The U.S. drug overdose epidemic continues to cause substantial morbidity and mortality. In 2017, 967,615 nonfatal drug overdoses were treated in emergency departments (EDs), a 4.3% increase from 2016 in all overdoses and a 3.1% increase in opioid-involved overdoses (1). During 2017 and 2018, syndromic surveillance revealed that 37.2% of overdoses treated in EDs in 18 states involved multiple drugs (2). To describe changes in rates and proportions of suspected nonfatal drug and polydrug overdoses treated in EDs, CDC analyzed syndromic surveillance data from 2018 to 2019 in 29 states. Rates of overdoses involving opioids, cocaine, and amphetamines increased 9.7%, 11.0%, and 18.3%, respectively, and the rate of benzodiazepine-involved overdoses decreased 3.0%. Overdoses co-involving opioids and amphetamines increased from 2018 to 2019, overall, in both sexes, and in most age groups. In 2019, 23.6%, 17.1%, and 18.7% of overdoses involving cocaine, amphetamine, and benzodiazepines, respectively, also involved opioids. Expanding overdose prevention, treatment, and response efforts is needed to reduce the number of drug and polydrug overdoses. This includes linkage into treatment, harm reduction services, and community-based programs for persons who use drugs; expanding overdose prevention efforts, including increased naloxone provision, to persons who use stimulants; addressing the illicit drug supply; and identifying specific risk factors for populations using these drugs. Continued surveillance with expanded coverage of additional jurisdictions of the evolving drug overdose epidemic is important to the success of these efforts.

Suspected nonfatal drug overdose ED visits were identified from 29 states* funded through CDC’s Overdose Data to Action program† that submitted data to the National Syndromic Surveillance Program (NSSP).§ Querying ED visit

1https://www.cdc.gov/drugoverdose/od2a/index.html.
2https://www.cdc.gov/nssp/documents/NSSP-overview.pdf; https://www.cdc.gov/nssp.

INSIDE

1156 Support for Transition from Adolescent to Adult Health Care Among Adolescents With and Without Mental, Behavioral, and Developmental Disorders — United States, 2016–2017
1161 Progress Toward Hepatitis B and Hepatitis C Elimination Using a Catalytic Funding Model — Tashkent, Uzbekistan, December 6, 2019–March 15, 2020
1166 COVID-19 Among American Indian and Alaska Native Persons — 3 States, January 31–July 3, 2020
1170 Limited Secondary Transmission of SARS-CoV-2 in Child Care Programs — Rhode Island, June 1–July 31, 2020
1173 Primary Indicators to Systematically Monitor COVID-19 Mitigation and Response — Kentucky, May 19–July 15, 2020
1177 Notes from the Field: Universal Statewide Laboratory Testing for SARS-CoV-2 in Nursing Homes — West Virginia, April 21–May 8, 2020
1180 Notes from the Field: Candida auris and Carbapenemase-Producing Organism Prevalence in a Pediatric Hospital Providing Long-Term Transitional Care — Chicago, Illinois, 2019
1182 Notes from the Field: CDC Polio Surge Response to Expanding Outbreaks of Type 2 Circulating Vaccine-Derived Poliovirus — Africa and Philippines, September 2019–March 2020
1185 QuickStats

Continuing Education examination available at https://www.cdc.gov/mmwr/mmwr_continuingEducation.html
Nonfatal suspected unintentional and undetermined intent drug overdoses involving opioids are defined by the following ICD-10-CM discharge diagnosis codes: T40.0X1A, T40.0X4A, T40.1X1A, T40.1X4A, T40.2X1A, T40.2X4A, T40.3X1A, T40.3X4A, T40.4X1A, T40.4X4A, T40.601A, T40.604A, T40.691A, or T40.694A.

Nonfatal suspected unintentional and undetermined intent drug overdoses involving amphetamines are defined by the following ICD-10-CM discharge diagnosis codes: T43.621A or T43.624A. Amphetamines are a specific stimulant drug class, distinct from cocaine, that encompass legal prescription medications (e.g., Adderall) and illicit drugs (e.g., methamphetamine). [https://www.dca.gov/sites/default/files/drug_of_abuse.pdf](https://www.dca.gov/sites/default/files/drug_of_abuse.pdf).

Nonfatal suspected unintentional and undetermined intent drug overdoses involving benzodiazepines are defined by the following ICD-10-CM discharge diagnosis codes: T42.4X1A or T42.4X4A.

