Emergency Department Trends From the Drug Abuse Warning Network, Final Estimates 1994-2001

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
Office of Applied Studies

ACKNOWLEDGMENTS

The findings in this publication are based on data developed for the Substance Abuse and Mental Health Services Administration (SAMHSA), Office of Applied Studies (OAS), by Johnson, Bassin, and Shaw, Inc. (JBS) under Contract No. 283-98-9010 and Westat under Contract No. 282-98-0003. Dr. Judy Ball (SAMHSA/OAS Project Officer), Dr. Wendy Kissin, and Tracy Garfield (Westat) wrote the publication. Other significant contributors at Westat include Jim Green, K.C. Lee, Nita Lemanski, Pat Stouffer, and Lois White.

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ORIGINATING OFFICE

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August 2002

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HIGHLIGHTS

This issue of *Emergency Department Trends From DAWN* presents final estimates for 2001, with comparisons to 1994, 1999, and 2000. The revised estimates in the *ED Trends From DAWN* publication series supersede the estimates published previously for 1994 through 2001.

The Drug Abuse Warning Network (DAWN) relies on a sample of hospitals operating 24-hour emergency departments (EDs) to capture data on ED visits induced by or related to substance abuse. DAWN data do not measure prevalence of drug use in the population, but the probability sample of hospitals is designed to produce representative estimates of ED drug episodes and drug mentions for the coterminous United States and for 21 metropolitan areas. The Substance Abuse and Mental Health Services Administration (SAMHSA), the agency responsible for DAWN, is required under Section 505 of the Public Health Service Act to collect such data.

Drug Episodes vs. Drug Mentions

Drug Episode: **A drug-related ED episode is an ED visit that was induced by or related to the use of an illegal drug(s) or the nonmedical use of a legal drug for patients age 6 to 97 years.**

Drug Mention: **A drug mention refers to a substance that was recorded ("mentioned") during a drug-related ED episode. Because up to 4 drugs (and alcohol) can be reported for each drug abuse episode, there are more mentions than episodes cited in this report.**

Findings reported here are statistically significant unless stated otherwise. These data include final estimates for 2001; they replace preliminary estimates for the first half of 2001 published in the last publication of *ED Trends From DAWN*. This publication (text and tables), additional tables grouped by metropolitan area, and tables of relative standard errors are available online at http://www.samhsa.gov/oas/dawn.htm.

TOTAL DRUG-RELATED ED EPISODES

- In 2001, there were 638,484 drug-related ED episodes in the coterminous U.S. (Table 2.2.0), a rate of 252 ED episodes per 100,000 population (Table 12.2.0). On average, 1.8 drugs were reported per episode for a total of 1,165,367 drug mentions. ED drug mentions and ED drug episodes each increased 6 percent from 2000 to 2001 (Table 2.2.0). Total ED visits (that is, ED visits for any reason) increased 5 percent (from 96.1 million to 100.5 million) during this period.

- Eight out of every 10 ED drug mentions (82%) come from only 7 categories: alcohol-in-combination, cocaine, heroin, marijuana, benzodiazepines, antidepressants, and analgesics. In 2001, alcohol-in-combination was a factor in 34 percent of ED drug episodes (218,005 mentions), cocaine in 30 percent (193,034), marijuana in 17 percent (110,512), and heroin in 15 percent (93,064). Taken together, the benzodiazepines, antidepressants, and analgesics constituted 339,484 ED mentions in 2001, or nearly 30 percent of total ED drug mentions.

- From 2000 to 2001, significant increases in drug episodes were found in 5 of the 21 metropolitan areas oversampled in DAWN (Table 3.2): Atlanta (30%, from 11,112 to 14,456), Minneapolis (26%, from 5,197 to 6,521), Boston (13%, from 14,902 to 16,853), Denver (11%, from 4,944 to 5,468), and San Francisco (9%, from 7,857 to

8,575). From 2000 to 2001, significant decreases in drug episodes were found in 2 metropolitan areas: New Orleans (-20%, from 4,664 to 3,729) and San Diego (-2%, from 7,094 to 6,962).

- Adjusting for population differences, the highest rates of ED drug episodes in 2001 were apparent in (Table 13.2): Philadelphia (573 ED drug episodes per 100,000 population), Chicago (558), San Francisco (546), Seattle (538), and Baltimore (505). Among the 21 metropolitan areas in DAWN, Dallas had the lowest rate of ED drug episodes (210 per 100,000 population) in 2001 (Table 13.2).

MAJOR SUBSTANCES OF ABUSE

Each ED drug mention in DAWN is tabulated either as a "major substance of abuse" or as an "other substance of abuse" (described below). "Major substances of abuse" include the most common illicit drugs reported to DAWN (e.g., cocaine, heroin, marijuana), alcohol reported in combination with any other substance reported to DAWN ("alcohol-in-combination"), and lower frequency drugs of particular policy interest (e.g., club drugs such as Ecstasy and GHB, inhalants).

- From 2000 to 2001, there were significant increases in ED mentions of cocaine (10%, from 174,881 to 193,034) and marijuana (15%, from 96,426 to 110,512) (Table 2.2.0), while mentions of alcohol-in-combination (218,005 in 2001), heroin (93,064), amphetamines (18,555), and methamphetamine (14,923) were unchanged.

- Among the less frequently mentioned major substances of abuse, only mentions of inhalants changed significantly (down 56%, from 1,522 to 676) from 2000 to 2001 (Table 2.2.0). Mentions of PCP (6,102 in 2001), MDMA (Ecstasy) (5,542), GHB (3,340), LSD (2,821), miscellaneous hallucinogens (1,788), Ketamine (679), and illicit combinations not mentioned above (298) were statistically unchanged from 2000 to 2001.

- **Alcohol-in-combination**: Mentions of alcohol-in-combination were statistically unchanged from 2000 to 2001, but have increased 36 percent (from 160,798 to 218,005 mentions) since 1994 (Table 2.2.0). From 2000 to 2001, significant increases in mentions of alcohol-in-combination were found in Minneapolis (26%, from 1,780 to 2,238), Washington, DC (21%, from 2,300 to 2,774), San Francisco (20%, from 1,804 to 2,155), Boston (17%, from 4,976 to 5,818), Miami (16%, from 3,168 to 3,679), Phoenix (14%, from 2,303 to 2,627), and Baltimore (11%, from 2,628 to 2,911) (Table 3.6). A significant decrease in mentions of alcohol-in-combination was found in New Orleans (-39%, from 1,948 to 1,181).

- **Cocaine**: Cocaine mentions increased 10 percent (from 174,881 to 193,034) from 2000 to 2001 (Tables 2.2.0 and 3.8). Almost a quarter of the cocaine mentions in 2001 (24%, 46,964 mentions) were attributed to "crack" (Table 2.4.0). Comparing estimates for 2000 and 2001, increases in cocaine mentions were evident for Atlanta (43%, from 6,229 to 8,891), Minneapolis (31%, from 841 to 1,105), San Francisco (21%, from 2,054 to 2,482), and Boston (20%, from 4,099 to 4,933). Decreases occurred in New Orleans (-29%, from 1,998 to 1,422 mentions), San Diego (-19%, from 1,002 to 812), and Dallas (-19%, from 2,180 to 1,770).

- **Heroin**: Nationwide, heroin mentions in 2001 (93,064) were statistically unchanged from 2000 (Tables 2.2.0 and 3.10). Comparing estimates for 2000 and 2001, increases in heroin mentions were evident for Atlanta (75%, from 485 to 848), Minneapolis (48%, from 228 to 338), Detroit (16%, from 3,328 to 3,870), Denver (16%, from 666 to 769), Miami (15%, from 1,452 to 1,666), and Boston (13%, from 3,867 to 4,358). Decreases occurred in New Orleans (-46%, from 982 to 530), San Diego (-29%, from 1,031 to 733), Seattle (-23%, from 2,490 to 1,927), Baltimore (-17%, from 5,405 to 4,481), Newark (-16%, from 4,399 to 3,718), and Los Angeles (-9%, from 3,177 to 2,878).

- **Marijuana**: Marijuana mentions increased 15 percent (from 96,426 to 110,512) from 2000 to 2001 (Tables 2.2.0 and 3.12). Comparing estimates for 2000 and 2001, increases in marijuana mentions were evident for Minneapolis (49%, from 803 to 1,200), San Diego (16%, from 955 to 1,107), Seattle (13%, from 1,414 to 1,596), San Francisco (12%, from 627 to 704), and Baltimore (10%, from 1,620 to 1,786). Decreases occurred only in New Orleans (-24%, from 1,068 to 814).

- **Amphetamines**: From 2000 to 2001, there were no significant changes in the number of mentions of amphetamines nationwide (Tables 2.2.0 and 3.14). ED mentions of amphetamines in 2001 were concentrated in 5 metropolitan areas in the western United States: Los Angeles (1,261), San Diego (942), Phoenix (888), San Francisco (786), and Seattle (699). Comparing estimates for 2000 and 2001, increases in mentions of amphetamines were evident for San Francisco (112%, from 371 to 786), Baltimore (50%, from 175 to 262), and Phoenix (34%, from 661 to 888). There were no significant decreases in mentions of amphetamines in any of the DAWN metropolitan areas with at least 100 mentions.

- **Methamphetamine**: Nationwide, there were no significant changes in the number of methamphetamine mentions from 2000 to 2001 (Tables 2.2.0 and 3.16). Looking across the 21 DAWN metropolitan areas, ED mentions of methamphetamine in 2001 were concentrated in 5 cities in the western United States: Los Angeles (1,517), San Diego (673), San Francisco (611), Phoenix (604), and Seattle (395). Among these cities, methamphetamine mentions increased from 2000 to 2001 in Los Angeles (10%, from 1,375) and decreased in Seattle (-27%, from 540).

- **Club Drugs**: No significant changes from 2000 to 2001 were evident for the club drugs MDMA (Ecstasy) (5,542 mentions in 2001), GHB (3,340), or Ketamine (679) (Table 2.2.0). Estimates for flunitrazepam (Rohypnol) were too imprecise for publication for 1995 through 2001. There were no metropolitan areas with 100 or more mentions of Ketamine or flunitrazepam in 2000 or 2001 (Tables 3.20 and 3.28)

  - **MDMA**: Comparing estimates for 2000 and 2001 among metropolitan areas with at least 100 mentions of MDMA (Table 3.18), increases were found in Atlanta (157%, from 68 to 175), Miami (75%, from 105 to 184), Philadelphia (44%, from 141 to 203), and San Francisco (42%, from 107 to 152). Decreases were evident in Chicago (-44%, from 215 to 121), Los Angeles (-20%, from 177 to 142), and Seattle (-10%, from 128 to 115).

  - **GHB**: Among the metropolitan areas with at least 100 mentions of GHB in 2000 or 2001, there were no significant increases from 2000 to 2001 (Table 3.30).

Significant decreases were evident in Los Angeles (-44%, from 149 to 83), Atlanta (-35%, from 129 to 84), and Chicago (-25%, from 139 to 104).

- **Hallucinogens**: Mentions of LSD, PCP, and miscellaneous hallucinogens remained stable from 2000 to 2001 (Table 2.2.0). Only LSD and PCP had 100 or more mentions in any metropolitan area in 2001 (Tables 3.22 and 3.24).

  - **LSD**: Among the 5 metropolitan areas with at least 100 mentions of LSD in 2000 or 2001, there were no significant increases from 2000 to 2001. Significant decreases were evident in Phoenix (-54%%, from 135 to 62 mentions), Seattle (-42%, from 107 to 62), Chicago (-40%, from 115 to 69), and Los Angeles (-19%, from 217 to 175) (Table 3.22).

  - **PCP**: Among the 8 metropolitan areas with at least 100 mentions of PCP in 2000 or 2001, significant increases were evident in Washington, DC (66%, from 317 to 525 mentions) and Philadelphia (30%, from 604 to 785) (Table 3.24).

- **Inhalants**: From 2000 to 2001, mentions of inhalants decreased 56 percent (from 1,522 in 2000 to 676 in 2001) (Table 2.2.0).

OTHER SUBSTANCES OF ABUSE

Not all cases involving prescription or over-the-counter (OTC) drugs are reportable to DAWN. However, DAWN receives reports of ED episodes involving the nonmedical use of legal drugs. These can involve deliberate abuse of prescribed or legally obtained over-the-counter (OTC) medications or of pharmaceuticals diverted for abuse. Accidental overdoses or ingestions with no intent of abuse, or adverse reactions to OTC or prescription drugs taken as directed are not reportable to DAWN unless they were present in combination with an illicit drug. Only generic drug names are presented in DAWN publications. DAWN estimates should not be attributed to drugs marketed under particular brand (trade) names.

- DAWN estimates that other substances of abuse (495,808 mentions) accounted for 43 percent of total ED drug mentions in 2001 (Table 2.2.0). Although the vast majority of these other substances are marketed legally by prescription or over the counter, it is impossible to know from DAWN the number of ED visits related to the abuse of prescription drugs by the person for whom the drug was prescribed for a therapeutic purpose.

