3.0%), whereas rates for nonheroin opioid overdoses increased only among males (7.0%). Heroin overdose rates decreased 50% among persons aged 0–14 years, 21.8% among persons aged 15–19 years, and 14.1% among persons aged 20–24 years. Rates for overdoses involving nonheroin opioids and heroin increased 8.5% and 8.6% in the Midwest, respectively, and 3.4% and 8.2%, respectively, in the South. Heroin overdose rates also increased 11.3% in the Midwest, respectively, and 3.4% and 8.2%, respectively, in the South.
TABLE 3. Annual number and age-adjusted rate* of emergency department visits† for nonfatal overdoses involving benzodiazepines§ and nonfatal overdoses involving cocaine,¶ by patient, facility, and visit characteristics — United States, 2016 and 2017

| Characteristic                  | 2016        | 2017        | Absolute rate change | Relative rate change | 2016        | 2017        | Absolute rate change | Relative rate change |
|---------------------------------|-------------|-------------|----------------------|----------------------|-------------|-------------|----------------------|----------------------|
| Total                           | 123,548     | 118,352     | −2.0                 | −5.2††               | 27,247      | 36,919      | 2.8                  | 32.9††               |
| Sex                             |             |             |                      |                      |             |             |                      |                      |
| Male                            | 50,313      | 48,218      | −1.6                 | −5.1††               | 18,498      | 24,852      | 3.7                  | 32.2††               |
| Female                          | 73,219      | 70,130      | −2.3                 | −5.2††               | 8,745       | 12,052      | 2.0                  | 36.4††               |
| Age group (yrs)                 |             |             |                      |                      |             |             |                      |                      |
| 0–14                            | 3,866       | 3,563       | −0.5                 | −7.9††               | 129         | 160         | 0.1                  | 50.0††               |
| 15–19                           | 9,721       | 9,451       | −3.6                 | −6.7§§               | 689         | 876         | 0.8                  | 24.2§§               |
| 20–24                           | 11,882      | 11,278      | −2.1                 | −4.0††               | 2,546       | 2,857       | 1.5                  | 13.2††               |
| 25–34                           | 23,707      | 22,914      | −2.0                 | −4.9††               | 6,703       | 8,903       | 4.6                  | 30.7§§               |
| 35–44                           | 21,439      | 20,776      | −2.2                 | −4.2††               | 5,437       | 7,132       | 4.0                  | 29.9††               |
| 45–54                           | 22,890      | 21,552      | −5.0                 | −9.3††               | 6,804       | 8,687       | 4.6                  | 28.9§§               |
| 55–64                           | 18,260      | 18,478      | 0.0                  | 0.0                  | 4,121       | 6,787       | 6.3                  | 63.6§§               |
| ≥65                             | 11,783      | 11,841      | −0.6                 | −2.5                 | 816         | 1,517       | 1.3                  | 76.5††               |
| U.S. Census region**            |             |             |                      |                      |             |             |                      |                      |
| Northeast                       | 18,948      | 17,920      | −2.0                 | −6.0††               | 6,892       | 8,040       | 1.9                  | 15.4††               |
| Midwest                         | 29,863      | 27,706      | −3.6                 | −8.0††               | 5,188       | 6,430       | 1.9                  | 24.7††               |
| South                           | 49,807      | 48,479      | −1.6                 | −3.9§§               | 12,944      | 18,878      | 1.8                  | 46.6††               |
| West                            | 24,931      | 24,267      | −1.2                 | −3.7††               | 2,673       | 3,571       | 1.1                  | 32.4††               |
| County urbanization level**     |             |             |                      |                      |             |             |                      |                      |
| Large central metro             | 32,154      | 34,086      | 1.5                  | 4.7††                | 9,926       | 17,525      | 6.9                  | 71.9††               |
| Large fringe metro              | 27,493      | 29,413      | −4.6                 | −13.5§§              | 6,171       | 6,901       | 0.9                  | 11.5§§               |
| Medium metro                    | 27,875      | 29,427      | 1.9                  | 4.6††                | 6,390       | 6,948       | 0.8                  | 8.2††                |
| Small metro                     | 13,829      | 11,541      | −8.7                 | −18.0††              | 1,877       | 2,051       | 0.6                  | 8.8††                |
| Micropolitan (nonmetro)         | 12,574      | 11,083      | −5.6                 | −11.9††              | 1,418       | 1,770       | 1.4                  | 25.0††               |
| Noncore (nonmetro)              | 8,604       | 7,229       | −7.1                 | −14.7††              | 678         | 859         | 1.3                  | 32.5††               |
| Intent***                       |             |             |                      |                      |             |             |                      |                      |
| Unintentional                   | 57,597      | 55,843      | −0.7                 | −4.0††               | 20,758      | 30,364      | 2.8                  | 43.8††               |
| Intentional self-harm           | 57,200      | 55,583      | −0.6                 | −3.4††               | 3,717       | 3,828       | 0.0                  | 0.0                  |
| Assault                         | 325         | 287         | 0.0                  | 0.0                  | 101         | 73         | 0.0                  | −33.3††               |
| Undetermined                    | 7,024       | 5,286       | −0.6                 | −27.3††              | 2,396       | 2,297       | 0.0                  | 0.0                  |