As an example, an overdose co-involving opioid and cocaine would be included in both the opioid and cocaine change estimates as well as the estimates for polydrug overdoses involving both opioid and cocaine.

The changes in rates of suspected drug overdose per 100,000 ED visits from 2018 to 2019 were calculated overall, by sex, age group, U.S. Census region of the ED facility, and county urbanization level of patient residence. Because syndromic surveillance data were used to examine meaningful changes in suspected overdose-related ED visits and not to estimate numbers of persons with nonfatal drug overdoses, results reported exclude counts and rates. Relative and absolute

---

**Suggested citation:** [Author names; if first three, then et al., if more than six.] [Report title]. MMWR Morb Mortal Wkly Rep 2020;69:[inclusive page numbers].

**Centers for Disease Control and Prevention**

Robert R. Redfield, MD, Director

Anne Schuchat, MD, Principal Deputy Director

Chesley L. Richards, MPH, MPH, Deputy Director for Public Health Science and Surveillance

Rebecca Bunnell, PhD, MD, Director, Office of Science

Arlene Greenspan, PhD, Acting Director, Office of Science Quality, Office of Science

Michael F. Iademarco, MD, MPH, Director, Center for Surveillance, Epidemiology, and Laboratory Services

**MMWR Editorial and Production Staff (Weekly)**

Charlotte K. Kent, PhD, MPH, Editor in Chief

Jacqueline Gindler, MD, Editor

Paul Z. Siegel, MD, MPH, Guest Associate Editor

Mary Dort, MD, MPH, Online Editor

Terisa F. Rutledge, Managing Editor

Douglas W. Weatherwax, Lead Technical Writer-Editor

Glenn Damon, Soumya Dunsworth, PhD

Teresa M. Hood, MS, Donald G. Meadows, MA

Technical Writer-Editors

Martha F. Boyd, Lead Visual Information Specialist

Maureen A. Leahy, Julia C. Martinroe, Stephen R. Spriggs, Tong Yang, Visual Information Specialists

Quang M. Doan, MBA, Phyllis H. King, Terraye M. Starr, Moua Yang, Information Technology Specialists

**MMWR Editorial Board**

Timothy F. Jones, MD, Chairman

Katherine Lyon Daniel, PhD

Jonathan E. Fielding, MD, MPH

David W. Fleming, MD

William E. Halperin, MD, DrPH, MPH

Jewel Mullen, MD, MPH, MPA

Jeff Niederdeppe, PhD

Patricia Quiruilsk, MD, MPH

Patrick L. Remington, MD, MPH

Carlos Roig, MS, MA

William Schaffner, MD

Morgan Bobb Swanson, BS

**Technical Writer-Editors**

Michelle E. Bonds, MBA

Matthew L. Boulton, MD, MPH

Carolyn Brooks, ScD, MA

Jay C. Butler, MD

Virginia A. Caine, MD

Jeff Niederdeppe, PhD

1150

MMWR / August 28, 2020 / Vol. 69 / No. 34

US Department of Health and Human Services/Centers for Disease Control and Prevention
Summary

What is already known about this topic?
In 2017, a total of 967,615 nonfatal drug overdoses were treated in U.S. emergency departments (EDs); polydrug ED-treated overdoses increased from 2017 to 2018.

What is added by this report?
Rates of ED-treated suspected nonfatal drug overdoses involving opioids, cocaine, and amphetamines, and of polydrug overdoses co-involving opioids and amphetamines increased from 2018 to 2019. Rates of suspected benzodiazepine-involved overdoses declined. Opioids were substantially co-involved with cocaine, amphetamine, and benzodiazepine overdoses in 2019; 23.6%, 17.1%, and 18.7% of cocaine-, amphetamine-, and benzodiazepine-involved overdoses, respectively, involved opioids.

What are the implications for public health practice?
Opioids have substantial involvement in nonfatal overdoses, including those involving other drugs. Expanding syndromic surveillance to better inform overdose prevention efforts and increasing naloxone provision to persons who use stimulants are essential.