- In 2001, ED mentions of other substances of abuse are most concentrated in 2 categories—psychotherapeutic agents (220,289 mentions) and central nervous system (CNS) agents (210,685)—in nearly equal proportions (19% and 18% of total ED mentions, respectively) (Table 2.2.0).

Psychotherapeutic Agents

- The most frequent psychotherapeutic agents mentioned in drug-related ED visits in 2001 were: anxiolytics, sedatives, and hypnotics (12% of total ED mentions, 135,949 mentions)—which include the benzodiazepines (9%, 103,972 mentions)—and the antidepressants (5%, 61,012 mentions).

- Overall, mentions of benzodiazepines have risen 14 percent (from 91,078 to 103,972) from 2000 to 2001, and 39 percent (from 74,637) from 1994 to 2001 (Table 2.2.0). The 2 most frequently mentioned benzodiazepines increased significantly from 2000 to 2001: alprazolam (up 16%, from 22,105 to 25,644) and benzodiazepines-NOS (up 35%, 22,376 to 30,302) (Table 2.6.0).

CNS Agents

- Narcotic analgesics/combinations were the most frequently mentioned CNS agents in drug-related ED visits in 2001 (9% of total ED mentions, 99,317 mentions) (Table 2.2.0).

- From 1994 to 2001, mentions of narcotic analgesics/combinations rose 123 percent, 44 percent from 1999 to 2001, and 21 percent from 2000 to 2001 (Table 2.2.0).

- In 2001, the most frequently mentioned narcotic analgesics/combinations were those containing codeine (3,720 mentions in 2001), hydrocodone (21,567), methadone (10,725), morphine (3,403), oxycodone (18,409), propoxyphene (5,361), and those unspecified as to type (32,196 mentions of narcotic analgesics-NOS) (Table 2.8.0).

- Significant long-term increases in ED mentions of narcotic analgesics/combinations were found for hydrocodone/combinations (up 131% since 1994), methadone (230%), morphine/combinations (210%), oxycodone/combinations (352%), and narcotic analgesics-NOS (288%). Fentanyl/combinations also increased significantly (over 2,000%), but were mentioned much less frequently (710 mentions in 2001) (Table 2.8.0).

- From 2000 to 2001, methadone mentions increased 37 percent (from 7,819 to 10,725), oxycodone mentions rose 70 percent (from 10,825 to 18,409), and mentions of narcotic analgesics-NOS rose 24 percent (from 25,935 to 32,196) (Table 2.8.0). Codeine/combinations decreased 30 percent (from 5,295 to 3,720) from 2000 to 2001.

- Considering the 2-year period 1999 to 2001, methadone mentions nearly doubled (up 98%, from 5,426 to 10,725), while mentions of oxycodone/combinations nearly tripled (up 186%, (from 6,429 to 18,409), mentions of hydrocodone/combinations rose 41 percent (from 15,252 to 21,567), and mentions of narcotic analgesics-NOS were statistically unchanged (Table 2.8.0). Codeine/combinations decreased 25 percent (from 4,974 to 3,720) during this 2-year period.

New Drugs

- During the period from 1994 to 2001, 7 new drugs—citalopram, mirtazapine, and nefazodone (antidepressants); olanzapine and quetiapine (antipsychotics); and tramadol and Cox-2 inhibitors (analgesics)—had zero ED mentions followed by increasing numbers in the years following their approval by the FDA. Whether any of these represent an emerging drug abuse problem(s) cannot be determined based solely on this information, but future monitoring of these drugs using DAWN and other information sources may be warranted.

DEMOGRAPHIC CHARACTERISTICS

- From 2000 to 2001, increases in total ED episodes occurred for males (up 8%, from 309,607 to 333,370 mentions), females (5%, from 281,793 to 296,313), and patients age 26 to 29 (11%, from 55,151 to 61,210) and age 35 and older (9%, from 277,283 to 301,792) (Table 4.2.0). Total episodes for younger age groups and all the race/ethnicity subgroups were unchanged from 2000 to 2001.

- **Gender**: Adjusting for population, males and females had similar rates of drug-related ED episodes overall (271 and 227 episodes per 100,000 population, respectively) (Table 14.2.0). However, the rates for males were approximately double the rates for females for cocaine (102 vs. 50), heroin (50 vs. 23), and marijuana (58 vs. 29), and PCP (3 vs. 1). Rates for males and females were not significantly different for any of the other major substances of abuse (Tables 14.2.0 through 14.34.0).

- **Age:** Nearly half (47%, 301,792 episodes) of total ED drug episodes involve patients age 35 and over, followed by patients age 26 to 34 (23%, 145,408), patients age 18 to 25 (20%, 127,175), and patients age 12 to 17 (10%, 61,695) (Table 4.2.0). However, when we account for differences in population size across these age groups, we find that patients 35 and over (215) have the lowest rates of ED episodes per 100,000 population, similar to the rates for patients age 12 to 17 (254) (Table 14.2.0). Patients age 26 to 34 have the highest rates of ED episodes (478 per 100,000 population), followed by patients age 18 to 25 (379).

- Considering 4 major substances of abuse (alcohol-in-combination, cocaine, heroin, and marijuana) and adjusting for population differences in 2001:

  - Rates for patients age 26 to 34 were consistently higher than rates for patients age 35 and over.

  - Rates for patients 12 to 17 were consistently lower than rates for older patients, except for marijuana. Patients age 12 to 17 had higher rates of marijuana mentions than patients age 35 and over (68 vs. 25) and rates similar to those for patients 18 to 25 (99) and 26 to 34 (83).

  - Rates for patients age 18 to 25 were lower than rates for patients age 26 to 34 for alcohol-in-combination (113 vs. 174) and cocaine (85 vs. 176). These age groups had similar rates of heroin mentions (52 vs. 75).

- Considering the 4 age groups (age 12 to 17, 18 to 25, 26 to 34, and 35+) and adjusting for population differences in 2001:

  - Rates for alcohol-in-combination, cocaine, and heroin appeared to rise with age and peak in the 26 to 34 age group (with 174, 176, and 75 mentions per 100,000 population, respectively).

  - Rates for marijuana were similar (68, 99, and 83 mentions per 100,000 population) across a broad range of ages (from age 12 to 34), and the rate for marijuana

mentions was substantially lower for patients age 35 and over (25 mentions per 100,000 population).

- Rates for MDMA (Ecstasy) mentions appeared to peak (at 10 mentions per 100,000 population) in the 18 to 25 age group with lower rates in both the younger and older age groups (4 mentions per 100,000 population for ages 12 to 17 and 26 to 34; less than 1 mention per 100,000 population for patients age 35 and over).

EPISODE CHARACTERISTICS

- The majority (56%, 358,858 episodes in 2001) of drug-related ED episodes involve more than one drug (Table 5.2.0).

- In 2001, nearly half (45%) of episodes involving heroin involved only heroin (Table 5.10.0), and nearly half (45%) of episodes involving methamphetamine involved only methamphetamine. By contrast, only 28 percent of episodes involving cocaine involved cocaine alone (Table 5.8.0), and only 24 percent of episodes involving marijuana involved marijuana alone (Table 5.12.0). By definition, all DAWN ED episodes involving alcohol also involved another drug (Table 5.6.0).

- In drug-related ED episodes during 2001, *dependence* (36%, 228,994 episodes) and *suicide* (30%, 194,324) were the most frequently cited motives for taking substances, followed by *psychic effects* (20%, 194,324) (Table 5.2.0). However, motive was *unknown* in a relatively high number of cases (12%, 75,886).

- In 2001, 5 of the major substances of abuse had relatively low rates of motive *unknown*. Among these, *dependence* was the motive for the majority of episodes involving heroin (83%) and methamphetamine (50%), and *psychic effects* was the motive for the majority of episodes involving MDMA (57%), Ketamine (65%), and LSD (54%). Among the major substances with relatively high rates of *unknown* motives, *dependence* was the predominant motive for episodes involving cocaine (56%, with 14% unknown) and *psychic effects* was the predominant motive among episodes involving GHB (71%, with 18% unknown).

- In 2001, half of drug-related ED episodes resulted in admission to the hospital (50%, 319,212 episodes) (Table 5.2.0).

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INTRODUCTION

This publication presents estimates of drug-related emergency department (ED) visits from the Drug Abuse Warning Network (DAWN) from 1994 through 2001. DAWN is an ongoing, national data system that collects information on drug-related visits to EDs from a national probability sample of hospitals. The Office of Applied Studies (OAS) of the Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services has been responsible for DAWN operations since 1992.

ED Trends From DAWN is published twice each year. Once each year, *ED Trends* publishes a limited set of preliminary estimates developed from the first half-year of data (i.e., January through June). Each year, a second issue of *ED Trends* reports final estimates for the most recent full year and comparisons to previous years. The publication series entitled *ED Trends From DAWN* replaces 2 semi-annual publications—*Mid-year Preliminary Emergency Department Data from DAWN* and *Year-end Emergency Department Data from DAWN*.[3] It also replaces the trend tables (chapter 4) from the annual *Detailed ED Tables*,[4] which are published exclusively on the Internet. The new title denotes more clearly the content of the series and is intended to reduce the confusion caused by those previous, complex titles.

This publication contains the following estimates of drug-related ED episodes and specific drug mentions:

- Final estimates for the full years 1994 through 2001.
- Final estimates for each half-year period for 1997 through 2001, which are provided for reference. Revised final estimates for January – June 2001 are published here for the first time (see Appendix B).

The revised estimates in the ED Trends From DAWN series replace those DAWN estimates published previously for 1994 through 2000.

These revisions to estimates published previously are the result of a major change in the underlying method by which drugs are coded and classified in DAWN. DAWN relies on a detailed "drug vocabulary" to categorize the thousands of substances that are reported each year. The drug vocabulary is, literally, the language—the codes and terminology—that DAWN uses to record and classify drugs and other substances collected from EDs. It was necessary to implement substantial changes to the existing vocabulary to ensure that reported substances are accurately and consistently classified. The overhaul and replacement of the DAWN drug vocabulary as well as the first publication of the revised trends are described in detail in *Emergency Department Trends From the Drug Abuse Warning Network Preliminary Estimates January – June 2001 with Revised Estimates 1994 – 2000*.[5] In addition, a separate methodology publication focusing exclusively on the drug vocabulary is forthcoming.

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[3] The first report in the *ED Trends* series was released in February 2002. Its complete title is *Emergency Department Trends From the Drug Abuse Warning Network Preliminary Estimates January – June 2001 with Revised Estimates 1994 – 2000*.

[4] Prior to 1998, *Detailed ED Tables* were published under the title *DAWN Annual Emergency Department Data.*

[5] The classification of drugs currently in use by DAWN is derived from the Multum *Lexicon*, Copyright © 2001, Multum Information Services, Inc. The classification has been modified to meet DAWN's unique requirements (2001). The Multum Licensing

In the next section, we describe the sources and methods used to collect data for DAWN, and then highlight certain limitations of the data. Finally, we provide an overview of the layout of this publication, including a detailed description of each table and its proper interpretation.

OTHER DAWN PUBLICATIONS

The DAWN system also collects data on drug-related deaths from a nonrandom sample of death investigation jurisdictions. DAWN mortality data are published annually in a separate publication series entitled *Mortality Data from the Drug Abuse Warning Network*.[6]

A relatively new series called *The DAWN Report* focuses on topics of special interest in a brief publication format.[7] The inaugural issue of *The DAWN Report* (12/2000) focused on club drugs, a topic chosen because of the large volume of requests for information on this emerging drug problem. The next issue of *The DAWN Report* featured major drugs of abuse in ED visits, which graphically depicted the geographic distribution of cocaine, heroin, marijuana, and methamphetamine mentions on a U.S. map (7/2001). Several new issues of *The DAWN Report* are scheduled for release in the near future.

OAS receives many requests for specific information from potential and actual consumers of information from DAWN. We view these requests as expressions of the need to improve the content of DAWN publications. Topics for *The DAWN Report* and modifications to other DAWN publications are often the result of consumer input.

OVERVIEW OF DAWN ED COMPONENT

The DAWN system provides information on some of the health consequences of drug abuse in the United States as manifested by drug-related visits to hospital EDs. Hospitals eligible for DAWN are non-Federal, short-stay, general medical and surgical hospitals that operate 24-hour, 7-day EDs. Since 1988, DAWN ED data have been collected from a representative sample of eligible hospitals located throughout the coterminous U.S., with oversampling in 21 metropolitan areas and a National Panel of hospitals sampled from locations outside these areas.

In 2001, the DAWN sample consisted of 564 eligible hospitals. Of these, 458 (81%) participated in DAWN. Response rates in the 21 metropolitan areas ranged from 58 percent to 100 percent, with only 2 metropolitan areas having response rates below 75 percent (Table 1.1). The 2001 sample of hospitals submitted data on 196,268 drug abuse episodes with an average of 1.8 drug mentions per episode (Table 1.3).

For this publication, sampling weights have been applied to data from the sample to produce estimates representing all ED drug episodes and drug mentions in the total coterminous U.S.[8] and in the 21 metropolitan areas (see Appendix B). The National Panel

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Agreement governing use of the *Lexicon* is provided in Appendix E to this report and can be found on the Internet at http://www.multum.com/.