**Abbreviation: SE = standard error.
* Rates are age-adjusted using the direct method and the 2000 U.S. Census standard population, except for age-specific crude rates. All rates are per 100,000 population. Statistical testing was completed using rates rounded to one decimal place and standard errors rounded to three decimal places.
† Categories of nonfatal drug overdose visits are not mutually exclusive because overdose visits might involve more than one drug. Summing of categories will result in greater than the total number of visits in a year.
§ Nonfatal drug overdose visits are classified using the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD–10-CM). ICD-10-CM diagnosis codes for benzodiazepines included T42.4X1A–T42.4X4A.
¶ ICD-10-CM diagnosis codes for cocaine included T40.5X1A–T40.5X4A.
** Absolute rate change is the difference in rates from 2016 to 2017. Relative rate change is the absolute rate change divided by the 2016 rate, multiplied by 100. Z-tests were used to determine significance.
†† Statistically significant (p-value <0.05).
§§ Facility geographic regions were derived from U.S. Census regions: https://www.hcup-us.ahrq.gov/db/vars/hosp_region/nedsnote.jsp.
** Facility urbanization levels for facilities were determined using the 2013 NCHS Urban-Rural Classification Scheme for Counties.
*** In ICD-10-CM, the fifth or sixth character in the diagnosis code indicates intent. Possible values include accidental (unintentional), intentional self-harm, assault, undetermined intent, adverse effect, and underdosing. Adverse effect and underdosing are not applicable values for all of the different drug poisoning diagnosis codes. In this report, the intent was set to "Missing" for emergency department visits with multiple overdose intents listed.

West. In the Northeast, the rate for heroin-involving overdoses decreased 8.8%. In 2017, the highest overdose rates for benzodiazepines were among females (42.3), persons aged 20–44 years (range = 50.5–51.0), persons in the Midwest (41.4), and persons in medium metro counties (43.5) (Table 3). The rates for cocaine overdoses in 2017 were highest among males (15.2), persons aged 25–34 years (19.6) and aged 45–54 years (20.5), as well as persons in the South census region (15.1) and large central metro counties (16.5). From 2016 to 2017, rates for benzodiazepine overdoses decreased 5.1% among males and 5.2% among females. Benzodiazepine overdose rates decreased among most age groups, and cocaine-involved overdoses rates increased across all age groups. All regions of the country experienced decreases in the rates of benzodiazepine overdoses and increases in the rates of cocaine overdoses. In large central metro counties, overdose rates increased for all drugs (11.7%), all opioids (15.2%), nonheroin
opioids (11.9%), heroin (21.4%), benzodiazepines (4.7%), and cocaine (71.9%) (Table 1) (Table 2) (Table 3). Most overdoses were unintentional (75% overall; range = 48% for benzodiazepines to 91% for heroin). A consistent finding across all overdose indicators, except for benzodiazepines, was that unintentional overdoses significantly increased from 2016 to 2017. Intentional self-harm overdoses increased 4.8% for all drugs but decreased 6.7% for all opioids, 7.4% for nonheroin opioids, and 3.4% for benzodiazepines.