In 2019, opioids were involved in 40.2% of all suspected drug overdoses treated in EDs, including 28.7%, 56.9%, 49.9%, and 34.6% of overdoses among persons aged 15–24, 25–34, 35–54, and ≥55 years, respectively (Figure). In 2019, 23.6% of overdoses involving cocaine, 17.1% involving amphetamines, and 18.7% involving benzodiazepines also involved opioids. The highest percentages of cocaine- (35.0%), amphetamine- (21.1%), and benzodiazepine-involved (23.6%) overdoses that also involved opioids occurred among persons aged 25–34 years.

Among U.S. Census regions, relative and absolute increases in rates of opioid-involved overdoses were observed in the South (16.5%; 19.2), West (11.5%; 13.5), and Midwest (8.3%; 11.8); of amphetamine-involved overdoses in the Northeast (12.4%; 1.1) and West (21.2%; 3.2); and of cocaine-involved overdoses in the South (12.0%; 1.0) and Midwest (14.9%; 0.7). The Midwest experienced the only decline in relative and absolute rate for benzodiazepine-involved overdoses (−11.2%; −1.5). Relative and absolute rates of opioid-involved overdoses increased among persons living in both urban (13.6%; 16.9) and rural counties (10.1%; 6.1), as did rates of amphetamine-involved overdoses (21.7%; 1.3, urban and 20.8%; 1.9, rural).

Changes in rates of polydrug overdoses predominantly comprised those co-involving opioids and amphetamines (37.3% relative increase; 0.4 per 100,000 absolute increase) (Table 2). Relative and absolute rate increases for overdoses co-involving opioids and amphetamines were experienced by both females (32.7%; 0.2) and males (38.3%; 0.6) and all age groups except persons aged 45–54 years. Relative and absolute rate increases were identified in the Northeast (116.3%; 0.4), South (33.3%; 0.4), and West (26.7%; 0.7) Census regions. Relative and absolute increases in rates of overdoses co-involving opioids and amphetamines occurred among persons living in urban counties (54.1%; 0.5).

In 2019, opioids were involved in 40.2% of all suspected drug overdoses treated in EDs, including 28.7%, 56.9%, 49.9%, and 34.6% of overdoses among persons aged 15–24, 25–34, 35–54, and ≥55 years, respectively (Figure). In 2019, 23.6% of overdoses involving cocaine, 17.1% involving amphetamines, and 18.7% involving benzodiazepines also involved opioids. The highest percentages of cocaine- (35.0%), amphetamine- (21.1%), and benzodiazepine-involved (23.6%) overdoses that also involved opioids occurred among persons aged 25–34 years.

Rate changes**** were calculated from 2018 to 2019 by visit characteristics; chi-squared tests compared 2018 and 2019 rates. Absolute rate changes were included to provide context for relative changes, some of which were based on small numbers of overdoses. Changes presented represent statistically significant findings, unless otherwise specified. Percentages of suspected drug overdose ED visits†††† were calculated for specific polydrug combinations to examine the percentages of suspected cocaine-, amphetamine-, and benzodiazepine-involved overdoses that also involved opioids in 2019, overall, and for certain age groups. Chi-squared tests were used for pairwise comparisons between age groups for percentage of overdose ED visits $$$ in 2019. For all analyses, p-values <0.05 were considered statistically significant. Analyses were conducted using SAS (version 9.4; SAS Institute).

From 2018 to 2019, overall relative and absolute rates increased for suspected nonfatal overdoses involving opioids (9.7%; 12.9 per 100,000 ED visits), cocaine (11.0%; 0.7), and amphetamines (18.3%; 1.3); rates decreased for overdoses involving benzodiazepines (−3.0%; −0.5) (Table 1). Relative and absolute rates for overdoses involving opioids increased from 2018 to 2019 among both females (7.1%; 6.0) and males (10.7%; 20.9), as well as all age groups. Cocaine- and amphetamine-involved overdose rates also increased among females (8.5%; 0.3 and 13.1%; 0.6, respectively) and males (12.4%; 1.1 and 20.5%; 2.2, respectively). Relative and absolute rate increases in amphetamine-involved overdoses occurred in all age groups except persons aged 15–24 years; relative and absolute rates of cocaine-involved overdoses increased only among persons aged 35–44 and ≥55 years. Relative and absolute rates of benzodiazepine-involved overdoses decreased among females (−4.4%; −0.7) and among persons aged 15–24 years (−7.3%; −1.7).