[6] For mortality data prior to 2000, the publication series was titled *Drug Abuse Warning Network Annual Medical Examiner Data.*

[7] Issues of *The DAWN Report* are available on-line at http://www.samhsa.gov/oas/dawn.htm.

[8] The total coterminous U.S. consists of the 48 contiguous states and the District of Columbia. Alaska and Hawaii are excluded.

represents hospitals outside of the 21 metropolitan areas. Estimates for the 21 metropolitan areas are pooled with estimates from the National Panel to produce the national estimates. To account for differences in population and to facilitate comparisons across metropolitan areas, estimated rates of ED drug episodes and mentions per 100,000 population are also presented (see Appendix B). Population estimates used to derive the estimated rates for 2001 are presented in Table 1.9 for each DAWN metropolitan area.

DATA COLLECTION METHODOLOGY

Within each hospital that participates in DAWN, a designated DAWN reporter, who is usually a member of the ED or medical records staff, is responsible for reviewing medical charts to identify ED visits that are eligible for submission to DAWN. DAWN reporters rely on information from medical charts that originates with hospital staff who treated the patient. Ultimately, the accuracy and completeness of the data submitted to DAWN depend on the careful recording of information by the medical staff and on the accuracy and completeness of the information provided to the medical staff by the patient.

The DAWN reporter submits an episode report to the DAWN system for each patient who visits a DAWN ED and meets certain criteria. To be included in DAWN, the patient presenting to the ED must meet all of the following criteria:

- The patient was age 6 to 97;
- The patient was treated in the hospital's ED;
- The patient's presenting problem(s) (i.e., the reason for the ED visit) was induced by or related to drug use, regardless of when the drug use occurred;
- The episode involved the use of an illegal drug or the use of a legal drug or other chemical substance for nonmedical purposes; and
- The patient's reason for using the substance(s) was dependence, suicide attempt or gesture, and/or psychic effects.

In addition to drug overdoses, reportable ED episodes may result from the chronic effects of habitual drug use or from unexpected reactions. Unexpected reactions reflect cases where the drug's effect was different than anticipated (e.g., caused hallucinations). DAWN cases do **not** include accidental ingestion or inhalation of a substance with no intent of abuse, or adverse reactions to prescription or over-the-counter medications taken as prescribed.

A single drug abuse episode may have multiple drug mentions. Up to 4 different substances can be recorded for each ED episode. Therefore, not every reported substance is, by itself, necessarily a cause of the medical emergency. On the other hand, substances that contributed to a drug abuse episode may occasionally go unreported or undetected. Even when only one substance is reported for an episode, an allowance should be made for reportable drugs not mentioned or for other contributory factors.

Alcohol use is reported to DAWN **only** when consumed in combination with a reportable substance.

In addition, each report of a drug-related ED episode includes demographic information about the patient and information about the circumstances of the episode (e.g., the date and time of the ED visit, the reason the patient came to the ED). For each drug mentioned, the DAWN reporting form includes the form in which the drug was acquired (e.g., liquid, pieces), its source (e.g., street buy, patient's own legal prescription), and its route of administration (e.g., oral, injection). Only one reason for the ED contact and one reason for taking substances is recorded, regardless of the number of substances involved.

CONSIDERATIONS WHEN INTERPRETING DAWN DATA

When interpreting findings from this publication, the reader needs to recognize what DAWN can and cannot measure. DAWN does not measure the frequency or prevalence of drug use in the population, but rather the health consequences of drug use that are reflected in visits to hospital EDs. Moreover, estimates of drug episodes and mentions may increase or decrease for reasons unrelated to the size or characteristics of the drug-using population. The reader should consider the following when interpreting estimates from DAWN:

- The DAWN estimates for 2001 are the first to utilize population data from the 2000 decennial Census. The U.S. Bureau of the Census is the source for all the population data used to produce the estimated rates (see Appendix B). It is important to note that the population denominator used to calculate rates per 100,000 population is considerably larger for 2001 due to the availability of 2000 decennial Census data. (Estimates for periods prior to 2001 used estimated yearly adjustments from the 1990 Census.) Many large decreases in 2001 population-based rates are attributable to the larger denominator. Therefore, it is important to verify reductions in rates against total estimates for the same measures. It is possible, for example, to have an estimate (in mentions or episodes) increase from 2000 to 2001 and to have the corresponding rate decrease because of changes in the population denominator. To assist the reader, the percent change columns in the rate tables are calculated based on the rates in this issue of *ED Trends*.[9]

- The number of ED episodes reported to DAWN is not equivalent to the number of individual patients, because one person may make repeated visits to an ED. DAWN data contain no individual identifiers, which would be required to estimate repeat visits. Therefore, the estimates presented in this publication pertain to total ED episodes or drug mentions, not to the number of different patients involved. In this context, rates should be regarded not as prevalence rates for the population using EDs, but as indicators of the number of ED drug abuse episodes or mentions per 100,000 population.

- DAWN data may be affected by data collection procedures and thereby reflect changes in hospital services or operations. A hospital in one city may open a new detoxification unit that diverts drug-related episodes away from the ED. Conversely, in another city, people may go to the ED to seek care for detoxification because they are unable to gain admission to a drug treatment facility or because they need medical certification before entering treatment. These factors may vary over time and place.

[9] Previously (in the last issue of *ED Trends*), the percent change columns presented in the rate tables reflected the changes for the underlying estimates (mentions or episodes).

- Estimates of drug-related ED episodes or mentions may be affected by reporting patterns. For example, a change to computer-based recordkeeping systems in a hospital ED could increase or decrease the number of ED visits identified as drug related.
- Greater awareness and knowledge of drug-related problems may result in a greater propensity for ED staff to record drug use in the ED record. Alternatively, the sensitivity of drug-related problems may reduce patients' willingness to disclose drug use and providers' willingness to record it in the permanent medical record.
- Estimates of drug-related ED episodes or mentions can be affected if the weights applied to the data change in an irregular way. We use a set of quality control procedures to identify and investigate unusual weights and data, and our review of the weights and data used in this publication did not reveal any factors that are unduly responsible for the trends reported.
- Trends may be affected by unusual changes in the sample composition. See Appendix B for more information regarding sampling.
- Graphs illustrating trends in drug mentions often use different scales for the vertical axis.

INTERPRETATION OF STATISTICAL SIGNIFICANCE

The estimates of episodes and mentions displayed in tables in this publication are accompanied by columns indicating the percent change from one period to another. The percent change is indicated only for statistically significant differences and only when both estimates in the comparison are greater than zero. In describing statistically significant differences between DAWN estimates, the traditional level of statistical significance (*p* less than 0.05) is used.

In tables presenting full years, the estimates for the latest year (2001) are compared to the earliest year presented in the trend (1994 in this publication), and then to the 2 previous years (1999 and 2000).

In tables presenting estimates for half years, the first half of 2001 is compared to the second half of 2001, then the second halves of 2000 and 2001 are compared. The potential for seasonal distortion of comparisons between the second half of one year and the first half of another makes comparisons of those periods problematic. Therefore, discussions of half-year findings in this publication will be limited and when present, will focus on comparisons between the second halves of 2000 and 2001.

Each table of estimates has a corresponding table containing relative standard errors (RSEs) for each estimate, and all the *p*-values, including those that are 0.05 or greater, for the comparisons described above. The RSE tables are published on the Internet. The RSE values for total estimates and rates per 100,000 population are similar, so a single RSE table is provided for each pair of estimate tables. For example, Table RSE-2.2.0 presents RSEs applicable to the estimates in Table 2.2.0 and to the estimated rates in Table 12.2.0. The statistical tests used to determine the significance levels are t-tests (with infinite degrees of freedom). That is, the change score, or the difference between the 2 estimates, is divided by the standard error of the estimate. A value of zero is expected under the null hypothesis.

Although tests for statistical significance are important tools in interpreting results, significance does not always imply that the difference is large or important. Small changes that are statistically significant may occur frequently at the metropolitan area level in DAWN due to the selection of all eligible hospitals (which constitutes a census) in Baltimore, Buffalo, Denver, San Diego, and San Francisco, along with sampling many other metropolitan areas at a high frequency (Table 1.1). The closer the sample is to a census, the higher is the likelihood that a change will be statistically significant, no matter how small it may be. While technically there is no sampling variability in the 5 areas noted, some variability is due to the hospitals' nonresponse, which is treated as sampling error in the variance calculations.

RSEs for the coterminous U.S. and for each metropolitan area are summarized in Figure 1. The RSE for total drug-related ED episodes for the coterminous U.S. is 7 percent. Across the 21 metropolitan areas oversampled in DAWN, RSEs range from a low of 3 percent in San Diego to a high of 21 percent in St. Louis. RSEs for particular drugs are often much higher.

Nonsampling errors such as nonresponse and reporting errors may affect the outcome of significance tests. While *p* less than 0.05 significance level is used to determine statistical significance in DAWN ED tabulations, large differences associated with slightly higher *p*-values (specifically those between 0.05 and 0.10) may be of interest also. On the other hand, statistically significant differences are not always meaningful, because the size of the difference is small or because the significance may have occurred simply by chance. In a series of 20 independent tests, it is to be expected that one test will indicate a significant difference merely by chance even if there is no real difference in the populations compared. The text often discusses more than one comparison within a given table (e.g., comparing percentages for different drugs or subgroups). We have made no attempt to adjust the level of significance to account for these multiple comparisons. Therefore, the probability of falsely rejecting the null hypothesis at least once in a family of comparisons is higher than the significance level given for individual comparisons (in this publication, 0.05).

OTHER CONSIDERATIONS WHEN READING DAWN TABLES

In this publication, estimates with RSEs of 50 percent or higher are regarded as too imprecise for publication. In the tables, the symbol "…" (3 dots) has been substituted for estimates that did not meet this standard of precision. With an RSE of 50 percent, the 95 percent confidence interval for an estimate ranges from 2 to 198 percent of the estimate's value (see Appendix B).

Similarly, some 2001 estimates for the Atlanta metropolitan area are suppressed (indicated by the symbol “---“) because they are based on insufficient data (see Appendix C).

Beginning with the 1999 ED data, estimates smaller than 10 were no longer suppressed in DAWN ED publications. Many estimates as small as this are suppressed by virtue of having RSEs greater than 50 percent. For those that are shown in the tables, we note for the reader that small numbers and their associated RSEs should be interpreted with caution.

As described in Appendix B, the DAWN ED data for 1995 through 1997 were reweighted and reprogrammed, and the presentation of findings was improved during 1998. Improvements

in the DAWN drug vocabulary resulted in revisions to estimates for 1994 through 2000.[10] The charts, tables, and graphs in this publication present only revised estimates.

HOW TO USE THIS PUBLICATION

This issue of *ED Trends From DAWN* examines the nature of trends in drug-related ED episodes across the 8 full years 1994 to 2001 and, to a lesser extent, across the 10 half-year periods ending with June – December 2001. Statistical tests are used to compare full year 2001 estimates with those for 2000, 1999, and 1994. For half years, estimates for the latest half-year period are compared with those for the previous 2 half years. Each table displays the percent change for statistically significant differences. Actual *p*-values are still available in the companion tables of relative standard errors (RSEs), which are published on the Internet.

The presentation of ED findings in this publication is divided into the following sections, which mirror the order of the tables in this publication:

- Major substances of abuse, such as cocaine, heroin, and "club drugs;"
- Other substances of abuse, such as prescription and over-the-counter (OTC) drugs;
- Episodes in the 21 metropolitan areas oversampled in DAWN;
- Demographic characteristics of patients treated in drug-related ED episodes;
- Characteristics of the episodes themselves; and
- Discussion of results.

Population-based rates are discussed within these sections by topic, because the rates are best used to supplement the other estimates of episodes and mentions. By considering the estimates of drug mentions and episodes relative to the size of the population at risk, the rates yield standardized measures that can be compared across selected drugs, metropolitan areas, gender and age groups.

ORGANIZATION OF TABLES

In this section, we explain the organization of the tables in *ED Trends* and explain the classification of drugs in the context of these tables.

The table numbering scheme is described in a separate exhibit on the inside of the front cover of this publication. Table numbers have changed slightly since the last (and initial) publication of the *ED Trends From DAWN* to accommodate the addition of new tables.[11]

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[10] A thorough description of the revisions to the DAWN drug vocabulary and the impact of those revisions on published estimates can be found in Appendixes A and B of the *ED Trends From DAWN Preliminary Estimates January – June 2001 with Revised Estimates 1994 – 2000*.

[11] Tables appearing for the first time in this publication provide population estimates (Table 1.9), half-year estimates for drug detail (Tables 2.3.0, 2.5.0, 2.7.0, 2.9.0, 2.11.0, 12.3.0, 12.5.0, 12.7.0, 12.9.0, and 12.11.0), and the major substances of abuse by metropolitan area (Tables 3.1 – 3.34 and 13.1 – 13.34), demographic characteristics (Tables 4.1.0 – 4.34.0 and 4.1.0 – 4.34.0), and episode characteristics (Tables 5.1.0 – 5.34.0).