**Discussion**

In 2017, a total of 967,615 nonfatal drug overdoses were treated in U.S. EDs. From 2016 to 2017, nonfatal overdose ED visit rates increased for each drug type except benzodiazepines, for which rates decreased 5.2%. The large increase in cocaine overdose rates (32.9%) might indicate potential increase in polysubstance overdose. A previous study found that in 2016, approximately 27% of nonfatal cocaine overdoses treated in EDs also involved an opioid, and cocaine-involved overdoses with an opioid reported increased 17% from 2015 to 2016, whereas cocaine-involved overdoses without an opioid decreased 14% (2). Future analyses examining drug combinations could help to determine the extent to which polysubstance use affects overdose surveillance of specific drug types. In this study, rates for nonfatal unintentional overdoses were shown to increase for each drug type except benzodiazepines and for the all-drug overdose category with self-harm intent. Rates for nonfatal drug overdoses associated with intentional self-harm, assault, and undetermined intent decreased or remained stable for most overdose indicators. Results suggest a leveling of intentional drug overdoses consistent with mortality data (3). Continued monitoring of nonfatal drug overdoses treated in EDs is important to inform community prevention and response activities.

Changes in rates of drug overdoses varied by age group, region, and urbanization level. Decreases in rates among persons aged 15–24 years for all opioids and heroin might be due to decreases in self-reported drug use and initiation. Regionally, increases in overdose rates occurred for all drugs, all opioids, heroin, and cocaine in the West, Midwest, and South, which are consistent with increases in drug supply and deaths across these regions and states (4,5). For example, from 2016 to 2017, cocaine drug reports increased significantly in the South and Midwest (4), and cocaine-involved deaths increased in the West, Midwest, and South (5). The decrease in the rate for nonfatal all opioid overdoses seen in the Northeast is not consistent with drug supply reports, which increased in 2017 (4). However, it is possible that the lethality of opioids in the supply (e.g., illicitly manufactured fentanyl) might result in an increase in cases with rapid progression to death, with fewer opportunities for transport to an ED for care. Large central metro areas experienced increases in every overdose indicator; these are largely consistent with results from other data sources, including syndromic ED surveillance and mortality data from similar periods (6,7).

The findings in this report are subject to at least seven limitations. First, CDC did not assess polysubstance overdose, and it is possible that some overdoses were not classified correctly given limits of drug testing in EDs (8). Second, CDC could not determine whether illicit or prescribed drugs were driving some drug-specific overdose rate increases from 2016 to 2017. Third, coding practices might vary by facility and might affect the rates presented rather than actual changes in overdose prevalence. Fourth, ED visits included unique events, not unique persons, and might reflect multiple visits for one person. Fifth, these findings likely underestimated the actual prevalence of nonfatal drug overdoses because some overdoses might not be seen in EDs. Sixth, determining overdose intent in the ED setting without necessary patient context might be challenging, which might affect the accuracy of recording of intent. Finally, hospital discharge data are not as timely or localized as other data sources, including ED syndromic surveillance and emergency medical services data. Syndromic surveillance and emergency medical services data are also available at the state level and smaller geographic areas and can inform allocation of resources at a more local level. The results might not represent current trends in overdose morbidity because of the data time lag and the rapidly evolving drug market. However, they do provide more representative, comparable population estimates derived from final clinical diagnoses than do other data sources.