Among U.S. Census regions, relative and absolute increases in rates of opioid-involved overdoses were observed in the South (16.5%; 19.2), West (11.5%; 13.5), and Midwest (8.3%; 11.8); of amphetamine-involved overdoses in the Northeast (18.9%; 0.6), South (14.3%; 1.1), and West (21.2%; 3.2); and of cocaine-involved overdoses in the South (12.0%; 1.0) and Midwest (14.9%; 0.7).
TABLE 1. Annual change in rates per 100,000 emergency department (ED) visits for suspected unintentional and undetermined intent nonfatal overdoses involving opioids,† cocaine,§ amphetamines,¶ or benzodiazepines,** by sex, age, U.S. Census region, and county urbanization level — 29 states,†† 2018 to 2019

| ED patient/visit characteristic | Opioids |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                               | Relative (%) | Absolute | Relative (%) | Absolute | Relative (%) | Absolute | Relative (%) | Absolute |
| All                           | 9.7††   | 12.9†† | 11.0†† | 0.7†† | 18.3†† | 1.3†† | –3.0†† | –0.5†† |
| Sex                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female                        | 7.1††   | 6.0†† | 8.5†† | 0.3†† | 13.1†† | 0.5†† | –4.4†† | –0.7†† |
| Male                          | 10.7††  | 20.9†† | 12.4†† | 1.1†† | 20.5†† | 2.2†† | –1.3 | –0.2 |
| Age group, yrs                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15–24                         | 3.7††   | 4.3†† | –0.4 | 0.0 | 4.3 | 0.4 | –7.3†† | –1.7†† |
| 25–34                         | 7.8††   | 22.9†† | 2.0 | 0.2 | 18.5†† | 2.0†† | –3.5 | –0.8 |
| 35–44                         | 15.2††  | 32.9†† | 20.1†† | 1.9†† | 16.4†† | 2.3†† | –0.8 | –0.2 |
| 45–54                         | 14.4††  | 23.2†† | 9.8 | 1.1 | 35.8†† | 2.5†† | –5.2 | –1.1 |
| ≥55                           | 12.9††  | 9.8†† | 26.4†† | 1.1†† | 60.0†† | 0.9†† | 3.3 | 0.4 |
| U.S. Census region***         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Northeast                     | 0.0     | 0.0 | 10.0 | 0.6 | 18.9†† | 0.6†† | –2.1 | –0.3 |
| South                         | 16.5††  | 19.2†† | 12.0†† | 1.0†† | 14.3†† | 1.1†† | –3.3 | –0.6 |
| Midwest                       | 8.3††   | 11.8†† | 14.9†† | 0.7†† | 2.2 | 0.1 | –11.2†† | –1.5†† |
| West                          | 11.5††  | 13.5†† | 8.1 | 0.3 | 21.2†† | 3.2†† | –0.8 | –0.2 |
| County urbanization†††        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Urban                         | 13.6††  | 16.9†† | 16.2†† | 1.0†† | 21.5†† | 1.3†† | –1.0 | –0.2 |
| Rural                         | 10.1††  | 6.1†† | –7.5 | –0.3 | 20.8†† | 1.5†† | –5.8 | –0.8 |

* Suspected unintentional and undetermined intent nonfatal overdoses identified using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) discharge diagnosis codes.
† Nonfatal suspected unintentional and undetermined intent drug overdoses involving opioids are defined by the following ICD-10-CM discharge diagnosis codes: T40.0X1A, T40.0X4A, T40.1X1A, T40.1X4A, T40.2X1A, T40.2X4A, T40.3X1A, T40.3X4A, T40.4X1A, T40.4X4A, T40.601A, T40.604A, T40.609A, or T40.694A.
§ Nonfatal suspected unintentional and undetermined intent drug overdoses involving cocaine are defined by the following ICD-10-CM discharge diagnosis codes: T40.5X1A or T40.5X4A.
¶ Nonfatal suspected unintentional and undetermined intent drug overdoses involving amphetamines are defined by the following ICD-10-CM discharge diagnosis codes: T42.4X1A or T42.4X4A.
** Nonfatal suspected unintentional and undetermined intent drug overdoses involving benzodiazepines are defined by the following ICD-10-CM discharge diagnosis codes: T40.5X1A or T40.5X4A.
†† U.S. Census region coded by location of the facility where emergency department visits occurred using values for hospital state. The Northeast region includes hospitals located in five of nine possible states, the South region includes hospitals located in 12 of 16 possible states (17 including the District of Columbia), the Midwest region includes hospitals located in four of 12 possible states, and the West region includes hospitals located in eight of 13 possible states.
††† County urbanization levels for residence county were determined using the 2013 National Center for Health Statistics Urban-Rural Classification Scheme for Counties (https://www.cdc.gov/nchs/data_access/urban_rural.htm). Urban included large central metro, large fringe metro, medium metro, and small metro and rural included micropolitan and noncore counties.