The tables in this publication are designed to array information from the very general to the very specific. This design responds directly to requests we receive for information at these different levels of detail. Figure 2 illustrates the general to specific organization of the tables.

Major Drug Categories

At the most general level (the left half of Figure 2), estimates are reported for major drug categories. Table 2.2.0 illustrates the standard layout of substances by drug categories. This table and others like it are divided into 2 panels with:

- "Major substances of abuse" (e.g., cocaine, heroin, marijuana) in the top panel, and
- "Other substances of abuse" in the lower panel.

Specific content for each of these panels is described later in this section.

National estimates are provided for the major drug categories in one table. The same estimates are provided in separate tables for each of the 21 metropolitan areas oversampled by DAWN. For example, Table 2.2.0 contains national estimates, and Tables 2.2.1 through 2.2.21 contain estimates for each of the 21 DAWN metropolitan areas.

The third term in the table number always indicates the geographic area:

- **.0** for national estimates, and
- **.1 - .21** for the 21 metropolitan areas, where **.1** is always Atlanta, **.2** is always Baltimore, and so forth. The complete list of the metropolitan areas and their corresponding numbers is provided on the inside of the front cover.

Component Drugs

At a more specific level (the right half of Figure 2), a second set of tables lists the component drugs classified under the 5 largest categories: major substances of abuse, psychotherapeutic agents, CNS agents, respiratory agents, and cardiovascular agents.

National estimates are provided for each of the component drugs; these are followed by estimates for component drugs for each of the 21 metropolitan areas.

This is more detailed drug information than is available from any other substance abuse data system. In response to requests, both high and low frequency terms are displayed, as follows:

- Table 2.4.0 (estimates) and 12.4.0 (rates): full-year estimates for component drugs of the major substances of abuse. Corresponding half-year estimates are published in Tables 2.3.0 and 12.3.0, respectively.

  This includes all the terms, including street names, reported to DAWN for the major substances of abuse. For example, users will consult this table to find estimates for "crack," which is subsumed under the major substance "cocaine" in Tables 2.1.0 and 2.2.0, and to see the relative frequency of particular terms.

- Table 2.6.0 (and 12.6.0): full-year estimates for component drugs of psychotherapeutic agents. Corresponding half-year estimates are published in Tables 2.5.0 and 12.5.0, respectively.

- Table 2.8.0 (and 12.8.0): full-year estimates for component drugs of CNS agents. Corresponding half-year estimates are published in Tables 2.7.0 and 12.7.0, respectively.

- Table 2.10.0 (and 12.10.0): full-year estimates for component drugs of respiratory agents. Corresponding half-year estimates are published in Tables 2.9.0 and 12.9.0, respectively.

- Table 2.12.0 (and 12.12.0): full-year estimates for component drugs of cardiovascular agents. Corresponding half-year estimates are published in Tables 2.11.0 and 12.11.0, respectively.

Except for the major substances of abuse, component drugs are always expressed at the generic substance level (e.g., fluoxetine). No published estimates are provided by brand (trade) name. Tabulations of component drugs will include all substances in the category, regardless of the frequency with which they were reported to DAWN. For example, users interested in the trends in ED visits involving particular narcotic analgesics will consult Table 2.8.0.

Major Substances of Abuse

The major substances of abuse include the most common illicit drugs and drug categories reported to DAWN, alcohol reported in combination with any other substance reported to DAWN, and lower frequency drugs of particular policy interest (e.g., club drugs such as Ecstasy and GHB).

The 15 categories in the major substances of abuse are grouped in a panel at the top of summary tables (e.g., Table 2.2.0) for ease of reference. For each of the major substances, component drugs—that is, the specific terms, including street names as they were reported to DAWN—are enumerated in Table 2.4.0 (and Table 2.3.0 for half years). The 15 major substances of abuse

Alcohol-in-combination. This is the most frequent drug reported to DAWN, even though it is reported only when present in combination with another reportable drug.

Cocaine. This category includes both powder and crack cocaine. Estimates for these and other specific terms are available in the component drug tables.

Heroin. ED estimates for heroin and morphine are tabulated separately (with ED morphine estimates presented under narcotic analgesics, below).[12]

Marijuana. This category includes both marijuana and hashish.

[12] In contrast, heroin and morphine are combined in tabulations of DAWN mortality data. It is often impossible to distinguish heroin from morphine during death investigations because the toxicology tests used to identify a drug involved in a drug-related death rely on a metabolite common to both drugs. This is the only such difference in drug classification between DAWN ED and mortality data.

Amphetamines. This class of substances has been extracted from the category of CNS stimulants because of its importance as a major substance of abuse. For purposes of classification, "amphetamines" (plural) includes a class of compounds derived from or related to the drug amphetamine. Although some "designer" drugs fall into the class of amphetamines, we choose to report some of them (e.g., methamphetamine) individually as major substances of abuse. This category does not include other CNS stimulants, such as caffeine or methylphenidate.

Methamphetamine. This category includes methamphetamine and the term "speed."

MDMA (methylenedioxymethamphetamine, Ecstasy). This is the "designer" or "club" drug commonly known as Ecstasy. It is classified separately as a major substance of abuse because of widespread interest.

Ketamine. This is a veterinary anesthetic classified separately as a major substance of abuse because of widespread interest. It is another of the "designer" or "club" drugs.

LSD. LSD is listed separately from other hallucinogens because of widespread interest.

PCP. PCP is listed separately from other hallucinogens because of widespread interest.

Miscellaneous hallucinogens. This category includes hallucinogens other than LSD and PCP.

Flunitrazepam (Rohypnol). Flunitrazepam is a benzodiazepine that is not legal for marketing in the United States. It is reported under major substances because of increased interest in its use as a "designer" or "club" drug. It is excluded from the list of benzodiazepines described below.

Gamma hydroxy butyrate (GHB). This category includes GHB and its precursor gamma butyrolactone (GBL). It is another of the "designer" or "club" drugs.

Inhalants. Inhalants include anesthetic gases and certain nonpharmaceuticals for which the documented route of administration was inhalation.

To be classified as inhalants, anesthetic gases are extracted from the category CNS agents, general anesthetics. These substances have the physical property at room temperature of being a gas or are delivered as a gas and therefore are presumed to have been inhaled. The anesthetic gases include nitrous oxide, ether, and chloroform.

To be classified as an inhalant, a nonpharmaceutical substance must have a psychoactive effect when inhaled and falls into one of 3 subcategories: volatile solvents, nitrites, or chlorofluorohydrocarbons (see Appendix D).

Illicit combinations. This category includes compounds composed of two or more major substances of abuse that are mixed and taken together. For example, "speedball," which usually refers to the combination of heroin and cocaine taken at once, would be classified as an illicit combination, whereas separate mentions of heroin and cocaine would be classified separately in the categories heroin and cocaine. Compounds consisting of a major substance of abuse and another substance are classified in the category of the major substance (e.g., heroin with scopolamine is classified as heroin).

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Other Substances Of Abuse

Other substances of abuse are summarized by pharmaceutical category (e.g., Table 2..0) using the categories and category assignments that are an integral part of the Multum *Lexicon* (the basis for DAWN's drug vocabulary), with a few exceptions noted here. Many of these substances are marketed legally as prescription and over-the-counter medications. Readers should note that the purpose for which these substances are intended may be quite different from the effect for which these substances are abused. Since it is impossible to know patients' actual intentions when abusing a substance, we have chosen to classify these substances by their therapeutic use. Some drugs may have more than one therapeutic use and could be assigned to multiple categories. To avoid duplication, each drug is assigned to a single therapeutic category and is tabulated only once.

Four of the categories under other substances of abuse are divided into finer subcategories, and the component drugs for these 4 categories are displayed in subsequent tables (e.g., Tables 2.6.0, 2.8.0, 2.10.0, and 2.12.0).

Psychotherapeutic agents are divided into the following categories:

- Antidepressants
  - MAO inhibitors
  - SSRI antidepressants
  - Trycyclic antidepressants
  - Miscellaneous antidepressants
- Antipsychotics
  - Phenothiazine antipsychotics
  - Psychotherapeutic combinations
  - Miscellaneous antipsychotic agents
- Anxiolytics, sedatives, and hypnotics
  - Barbiturates
  - Benzodiazepines – This category excludes the benzodiazepine flunitrazepam (Rohypnol), which was assigned to major substances of abuse.
  - Miscellaneous anxiolytics, sedatives, and hypnotics
- CNS stimulants. This category excludes the CNS stimulants that were assigned to major substances of abuse: amphetamines, methamphetamine, and MDMA (Ecstasy).

Central nervous system (CNS) agents are divided into the following categories:

- Analgesics
  - Antimigraine agents
  - Cox-2 inhibitors
  - Narcotic analgesics and narcotic analgesic combinations – This category excludes heroin, which is classified as a major substance of abuse.
  - Nonsteroidal anti-inflammatory agents
  - Salicylates
  - Analgesic combinations
  - Miscellaneous analgesics
- Anorexiants
- Anticonvulsants
- Antiemetic/antivertigo agents
- Antiparkinson agents

- General anesthetics – This category excludes the anesthetic gases that were assigned to major substances of abuse as inhalants.
- Muscle relaxants
- Miscellaneous CNS agents

Respiratory agents are divided into the following categories:

- Antihistamines
- Bronchodilators
- Decongestants
- Expectorants
- Upper respiratory combinations
- Respiratory agents not tabulated above (NTA) – This category captures respiratory agents that did not fit into the 5 other categories of respiratory agents.

Cardiovascular agents are divided into the following categories:

- Antiandrenergic agents, centrally acting
- Beta-andrenergic blocking agents
- Calcium channel blocking agents
- Diuretics
- Cardiovascular agents NTA – This category has been added to capture cardiovascular agents that did not fit into the 4 other categories of cardiovascular agents.

As noted earlier, the general categories used in Table 2.2.0 are expanded in Tables 2.4.0 through 2.12.0 to enumerate the component drugs for the 4 major categories: psychotherapeutic agents, CNS agents, respiratory agents, and cardiovascular agents and their associated subcategories. For example, Table 2.2.0 presents mentions of narcotic analgesics under CNS agents; mentions of particular narcotic analgesics—morphine, codeine, and others—are displayed in Table 2.8.0.

In the tables enumerating component drugs, only generic names are used. Brand (trade) names are not used because estimates for particular brands are considered to be unreliable.[13] Therefore, for example, mentions of the miscellaneous analgesic acetaminophen are tabulated as “acetaminophen,” not Tylenol.

Users of DAWN estimates have told us that it is not useful to report only the most frequently occurring substances. Therefore, in Tables 2.4.0 through 2.12.0, substances are enumerated in their relevant category, regardless of the numbers of mentions estimated from DAWN.

The following 6 categories from the Multum *Lexicon* are presented without subdivisions due to the low number of mentions:

- Alternative medicines
- Anti-infectives
- Gastrointestinal agents
- Hormones
- Nutritional products
- Topical agents

[13] This issue is discussed in greater detail in Appendix A.

Finally, 2 additional categories, "drug unknown" and "all other substances NTA" do not appear in the Multum *Lexicon* but are needed to complete the classification of substances for DAWN.

Drug unknown. This includes 2 types of cases: those in which the drug was reported to DAWN as "unknown" and those in which drugs were reported to DAWN as "polysubstances." For the purposes of DAWN, polysubstance refers to the abuse of more than one substance when the individual substances were not identified by the source record. Because DAWN cases are identified through retrospective medical chart review, there will always be cases in which the drug abuse was known but the particular substance was unknown or unknowable. Since 1995, reporting of unknown substances seems to have stabilized at about 2 to 3 percent of drug mentions.

All other substances NTA. This category contains any substance reported to DAWN that could not be classified in the categories noted above and have too few mentions to warrant their own entries in DAWN tables. This category currently includes: antihyperlipidemic agents, antineoplastics, biologicals, coagulation modifiers, immunologic agents, miscellaneous agents, and plasma expanders. Miscellaneous agents include: antidotes, antigout agents, antipsoriatics, antirheumatics, chelating agents, cholinergic muscle stimulants, genitourinary tract agents, impotence agents, local injectable anesthetics, miscellaneous uncategorized agents, psoralens, radiocontrast agents, and viscosupplementation agents.

This category also includes certain legacy terms that could not be assigned reliably to any category. These include ambiguous, nonspecific terms that could fall into any of several categories (e.g., "AIDS medicine" could be an anti-infective, an anticonvulsant, or any number of other drugs); undocumented, nonspecific terms (e.g., "thought organizer"); and street terms for illicit substances that could not be linked reliably to a particular illicit substance (e.g., "T," "butterflies").

We will monitor the content of this category to avoid its uncontrolled expansion in the future. Should a substance or class of substances begin to show significant growth, we intend to add such information to the published categories rather than allow this "all other" category to degrade over time. In addition, regular updates of the Multum *Lexicon* will introduce new prescription and over-the-counter substances as they are approved for marketing and before they begin to appear in DAWN.