Overall, the increases in nonfatal overdoses suggest that enhanced surveillance, prevention, treatment, and public safety response efforts are needed to curb the increasing trends of nonfatal drug overdoses. In September 2019, CDC implemented the Overdose Data to Action (OD2A) program, that strives to improve and expand surveillance and prevention efforts for states, territories, and localities through higher quality, more comprehensive, and more timely data on drug overdose morbidity and mortality, along with enhanced and data-driven prevention activities. With these activities, many

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* https://www.cdc.gov/drugoverdose/pdf/pubs/2019-cdc-drug-surveillance-report.pdf.
Summary

What is already known about this topic?
In 2017, U.S. drug overdose deaths increased 9.6% from 2016. Emergency department (ED) discharge data can estimate nonfatal overdose prevalence and, because of the ability to conduct standardized analyses, track changes across time.

What is added by this report?
From 2016 to 2017, the nonfatal overdose ED visits rates for all drugs, all opioids, nonheroin opioids, heroin, and cocaine increased significantly, whereas those for benzodiazepines decreased significantly.

What are the implications for public health practice?
Using ED data to track trends in nonfatal drug overdoses is a critical strategy for expanding overdose surveillance and tailoring prevention resources to populations most affected, including initiation of medication-assisted treatment in ED settings and subsequent linkage to care for substance use disorders.

Persons who would have died from a fatal overdose are now able to receive lifesaving care, including better access to medication-assisted treatment, which might be initiated in ED settings, and subsequent linkage to care for substance use disorders and co-occurring mental disorders (9). In addition, implementing postoverdose protocols in EDs, including naloxone provision to patients who use opioids or other illicit drugs (9), checking patients’ prescription histories in prescription drug monitoring program data, and following the CDC Guideline for Prescribing Opioids for Chronic Pain when treating patients with chronic pain might prevent future overdoses (10).

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References

1. Hedegaard H, Miniño AM, Warner M. Drug overdose deaths in the United States, 1999–2017. NCHS data brief, no. 329. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2018. https://www.cdc.gov/nchs/data/databriefs/db329-h.pdf
2. Hoots B, Vivolo-Kantor A, Seth P. The rise in non-fatal and fatal overdoses involving stimulants with and without opioids in the United States. Addiction 2020. Epub January 7, 2020. https://doi.org/10.1111/add.14878
3. Hempstead K, Phillips J. Divergence in recent trends in deaths from intentional and unintentional poisoning. Health Aff (Millwood) 2019;38:29–35. https://doi.org/10.1377/hlthaff.2018.05186
4. Drug Enforcement Administration, Diversion Control Division. National Forensic Laboratory Information. System: NFLIS-Drug 2017 annual report. Washington, DC: US Department of Justice, Drug Enforcement Administration; 2018. https://www.nflis.deadiversion.usdoj.gov/DesktopModules/ReportDownloads/Reports/NFLIS-Drug-AR2017.pdf
5. Kariisa M, Scholl L, Wilson N, Seth P, Hoots B. Drug overdose deaths involving cocaine and psychostimulants with abuse potential—United States, 2003–2017. MMWR Morb Mortal Wkly Rep 2019;68:388–95. https://doi.org/10.15585/mmwr.mm6817a3
6. Vivolo-Kantor AM, Seth P, Gladden RM, et al. Vital signs: trends in emergency department visits for suspected opioid overdoses—United States, July 2016–September 2017. MMWR Morb Mortal Wkly Rep 2018;67:279–85. https://doi.org/10.15585/mmwr.mm6709e1
7. Scholl L, Seth P, Kariisa M, Wilson N, Baldwin G. Drug and opioid-involved overdose deaths—United States, 2013–2017. MMWR Morb Mortal Wkly Rep 2018;67:1419–27. https://doi.org/10.15585/mmwr.mm675152e1
8. Morrow JB, Ropero-Miller JD, Catlin ML, et al. The opioid epidemic: moving toward an integrated, holistic analytical response. J Anal Toxicol 2019;43:1–9. https://doi.org/10.1093/jat/bky049
9. Houry DE, Haegerich TM, Vivolo-Kantor A. Opportunities for prevention and intervention of opioid overdose in the emergency department. Ann Emerg Med 2018;71:688–90. https://doi.org/10.1016/j.annemergmed.2018.01.052
10. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1). https://doi.org/10.15585/mmwr.mm6501e1