Discussion

From 2018 to 2019, rates of suspected nonfatal overdoses involving opioids, cocaine, and amphetamines treated in EDs increased, and those involving benzodiazepines decreased. Despite the decline in nonfatal benzodiazepine-involved overdoses, benzodiazepines were identified in 12.2% of nonfatal overdoses treated in EDs during 2017 (1). Benzodiazepines were also one of the most common drug classes identified in overdose deaths, likely because of co-use with opioids (3). Increases in overdose rates involving other drugs highlight the complicated nature of and challenges associated with addressing the evolving U.S. drug overdose epidemic (1). Deaths involving synthetic opioids, primarily illicitly manufactured fentanyl, have been increasing since 2013 (4,5). In addition, the availability of cocaine and methamphetamine has increased in the United States in recent years, and according to the Drug Enforcement Administration, methamphetamine was the most frequently reported drug among all drug submissions in 2019.****

Consistent with prior research, opioids constituted a large percentage of drug overdoses overall and were substantially co-involved with stimulant overdoses (2). Notably, rates of suspected overdoses co-involving opioids and amphetamines significantly increased from 2018 to 2019, overall, and in both

**** https://www.fdlis.deadiversion.usdoj.gov/Deskt...019.pdf. https://www.dea.gov/sites/default/files/2020-01/2019-NDTA-final-01-14-2020_Low_Web-DIR-007-20_2019.pdf.
TABLE 2. Annual change in rates per 100,000 emergency department (ED) visits for suspected unintentional and undetermined intent nonfatal overdoses* of cocaine,† amphetamines,§ benzodiazepines** co-involving opioids,*** by sex, age, U.S. Census region, and county urbanization level — 29 states,††† 2018 to 2019

| ED patient/visit characteristic | Rate change from 2018 to 2019§§ | Rate change from 2018 to 2019¶¶ | Rate change from 2018 to 2019†† |
|---------------------------------|----------------------------------|---------------------------------|---------------------------------|
|                                 | Relative (%) | Absolute | Relative (%) | Absolute | Relative (%) | Absolute |
| All                             | 4.4          | 0.1      | 37.3†††     | 0.4†††    | 2.6          | 0.1      |
| Sex                             |              |          |             |           |              |          |
| Female                          | 0.6          | 0.0      | 32.7†††     | 0.2†††    | 0.3          | 0.0      |
| Male                            | 6.2          | 0.1      | 38.3†††     | 0.6†††    | 4.9          | 0.2      |
| Age group, yrs                  |              |          |             |           |              |          |
| 15–24                           | 1.6          | 0.0      | 50.2†††     | 0.5†††    | –8.5         | –0.2     |
| 25–34                           | –0.1         | 0.0      | 35.5†††     | 1.0†††    | 14.6         | 0.6      |
| 35–44                           | 22.1†††      | 0.6†††   | 38.6†††     | 0.9†††    | –7.2         | –0.3     |
| 45–54                           | –0.9         | 0.0      | 26.0        | 0.3       | –7.6         | –0.3     |
| ≥55                             | 15.3         | 0.1      | 66.0†††     | 0.2†††    | 14.5†††      | 0.4†††   |
| U.S. Census region***           |              |          |             |           |              |          |
| Northeast                       | –1.4         | 0.0      | 116.3†††    | 0.4†††    | 5.2          | 0.1      |
| South                           | 6.1          | 0.1      | 33.3†††     | 0.4†††    | –0.6         | 0.0      |
| Midwest                         | 19.2         | 0.2      | 21.1        | 0.1       | 3.0          | 0.1      |
| West                            | –13.7        | –0.1     | 26.7†††     | 0.7†††    | 2.6          | 0.1      |
| County urbanization†††          |              |          |             |           |              |          |
| Urban                           | 11.3†††      | 0.2†††   | 54.1†††     | 0.5†††    | 4.3          | 0.1      |
| Rural                           | –26.1        | –0.2     | 15.2        | 0.2       | 6.8          | 0.2      |