ADDITIONAL CONTENT AVAILABLE ON THE INTERNET

Although this publication includes a large number of tables, even more detail is available through tables that are published only on the Internet. These additional tables can be accessed online at http://www.samhsa.gov/oas/dawn.htm. Tables published exclusively on the Internet are:

- Additional tables of estimates by metropolitan area. For ease of reference, these are listed in the table of contents of *ED Trends* and their location noted.
- Relative standard errors (RSEs) for estimates provided in this publication, in a corresponding tabular format. The RSEs used for population-based rates are the same as those used for other DAWN estimates. Although there may be slight differences in the

RSEs calculated for the DAWN estimates and the RSEs that would be appropriate for the population-based rates (due to sampling error in the current population estimates), they are sufficiently close for the purpose of this publication.

- Updated indexes listing generic and brand names for prescription and over-the-counter substances. No published estimates are provided by brand (trade) name. The index is provided as an aid for readers who may be unfamiliar with the generic names used in this publication. The updated index is not printed in each issue of *ED Trends* due to size.[14]

[14] The index was printed as Appendix I in *Emergency Department Trends From the Drug Abuse Warning Network Preliminary Estimates January – June 2001 with Revised Estimates 1994 – 2000*.

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Figure 1
Relative standard errors (RSEs) for drug-related episodes by metropolitan area: 2001

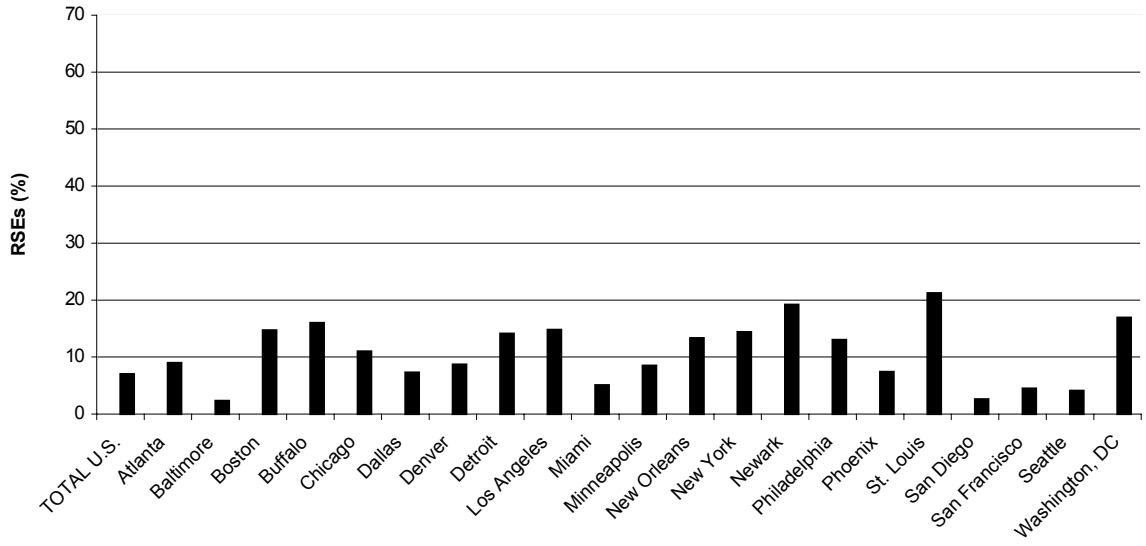
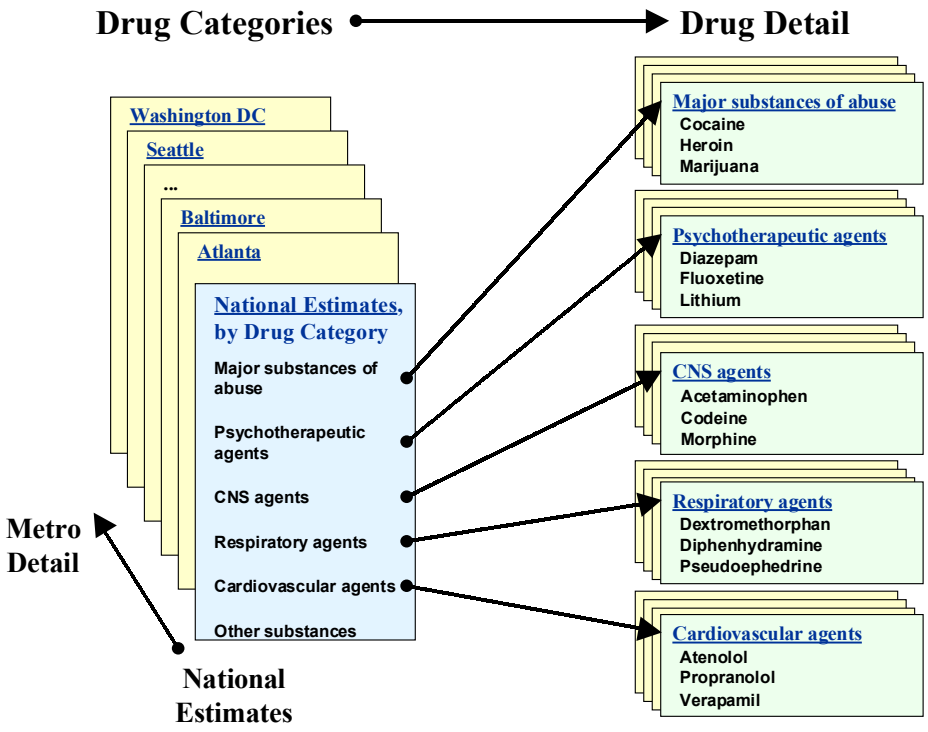


Figure 2
Tables in *ED Trends From DAWN*



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TRENDS IN MAJOR SUBSTANCES OF ABUSE

This section presents annual estimates from DAWN for total drug-related ED episodes and mentions of major substances of abuse.

"Major substances of abuse" include the most common illicit drugs reported to DAWN, alcohol reported in combination with any other substance reported to DAWN, and lower frequency drugs of particular policy interest (e.g., club drugs such as Ecstasy and GHB). The specific terms (including street names) reported to DAWN for each drug category are listed, with corresponding mentions from 1994 to 2001, in Table 2.4.0 (full-year estimates) and Table 12.4.0 (corresponding rates per 100,000 population). Corresponding half-year tables (Tables 2.3.0 and 12.3.0) are available for the first time in this publication of *ED Trends From DAWN*.

One ED episode can include mentions of one drug alone or mentions of multiple drugs. Major substances of abuse, such as cocaine, heroin, and marijuana, are often reported in combination with other drugs. Alcohol-in-combination is reportable to DAWN only when present in combination with another reportable drug. Therefore, the number of drug mentions exceeds the number of episodes.

The following discussion focuses primarily on comparisons of final estimates for 2001 with 2000. Tables also show statistical tests comparing 2001 estimates with those for 1999 and, for long-term trends, with those for 1994 (the earliest year shown in the tables). In addition, long-term trends in drug-related ED episodes overall and for those involving the most frequently mentioned illicit drugs and alcohol-in-combination are shown in Figure 3.

DAWN estimates for 2001 are based on data from a nationally representative sample of 458 hospitals (Table 1.1).

TOTAL DRUG-RELATED ED EPISODES

- In 2001, there were 638,484 drug abuse-related ED episodes in the coterminous U.S. with 1,165,367 drug mentions (on average, 1.8 drugs per episode) (Table 2.2.0).
- There was a 6 percent increase from 2000 to 2001 in total drug-related ED episodes and in ED drug mentions (Table 2.2.0). Total ED visits (that is, ED visits for any reason) increased 5 percent (from 96.2 million to 100.5 million) during this period.
- In 2001, drug abuse-related ED visits occurred at the rate of 252 ED episodes per 100,000 population in the coterminous U.S. (Table 12.2.0).
- From 2000 to 2001, there were significant increases in ED mentions of cocaine (10%, from 174,881 to 193,034) and marijuana (15%, from 96,426 to 110,512) (Table 2.2.0), while mentions of alcohol-in-combination (218,005 in 2001), heroin (93,064), amphetamines (18,555), and methamphetamine (14,923) were unchanged.
- Among the less frequently mentioned major substances of abuse, only mentions of inhalants changed significantly (down 56%, from 1,522 to 676) from 2000 to 2001

(Table 2.2.0). Mentions of PCP (6,102 in 2001), MDMA (Ecstasy) (5,542), GHB (3,340), LSD (2,821), miscellaneous hallucinogens (1,788), Ketamine (679), and illicit combinations not mentioned above (298) were statistically unchanged from 2000 to 2001.

- Among the major substances of abuse, the highest rates of ED drug mentions in 2001 occurred for (Table 12.2.0):
  - Alcohol-in-combination (86 mentions per 100,000 population),
  - Cocaine (76),
  - Marijuana (44), and
  - Heroin (37).

ALCOHOL-IN-COMBINATION

- Alcohol-in-combination was mentioned in 34 percent of ED drug episodes in 2001 (218,005 mentions) and remains the most common substance reported in drug-related ED visits (Table 2.2.0 and Figure 3). Alcohol is reported to DAWN only when present in combination with another reportable drug, so the actual number of alcohol-related ED visits is higher than the DAWN estimate for alcohol-in-combination.
- Mentions of alcohol-in-combination were statistically unchanged from 2000 to 2001, but have increased 36 percent (from 160,798 mentions) since 1994 (Table 2.2.0 and Figure 3).

COCAINE, HEROIN, MARIJUANA

- Cocaine continues to be the most frequently mentioned illicit substance, present in 30 percent of ED episodes (193,034 mentions) in 2001. Cocaine was followed in frequency by marijuana (17%, 110,512 mentions) and heroin (15%, 93,064 mentions) (Table 2.2.0 and Figure 3).
- Marijuana mentions increased 15 percent (from 96,426 to 110,512) and cocaine mentions increased 10 percent (from 174,881 to 193,034) from 2000 to 2001; heroin mentions were stable during this period (Table 2.2.0).
- Almost a quarter of the cocaine mentions in 2001 (24%, 46,964 mentions) were attributed to “crack,” which has increased 35 percent since 1994 and 20 percent since 2000 (Table 2.4.0). Most cocaine mentions (75%, 145,160) were reported to DAWN simply as “cocaine,” and it is not possible to determine what proportion of these might be crack. Mentions that were reported simply as “cocaine” did not increase significantly from 2000 to 2001.
- Taking changes in population into account, from 1994 to 2001, cocaine mentions increased 22 percent (from 62 to 76 mentions per 100,000 population) (Table 12.2.0). Also during this period, heroin mentions increased 34 percent (from 27 to 37 mentions

per 100,000 population), and marijuana mentions increased 151 percent (from 17 to 44).

AMPHETAMINES AND METHAMPHETAMINE

- In 2001, amphetamines were mentioned in 3 percent of DAWN ED episodes (18,555 mentions) (Table 2.2.0). Since 1994, the rate of mentions of amphetamines has increased 67 percent, from 4 to 7 mentions per 100,000 population (Table 12.2.0). From 2000 to 2001, no significant change was evident.
- There were 14,923 methamphetamine mentions (6 per 100,000 population) in 2001 (Tables 2.2.0 and 12.2.0). These estimates were not statistically changed from 2000, 1999, or 1994. This recent period of stability follows a period of great fluctuation in methamphetamine mentions during the late 1990s.
- Most mentions of amphetamines (93%) are attributed simply to "amphetamine," while methamphetamine mentions are split among "crank" (13%), "methamphetamine" (65%), and "speed" (16%) (Table 2.4.0). It is impossible to know the accuracy of distinctions between amphetamine and methamphetamine. Together they account for 33,478 mentions.

CLUB DRUGS

- No significant changes from 2000 to 2001 were evident for the club drugs MDMA (Ecstasy) (5,542 mentions in 2001), GHB (3,340), or Ketamine (679) (Table 2.2.0).
- The changes in MDMA, GHB, and Ketamine mentions from 1994 to 2001 are very large in percentage terms, the result of very small numbers in 1994 (Table 2.2.0). Each of these drugs remains relatively infrequent in ED visits with no more than 2 mentions per 100,000 population in 2001 (Table 12.2.0).
- Estimates for flunitrazepam (Rohypnol) were too imprecise for publication every year from 1995 through 2001 (Table 2.2.0 and Figure 4).

OTHER TRENDS

- Among the less frequently mentioned major substances of abuse, mentions of inhalants decreased 56 percent (from 1,522 in 2000 to 676 in 2001) (Table 2.2.0).
- No significant changes from 2000 to 2001 were evident for (Table 2.2.0):
  - PCP (6,102 mentions in 2001),
  - LSD (2,821), or
  - Miscellaneous hallucinogens (1,788).
- For the 15 major substances of abuse (displayed in Figure 4), relative standard errors (RSEs) in 2001 range from a low of 9.6 for alcohol-in-combination to a high of 61.7 for

flunitrazepam. Any DAWN estimate with an RSE exceeding 50 percent is considered too imprecise for publication and is therefore suppressed in the tables. Methamphetamine, Ketamine, miscellaneous hallucinogens, GHB, inhalants, and combinations NTA all had RSEs greater than 20 percent.