* Suspected unintentional and undetermined intent nonfatal overdoses identified using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) discharge diagnosis codes.
† Nonfatal suspected unintentional and undetermined intent drug overdoses involving cocaine are defined by the following ICD-10-CM discharge diagnosis codes: T40.5X1A or T40.5X4A.
‡ Nonfatal suspected unintentional and undetermined intent drug overdoses involving amphetamines are defined by the following ICD-10-CM discharge diagnosis codes: T40.4X1A or T40.4X4A.
§ Nonfatal suspected unintentional and undetermined intent drug overdoses involving benzodiazepines are defined by the following ICD-10-CM discharge diagnosis codes: T43.621A or T43.624A.
** Nonfatal suspected unintentional and undetermined intent drug overdoses involving opioids are defined by the following ICD-10-CM discharge diagnosis codes: T40.0X1A, T40.0X4A, T40.1X1A, T40.1X4A, T40.2X1A, T40.2X4A, T40.3X1A, T40.3X4A, T40.4X1A, T40.4X4A, T40.601A, T40.604A, T40.691A, or T40.694A.
*** U.S. Census region coded by location of the facility where emergency department visits occurred using values for hospital state. The Northeast region includes hospitals located in five of nine possible states, the South region includes hospitals located in 12 of 16 possible states (17 including the District of Columbia), the Midwest region includes hospitals located in 12 of possible states, and the West region includes hospitals located in eight of 13 possible states.
††† County urbanization levels for residence county were determined using the 2013 National Center for Health Statistics Urban-Rural Classification Scheme for Counties (https://www.cdc.gov/nchs/data_access/urban_rural.htm). Urban included large central metro, large fringe metro, medium metro, and small metro and rural included micropolitan and noncore counties.

sexes and nearly all age groups. Findings are consistent with previous studies that have highlighted increases in methamphetamine use initiation,††††† co-use between stimulants and opioids (6,7), nonfatal stimulant-involved overdoses treated in EDs (8), and co-involvement of opioids and stimulants in overdose deaths (9).

These findings have important programmatic implications regarding the evolving U.S. overdose epidemic. Syndromic surveillance is a critical data source for identifying overdose spikes and clusters to inform deployment of public health and public safety resources. Expanding coverage to include all ED visits in the United States would help further identify certain population characteristics and geographic regions that should be prioritized for prevention, treatment, and response efforts. The increases observed in polydrug overdose rates highlight the complexity of the overdose epidemic and the need to intervene more rapidly before nonfatal polydrug overdoses increase further or result in fatal overdoses.

The findings in this report are subject to at least seven limitations. First, overdose case definitions relied on discharge diagnosis codes, which were missing in 20.3% of ED visits available in NSSP for the 29 states analyzed. Improvements in submission of discharge diagnosis codes might have influenced the changes observed. However, in all included states, visits with valid discharge diagnosis codes increased 5.3% from 2018 to 2019. Second, discharge diagnosis codes might be used
Suspected unintentional and undetermined intent nonfatal overdoses identified using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) discharge diagnosis codes.

Nonfatal suspected unintentional and undetermined intent drug overdoses involving opioids are defined by the following ICD-10-CM discharge diagnosis codes: T40.0X1A, T40.0X4A, T40.1X1A, T40.1X4A, T40.2X1A, T40.2X4A, T40.3X1A, T40.3X4A, T40.4X1A, T40.4X4A, T40.601A, T40.604A, T40.691A, or T40.694A.

Nonfatal suspected unintentional and undetermined intent drug overdoses involving cocaine are defined by the following ICD-10-CM discharge diagnosis codes: T40.5X1A or T40.5X4A.

Nonfatal suspected unintentional and undetermined intent drug overdoses involving amphetamines are defined by the following ICD-10-CM discharge diagnosis codes: T43.621A or T43.624A.

Nonfatal suspected unintentional and undetermined intent drug overdoses involving benzodiazepines are defined by the following ICD-10-CM discharge diagnosis codes: T42.4X1A or T42.4X4A.

For overdoses of opioids combined with other drugs, the sum of the bars for "Opioid without other drug" and for "Opioid and other drug" are the percentage totals for opioid-involved overdoses. Opioids were involved in 28.7%, 56.9%, 49.9%, and 34.6% of suspected unintentional and undetermined intent drug overdoses among persons aged 15–24, 25–34, 35–54, and ≥55 years, respectively.