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Figure 3
Number of drug-related episodes and alcohol-in-combination, cocaine, heroin, and marijuana mentions: 1994 through 2001

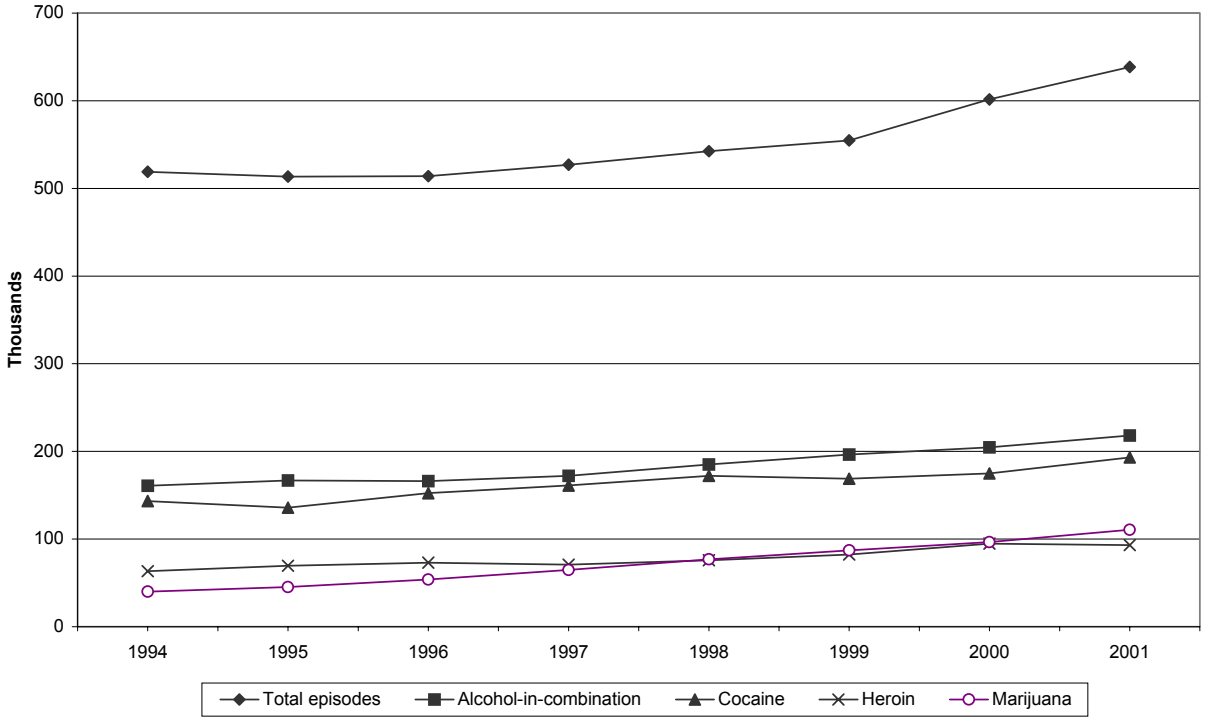
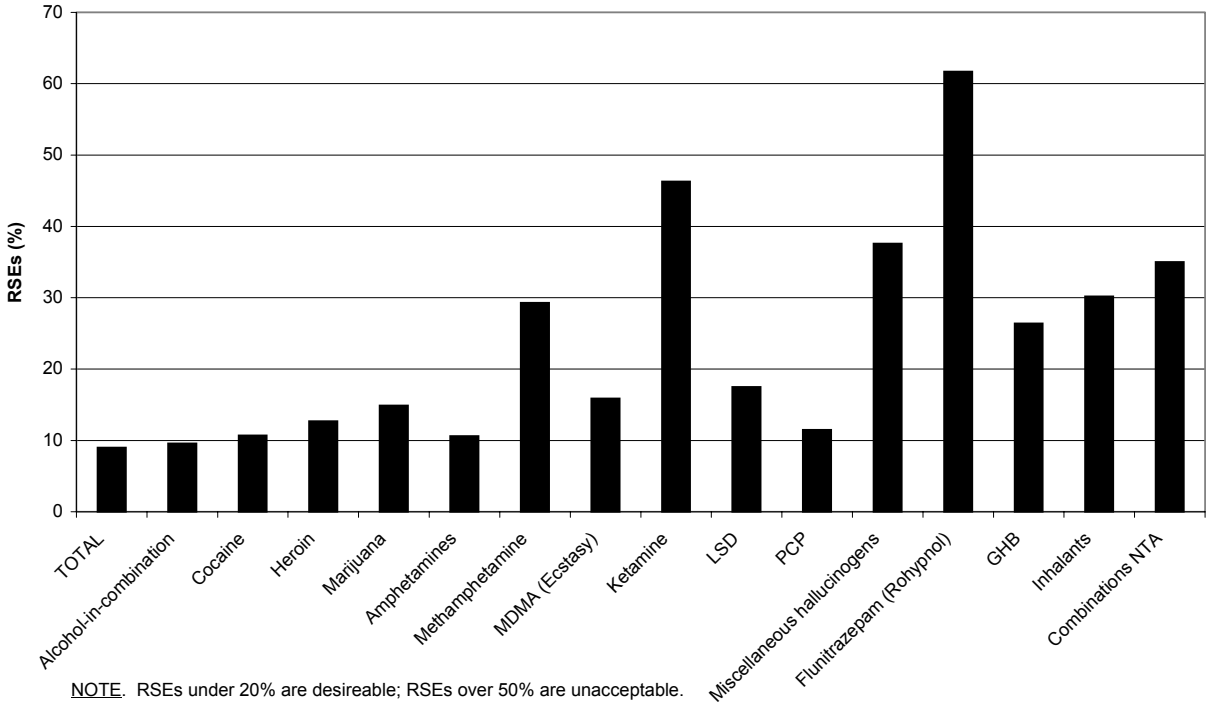


Figure 4
Relative standard errors (RSEs) for major substances of abuse: 2001



NOTE. RSEs under 20% are desireable; RSEs over 50% are unacceptable.

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TRENDS IN OTHER SUBSTANCES OF ABUSE

DAWN also receives reports of ED episodes involving the nonmedical use of legal drugs. These can involve deliberate abuse of prescribed or legally obtained over-the-counter (OTC) medications or of pharmaceuticals diverted for abuse. Accidental overdoses or adverse reactions to OTC or prescription drugs taken as directed are not reportable to DAWN unless they were present in combination with an illicit drug.

These "other substances of abuse" are tabulated first by categories composed of similar substances (Tables 2.2.0 and 12.2.0 for full year estimates and rates, respectively) and then by generic drug name for the component drugs in each of the largest categories: psychotherapeutic agents (Tables 2.6.0 and 12.6.0), CNS agents (Table 2.8.0 and 12.8.0), respiratory agents (Tables 2.10.0 and 12.10.0), and cardiovascular agents (Tables 2.12.0 and 12.12.0). Corresponding half-year tables (2.5.0, 2.7.0, 2.9.0, and 2.11.0 for estimates and 12.5.0, 12.7.0, 12.9.0, and 12.11.0 for rates) are available for the first time in this publication of *ED Trends From DAWN*.

By design, all drug mentions in DAWN are tabulated as either major substances of abuse or other substances of abuse. There is no double counting, and the deliberate assignment of drugs into major substances is the result of specific interest in such substances.

Only generic drug names are presented in DAWN publications. DAWN estimates should not be attributed to drugs marketed under particular brand (trade) names. DAWN data are extracted from medical records produced in the course of health care delivery (no patient is ever interviewed), so DAWN case reports contain information about particular substances as that information was documented in the ED medical record. Any prescription or OTC drug may be reported to DAWN by its brand (trade) name, generic name, or chemical name, depending on what was documented in the source record. There is no way to discern whether the brand names in the medical record are always accurate or how frequently brands might have been recorded in generic terms. Therefore, we do not publish estimates for particular brands because we consider them to be unreliable. An index linking brand to generic names is available online at http://www.samhsa.gov/oas/DAWN.htm. The index is provided solely as an aid to readers who may be unfamiliar with generic names.

This discussion focuses mainly on comparisons of estimates from 2000 to 2001.

OTHER SUBSTANCES OF ABUSE

- DAWN estimates that other substances of abuse (495,808 mentions) comprised 43 percent of total ED drug mentions in 2001 (Table 2.2.0). Although the vast majority of these other substances are marketed legally by prescription or OTC, it is impossible to know from DAWN the number of ED visits related to the abuse of prescription drugs by patients with legitimate prescriptions.

- ED mentions of other substances of abuse in 2001 were most concentrated in 2 categories—psychotherapeutic agents (220,289 mentions) and central nervous system

(CNS) agents (210,685)—in nearly equal proportions (19% and 18% of total ED mentions, respectively) (Table 2.2.0).

- The particular drugs involved in ED visits are sometimes unknown or unknowable. In 2001, there were 23,923 such mentions (2% of total mentions) (Table 2.2.0).

PSYCHOTHERAPEUTIC AGENTS

- Overall, mentions of psychotherapeutic agents increased 8 percent (from 204,527 to 220,289) from 2000 to 2001 (Table 2.2.0).

- Psychotherapeutic agents in DAWN are broken into 4 subcategories: antidepressants; antipsychotics; anxiolytics, sedatives, and hypnotics; and CNS stimulants.

Antidepressants

- Antidepressants (5% of total ED mentions, 61,012 mentions) were the second most frequent psychotherapeutic agents mentioned in drug-related ED visits in 2001 and have remained statistically unchanged in recent years (Table 2.2.0). This category includes:

  - MAO inhibitors, with estimates too imprecise for publication,
  - SSRI antidepressants (26,972 mentions),
  - Tricyclic antidepressants (12,447), and
  - Miscellaneous antidepressants (21,459).

SSRI Antidepressants

- In 2001, the most frequently mentioned SSRIs (Table 2.6.0) were:

  - Citalopram (4,474 mentions), which has nearly tripled from 1999 to 2001,
  - Fluoxetine (6,362), down 32 percent from 1999 to 2001,
  - Paroxetine (8,923), up 128 percent from 1994 to 2001, and
  - Sertraline (6,932), which has remained relatively stable in recent years.

- From 1994 to 2001, mentions of SSRI antidepressants increased 32 percent (Table 2.6.0).

Tricyclic Antidepressants

- In 2001, the most frequently mentioned tricyclic antidepressants (Table 2.6.0) were:

  - Amitriptyline (4,673 mentions), down 28 percent from 2000 to 2001,
  - Doxepin (772), down 82 percent since 1994,

- Imipramine (390), down 86 percent since 1994,
- Nortriptyline (658), down 76 percent since 1994, and
- Tricyclic antidepressants-not otherwise specified (NOS, 5,515), which more than doubled from 2000 to 2001 and increased more than four-fold since 1994.

- Overall, mentions of tricyclic antidepressants have decreased 50 percent since 1994, but have remained stable in the last 2 years (Table 2.6.0).

Miscellaneous Antidepressants

- In 2001, the category of miscellaneous antidepressants (Table 2.6.0) includes:
  - Bupropion (4,145 mentions), up 448 percent since 1994,
  - Mirtazapine (1,898),
  - Nefazodone (1,494),
  - Trazadone (9,347), and
  - Venlafaxine (3,994), up 1,071 percent since 1994.
- Overall, mentions of miscellaneous antidepressants increased 138 percent from 1994 to 2001, but remained stable from 1999 to 2001 (Table 2.6.0).

Antipsychotics

- Mentions of substances classified as antipsychotics were statistically unchanged from 2000 to 2001, but rose 33 percent from 1999. However, this represents a 19 percent decrease (from 25,012 to 20,182 mentions) from 1994 to 2001 (Table 2.2.0). In 2001, this category includes 4 subcategories:
  - Phenothiazine antipsychotics (1,359 mentions in 2001),
  - Psychotherapeutic combinations, with estimated mentions too imprecise for publication,
  - Thioxanthenes (a category printed in Table 2.2.0 for this first time), with estimated mentions too imprecise for publication, and
  - Miscellaneous antipsychotic agents (18,542 mentions in 2001).

Phenothiazine Antipsychotics

- The subcategory phenothiazine antipsychotics accounted for only 7 percent (1,359) of mentions of antipsychotics in 2001, an 89 percent decrease from 1994 (11,899) (Table 2.6.0). Mentions of phenothiazine antipsychotics decreased 35 percent from 1999 to 2001.

- Mentions of chlorpromazine, the most frequently mentioned phenothiazine in 2001 (636 mentions), have declined 76 percent since 1994 (Table 2.6.0).

Miscellaneous Antipsychotic Agents

- The subcategory miscellaneous antipsychotic agents accounted for 92 percent (18,542) of mentions of antipsychotics in 2001 (Table 2.2.0). Mentions of miscellaneous antipsychotic agents in 2001 were 45 percent higher than in 1999 and 73 percent higher than in 1994.

- In 2001, miscellaneous antipsychotic agents (Table 2.6.0) include:

  - Haloperidol (1,016 mentions), down 66 percent since 1994,

  - Lithium (3,410), down 43 percent since 1994,

  - Olanzapine (5,217), up 59 percent since 1999,

  - Quetiapine (4,346), up 385 percent since 1999, and

  - Risperidone (4,046), up 588 percent since 1994.

- No other significant long-term or short-term trends in antipsychotics were evident.

Anxiolytics, Sedatives, and Hypnotics

- Anxiolytics, sedatives, and hypnotics (135,949, or 12% of total ED mentions) were the most frequent psychotherapeutic agents mentioned in drug-related ED visits in 2001 (Table 2.2.0). This category includes 3 subcategories:

  - Barbiturates (1%, 9,506 mentions), with an increase of 34 percent from 2000 to 2001,

  - Benzodiazepines (9%, 103,972), with a 14 percent increase from 2000 to 2001, and

  - Miscellaneous anxiolytics, sedatives, and hypnotics (2%, 22,472).

Barbiturates

- In 2001, the most frequently mentioned barbiturate reported to DAWN was barbiturates-NOS (7,209 mentions) (Table 2.6.0). Mentions of barbiturates-NOS increased 49 percent from 2000 to 2001, and 153 percent since 1994.

- Phenobarbital was the second most frequently mentions barbiturate reported to DAWN in 2001 (1,117 mentions). Phenobarbital mentions have decreased 55 percent since 1994 (Table 2.6.0).

Benzodiazepines

- Overall, mentions of benzodiazepines increased 14 percent (from 91,078 to 103,972) from 2000 to 2001 (Table 2.2.0 and Figure 5). Since 1994, mentions of benzodiazepines have risen 39 percent.

- In 2001, mentions of benzodiazepines accounted for 9 percent of all ED drug mentions. The most frequently mentioned benzodiazepines (Table 2.6.0 and Figure 5) were:

  - Alprazolam (25,644 mentions),

  - Clonazepam (19,117),

  - Diazepam (11,447),

  - Lorazepam (11,902),

  - Temazepam (2,637), and

  - Benzodiazepines-NOS (30,302).

- From 1994 to 2001, among the most frequent benzodiazepines (Table 2.6.0 and Figure 5):

  - Mentions of alprazolam rose 49 percent, clonazepam 57 percent, and benzodiazepines-NOS 232 percent, while

  - Mentions of diazepam, lorazepam, and temazepam remained stable.

- Since 1999, all the benzodiazepines except alprazolam and benzodiazepines-NOS were statistically unchanged (Table 2.6.0).

  - Alprazolam mentions rose 16 percent (from 22,105 to 25,644) from 2000 to 2001 and 25 percent (from 20,484) from 1999 to 2001.

  - Mentions of benzodiazepines-NOS increased 35 percent from 2000 to 2001.

- From 1994 to 2001, 3 of the less frequent benzodiazepines decreased significantly (Table 2.6.0):

  - Chlordiazepoxide (-63%, from 2,563 to 953),

  - Flurazepam (-60%, from 1,497 to 603), and

  - Triazolam (-76%, from 991 to 235).

Miscellaneous Anxiolytics, Sedatives, and Hypnotics

- In 2001, the most frequently mentioned substances in the category miscellaneous anxiolytics, sedatives, and hypnotics were (Table 2.6.0):

  - Buspirone (1,280 mentions),

- Diphenhydramine (7,670),
- Doxylamine (1,310),
- Hydroxyzine (1,458),
- Zolpidem (8,289), and
- Anxiolytics, sedatives, and hypnotics-NOS (1,685).

- Among the miscellaneous anxiolytics, sedatives, and hypnotics listed above, only buspirone decreased (44%, from 2,299 to 1,280) from 2000 to 2001 (Table 2.6.0). No other changes from 2000 to 2001 were evident.

- From 1994 to 2001, zolpidem mentions increased 488 percent (from 1,410) (Table 2.6.0). Also during this period, mentions of diphenhydramine dropped 45 percent (from 13,958), mentions of hydroxyzine dropped 54 percent (from 3,150), and mentions of anxiolytics, sedatives, and hypnotics-NOS dropped 40 percent (from 2,808).

CNS Stimulants

- In 2001, the CNS stimulants category had the fewest mentions among the psychotherapeutic agents (Table 2.6.0). However, several important stimulants—the amphetamines, methamphetamine, and MDMA (Ecstasy)—are tabulated separately as major substances of abuse.

- Mentions of CNS stimulants decreased 32 percent (from 4,592 to 3,146) from 1994 to 2001 (Table 2.6.0).

CNS AGENTS

- The CNS agents (210,685 mentions) in DAWN are divided into 8 subcategories (Table 2.2.0), but analgesics account for more than 80 percent (174,500) of mentions of CNS agents in 2001. Because of their frequency, analgesics are further subdivided into:
  - Antimigraine agents (660 mentions in 2001),
  - Cox-2 inhibitors (1,314),
  - Narcotic analgesics and narcotic analgesic combinations (99,317),
  - Nonsteroidal anti-inflammatory agents (22,663),
  - Salicylates and salicylate combinations (8,499),
  - Miscellaneous analgesics and miscellaneous analgesic combinations (42,044), and
  - All other analgesic combinations, with estimated mentions too imprecise for publication.

- Among the CNS agents other than analgesics, 4 subcategories had substantial numbers of mentions in 2001 (Table 2.2.0):
  - Anorexiants (953 mentions), down 60 percent from 1994 to 2001;
  - Anticonvulsants (14,642 mentions), up 57 percent from 1994 to 2001;
  - Antiparkinson agents (985), down 72 percent from 1994 to 2001; and
  - Muscle relaxants (19,001), up 19 percent from 2000 to 2001 and 56 percent from 1994 to 2001.

Narcotic Analgesics and Narcotic Analgesic Combinations

Narcotic analgesics and narcotic analgesic combinations are classified separately in the Multum *Lexicon*, the basis for DAWN's classification of drugs. However, to fully understand the magnitude of narcotic analgesic abuse as it manifests in ED visits, it is necessary to combine mentions of individual narcotic analgesics with their mentions as compounds or combinations. The narcotic analgesics containing oxycodone provide an example of this:

The example summarized in the exhibit below includes 2 common narcotic analgesics that are marketed under brand names OxyContin and Percocet. OxyContin is a pharmaceutical that contains a single active ingredient, oxycodone hydrochloride. Percocet is a pharmaceutical compound containing oxycodone and acetaminophen. The documentation in ED medical records (the source of the data submitted to DAWN) varies in its detail. That is, some mentions are documented by the brand name OxyContin (row 1) or Percocet (row 4), whereas others are documented only by generic name or ingredient, oxycodone (rows 2, 6, and 7), oxycodone hydrochloride (row 3), or acetaminophen-oxycodone (row 5).

Example of how DAWN handles variability in reporting of narcotic analgesic mentions.

	Drug consumed was:	**Medical record says:**	**DAWN tabulates drug as:**
1	OxyContin	OxyContin	Oxycodone
2	OxyContin	Oxycodone	Oxycodone
3	OxyContin	Oxycodone hydrochloride	Oxycodone
4	Percocet	Percocet	Acetaminophen-oxycodone
5	Percocet	Acetaminophen-oxycodone	Acetaminophen-oxycodone
6	Percocet	Oxycodone	Oxycodone
7	Oxycodone (identity unknown)	Oxycodone	Oxycodone
8	**Total mentions**		**Oxycodone/combinations**

To account for this variability, DAWN collapses all brand terms into generic categories for publication. All case reports of "OxyContin" (row 1) go into the generic category "oxycodone" with all other mentions of "oxycodone." All case reports of "Percocet" (row 4) go into the generic compound category "acetaminophen-oxycodone" with all other mentions of "acetaminophen-oxycodone" (row 5). Case reports with the less specific information (row 6 or 7) are classified as specifically as possible, given the information available in the source record.

Therefore, as the exhibit shows, we cannot conclude that mentions of "oxycodone" in DAWN tabulations (e.g., Table 2.8.0) are solely OxyContin, nor can we conclude that all mentions of Percocet can be found under "acetaminophen-oxycodone." For this reason, mentions of narcotic analgesics and narcotic analgesic combinations (referred to as "narcotic analgesics/combinations" for simplicity) have been combined for presentation in DAWN tables, with the component drugs indicated underneath, as follows:

Narcotic analgesics summarized in Table 2.8.0	**Relationships among these rows**
Narcotic analgesics/combinations	A + B
Narcotic analgesics	A (includes C)
Narcotic analgesic combinations	B (includes D and E)
oxycodone/combinations	C + D + E
oxycodone	C
acetaminophen-oxycodone	D
aspirin-oxycodone	E

Table 2.8.0 presents full year estimates of CNS agents, including narcotic analgesics and narcotic analgesic combinations, for 1994 through 2001. Trends in narcotic analgesics and narcotic analgesic combinations are also represented graphically in Figure 6.

- When considered together, narcotic analgesics/combinations comprise 99,317 mentions or 9 percent of ED mentions estimated for the coterminous U.S. in 2001 (Table 2.8.0).

- From 1994 to 2001, mentions of narcotic analgesics/combinations rose 123 percent, 44 percent from 1999 to 2001, and 21 percent from 2000 to 2001 (Table 2.8.0 and Figure 6).

- The most frequently mentioned narcotic analgesics/combinations in 2001 (Table 2.8.0) were:

  - Narcotic analgesics containing codeine (see codeine/combinations) (3,720 mentions in 2001), which continued to decrease (30% from 2000 to 2001 and 61% from 1994 to 2001);

  - Narcotic analgesics containing hydrocodone (see hydrocodone/combinations) (21,567 mentions), which were statistically unchanged from 2000, but 41 percent higher than in 1999 (15,252 mentions);

- Methadone[15] (10,725 mentions), up 37 percent from 2000 (7,819);
- Narcotic analgesics containing morphine (i.e., morphine/combinations) (3,403 mentions), unchanged since 1999;
- Narcotic analgesics containing oxycodone (i.e., oxycodone/combinations) (18,409 mentions), which rose 70 percent (from 10,825) since 2000 and nearly doubled since 1999 (6,429);
- Narcotic analgesics containing propoxyphene (i.e., propoxyphene/combinations) (5,361 mentions), unchanged since 2000; and
- Narcotic analgesics reported to DAWN without a specific ingredient identified[16] (i.e., narcotic analgesics-NOS) (32,196 mentions), up 24 percent (from 25,935) since 2000.

■ From 1994 to 2001, significant long-term increases in narcotic analgesics/combinations mentions were found (Table 2.8.0) for:

- Fentanyl/combinations (over 2,000%), but still mentioned relatively infrequently with 710 mentions in 2001,
- Hydrocodone/combinations (up 131%),
- Methadone (230%),
- Morphine/combinations (210%),
- Oxycodone/combinations (352%), and
- Narcotic analgesics-NOS (288%).

Non-narcotic Analgesics

■ In 2001, the most frequently mentioned non-narcotic analgesics (Table 2.2.0) were:

- Nonsteroidal anti-inflammatory agents (NSAIDs) (22,663 mentions),
- Salicylates and salicylate combinations (8,499), and
- Miscellaneous analgesics and miscellaneous analgesic combinations (42,044 mentions).

NSAIDs

■ Mentions of the class of drugs known as NSAIDs have dropped 21 percent (from 28,742 to 22,663) since 1994 (Table 2.2.0).

[15] Methadone is not currently marketed as a combination.

[16] This category includes drugs reported to DAWN as “narcotic analgesic,” “opiates,” “opioid,” and “synthetic narcotic.”

- The most frequently mentioned NSAIDs in drug-related ED visits in 2001 (Table 2.8.0) were:
  - Ibuprofen (17,123 mentions) and
  - Naproxen (4,270).

Salicylates and salicylate combinations

- Mentions of salicylates/combinations dropped 38 percent (from 13,784 to 8,499) from 2000 to 2001, and 55 percent (from 18,990) since 1994 (Table 2.8.0).
- In 2001, salicylates were primarily aspirin and aspirin compounds, which accounted for 85 percent of the category (7,235 mentions) (Table 2.8.0). Mentions of aspirin/combinations decreased 43 percent (from 12,710) from 2000 to 2001.

Miscellaneous analgesics and miscellaneous analgesic combinations

- Mentions of miscellaneous analgesics/combinations rose 17 percent from 1999 to 2001. Acetaminophen/combinations account for more than 90 percent of this category (39,165 mentions in 2001) (Table 2.8.0).
- Tramadol (2,329 mentions in 2001) remained statistically unchanged from 2000 to 2001, but has increased 109 percent (from 1,810) from 1999 to 2001 (Table 2.8.0).

RESPIRATORY AGENTS

- Respiratory agents comprised 1 percent (12,238) of total ED drug mentions in 2001 (Table 2.2.0).
- The respiratory agents mentioned most frequently in ED episodes in 2001 (Table 2.2.0) are:
  - Antihistamines (4,112 mentions and relatively stable since 1994),
  - Decongestants (859), down 61 percent since 1994, and
  - Upper respiratory combinations (5,697), up 68 percent since 1999.
- In general, mentions of respiratory agents remained stable between 2000 and 2001. The long-term trend has been downward (-22% since 1994) (Table 2.10.0).
- The few large changes in respiratory agents tended to be associated with small numbers of mentions.