For overdoses of cocaine, amphetamines, and benzodiazepines also involving opioid, using pairwise comparisons between age groups, statistically significant (p<0.05) differences include cocaine, persons aged 25–34 years compared with each other age group; amphetamine, persons aged 25–34 years compared with each other age group; benzodiazepines, persons aged 25–34 years compared with persons aged 15–24 and 35–54 years. Overall percentage among all age groups was 18.7% for benzodiazepine, 17.1% for amphetamine, and 23.6% for cocaine-involved overdoses also involving opioids.

Alabama, Arizona, Arkansas, Colorado, Connecticut, Delaware, Georgia, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Montana, Nevada, New Jersey, New Mexico, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Utah, Virginia, Washington, West Virginia, and Wisconsin.
inconsistently by hospitals and providers, which could result in misclassification. Third, comprehensive toxicology testing of patients experiencing overdose rarely occurs in overdose ED visits (10), which might have underestimated polydrug overdoses. Fourth, hospital participation in NSSP varied across years; thus, results might be related to changes in hospital participation. Fifth, NSSP coverage is not necessarily uniform across or within all states, leading to different levels of coverage by region. Sixth, data are not generalizable beyond states participating in NSSP. Finally, analyses of overdoses stratified by race and ethnicity were not conducted because these data were not available in approximately one third and one half of visits, respectively.

EDs provide an opportunity to intervene and link persons into treatment, harm reduction services, and other community-based programs. Although rates of overdoses co-involving opioids and benzodiazepines were stable from 2018 to 2019, efforts to ensure safe prescribing practices remain critical. Provision of naloxone, expanding overdose education to more groups who are at risk, including persons using stimulants, utilizing partnerships between public health and public safety, and an improved understanding of social and structural factors that contribute to overdose are necessary to prevent drug overdoses.

https://www.cdc.gov/drugoverdose/prescribing/guideline.html.

Acknowledgments

Alana M. Vivolo-Kantor, Londell McGlone, Division of Overdose Prevention, National Center for Injury Prevention and Control, CDC; state health departments participating in CDC’s Overdose Data to Action Program and the National Syndromic Surveillance Program.

Corresponding author: Stephen Liu, ice5@cdc.gov, 404-498-5686.

1Division of Overdose Prevention, National Center for Injury Prevention and Control, CDC.

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

References

1. Vivolo-Kantor AM, Hoots BE, Scholl L, et al. Nonfatal drug overdoses treated in emergency departments—United States, 2016–2017. MMWR Morb Mortal Wkly Rep 2020;69:371–6. https://doi.org/10.15585/mmwr.mm6913a3
2. Liu S, Vivolo-Kantor A. A latent class analysis of drug and substance use patterns among patients treated in emergency departments for suspected drug overdose. Addict Behav 2020;101:106142. https://doi.org/10.1016/j.addbeh.2019.106142
3. Tori ME, Larochelle MR, Naimi TS. Alcohol or benzodiazepine co-involvement with opioid overdose deaths in the United States, 1999–2017. JAMA Netw Open 2020;3:e202361. https://doi.org/10.1001/jamanetworkopen.2020.2361
4. Scholl L, Seth P, Karidas M, Wilson N, Baldwin G. Drug and opioid-involved overdose deaths—United States, 2013–2017. MMWR Morb Mortal Wkly Rep 2019;67:1419–27. https://doi.org/10.15585/mmwr.mm671512e1
5. Wilson N, Karidas M, Seth P, Smith H 4th, Davis NL. Drug and opioid-involved overdose deaths—United States, 2017–2018. MMWR Morb Mortal Wkly Rep 2020;69:290–7. https://doi.org/10.15585/mmwr.mm6911a4
6. Cicero TJ, Ellis MS, Kasper ZA. Polysubstance use: a broader understanding of substance use during the opioid crisis. Am J Public Health 2020;110:244–50. https://doi.org/10.2105/ AJPH.2019.305412
7. Jones CM, Underwood N, Compton WM. Increases in methamphetamine use among heroin treatment admissions in the United States, 2008–17. Addiction 2020;115:347–53. https://doi.org/10.1111/add.14812
8. 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;115:946–58. https://doi.org/10.1111/add.14878
9. Karidas 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
10. 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