CARDIOVASCULAR AGENTS

- Cardiovascular agents comprised 1 percent (9,984) of total ED drug mentions in 2001 (Table 2.2.0).

- Cardiovascular agents are divided rather evenly among 5 subcategories (Table 2.2.0):
  - Antiadrenergic agents, centrally acting (1,852 mentions in 2001);
  - Beta-adrenergic blocking agents (2,382);
  - Calcium channel blocking agents (1,386);
  - Diuretics (821); and
  - All others (3,543).
- The long-term trend in mentions of cardiovascular agents appears stable from 1994 to 2001 (Table 2.2.0).
- Of all the cardiovascular agents, there are few specific substances with large enough numbers to warrant discussion (Table 2.12.0). The largest are:
  - Clonidine (1,781 mentions in 2001),
  - Atenolol (1,238),
  - Ephedrine (728), and
  - Lisinopril (659).
- Of the 4 most frequent cardiovascular agents, mentions of clonidine increased from 2000 to 2001 (up 63% from 1,093 mentions), and mentions of ephedrine decreased from 1994 to 2001 (down 64% from 1,992 mentions) (Table 2.12.0).

OTHER SUBSTANCES

- The majority (56%) of mentions in the category “other substances” come from drug unknown, with the remainder distributed across (Table 2.2.0):
  - Alternative medicines (662 mentions in 2001),
  - Anti-infectives (5,282),
  - Gastrointestinal agents (2,792),
  - Hormones (4,032),
  - Nutritional products (1,449), and
  - Topical agents (2,600).
- Of these, only topical agents experienced significant changes from 2000 to 2001 (up 323%, from 615 mentions) (Table 2.2.0). Mentions of topical agents have increased 190 percent since 1994. Long-term trends for the remaining “other substances” were stable or downward.

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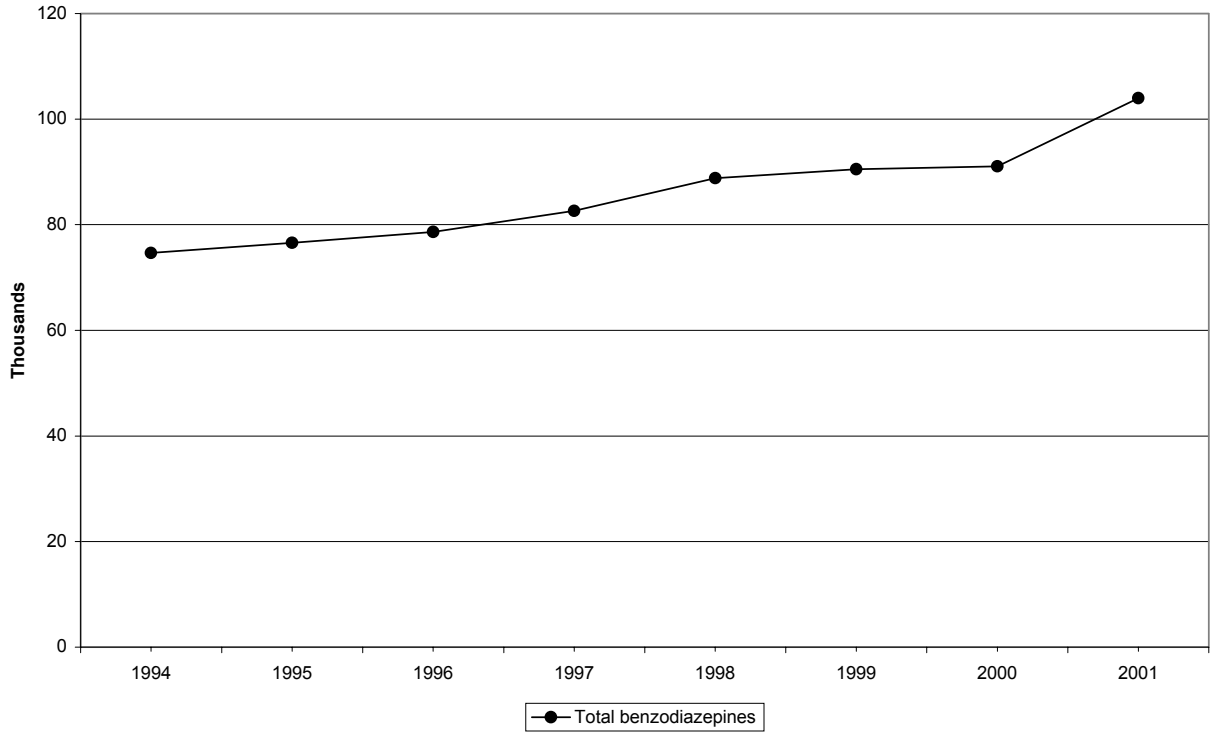
Figure 5
ED mentions of benzodiazepines: 1994 through 2001



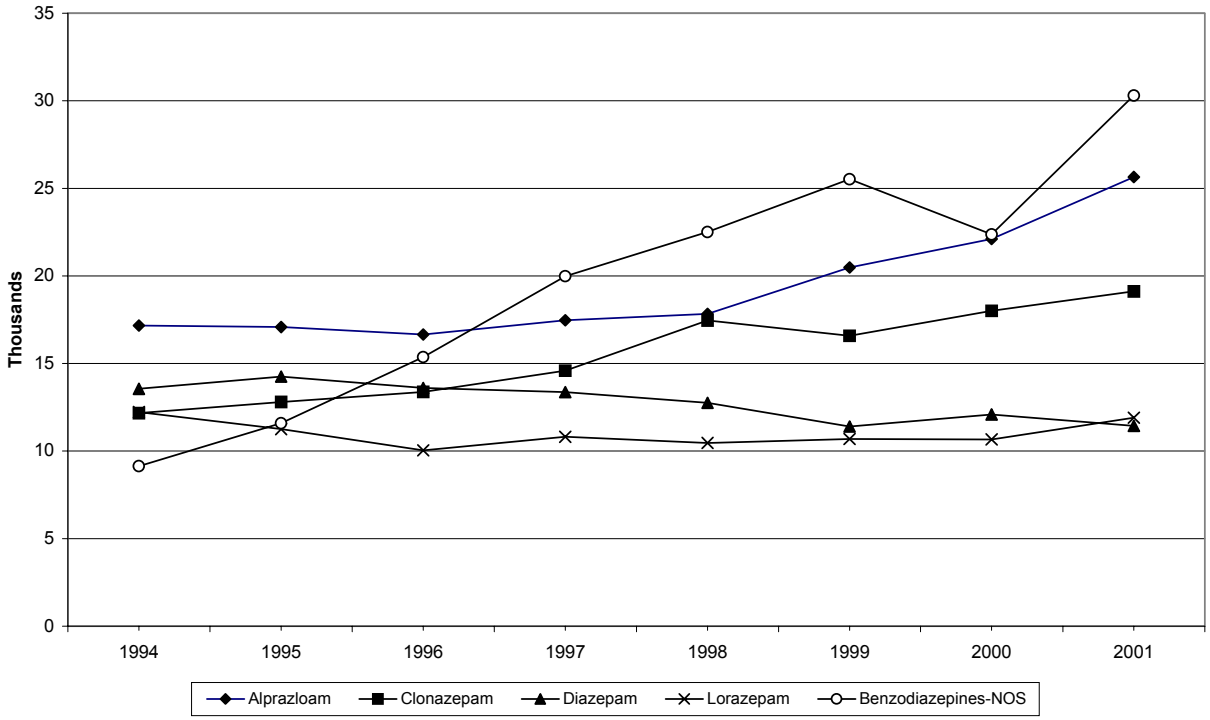


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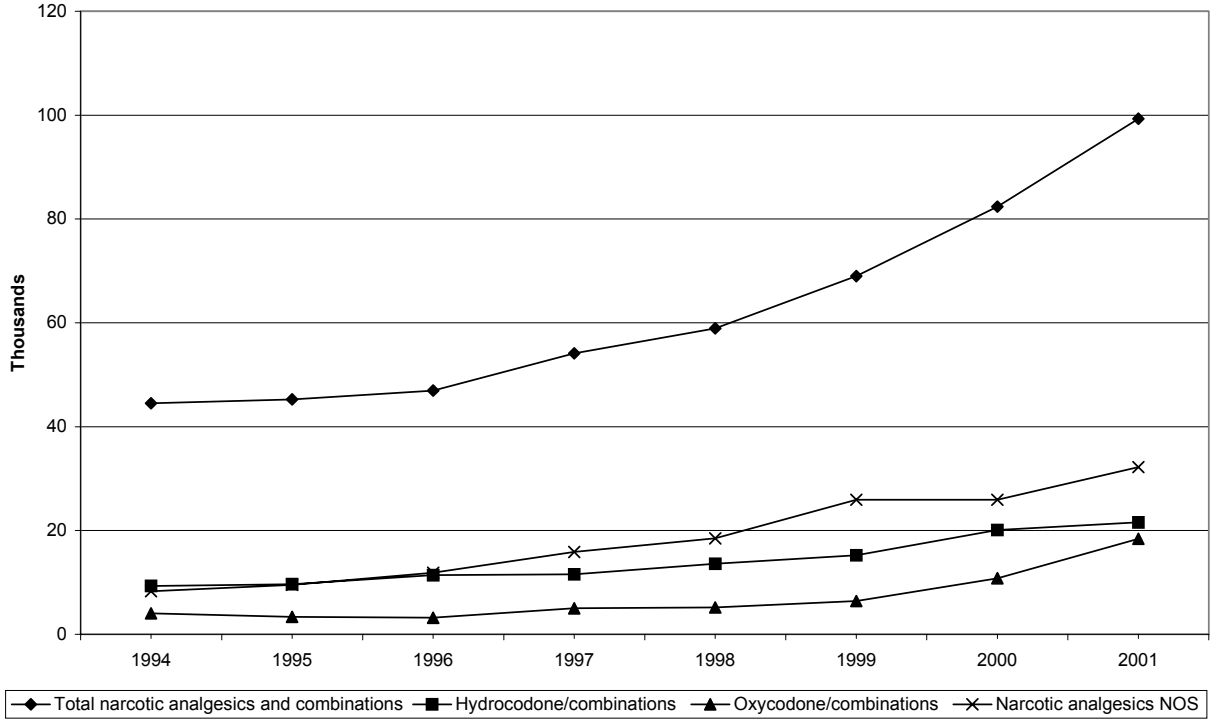
Figure 6
ED mentions of narcotic analgesics: 1994 through 2001



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TRENDS IN MAJOR SUBSTANCES OF ABUSE IN 21 METROPOLITAN AREAS

This section presents findings for the major substances of abuse for the 21 metropolitan areas oversampled in DAWN. As noted previously, "major substances of abuse" include the most common illicit drugs reported to DAWN, alcohol reported in combination with any other substance reported to DAWN, and lower frequency drugs of particular policy interest (e.g., club drugs such as Ecstasy and GHB).

This section of *ED Trends* focuses on Tables 3.1 to 3.34 (ED episodes and mentions) and 13.1 to 13.34 (rates of ED episodes and mentions per 100,000 population). These tables summarize for all the 21 metropolitan areas the estimates for: total episodes, total mentions, and the 15 major substances of abuse (which is new in this publication of *ED Trends From DAWN*).

These are the same estimates presented separately for each metropolitan area in Tables 2.2.1 to 2.2.21 (episodes and mentions) and 12.2.1 to 12.2.21 (rates).[17] As noted in the introduction, 3-part table numbers ending in "**.1**" to "**.21**" contain estimates for the 21 metropolitan areas. Some readers will be interested in findings only for a particular area. For these readers, we also provide 21 complete sets of tables, one for each metropolitan area, online at http://www.samhsa.gov/oas/DAWN.htm.

Readers should note that very small changes in the estimates for some metropolitan areas may result in statistically significant differences. This occurs when all or nearly all eligible hospitals are included in the sample for those cities. Those interested in making comparisons across metropolitan areas should rely on the rates per 100,000 population because these account for differences in population across the metropolitan areas.

TOTAL DRUG-RELATED EPISODES

- Nationwide, total ED drug episodes and drug mentions increased 6 percent from 2000 to 2001 (Tables 3.2 and 3.4).
- From 2000 to 2001, significant increases in drug episodes were found in 5 metropolitan areas oversampled in DAWN (Table 3.2):
  - Atlanta (30%, from 11,112 to 14,456 episodes),
  - Minneapolis (26%, from 5,197 to 6,521),
  - Boston (13%, from 14,902 to 16,853),

[17] In addition, demographic characteristics of patients are presented in Tables 4.2.1 to 4.2.21 (episodes and mentions) and 14.2.1 to 14.2.21 (rates). Estimates of episode characteristics are presented in Tables 5.2.1 to 5.2.21 (there are no rates calculated for episode characteristics). Because of the detail involved, this publication focuses little on these estimates by metropolitan area.

- Denver (11%, from 4,944 to 5,468), and
- San Francisco (9%, from 7,857 to 8,575).

- From 2000 to 2001, significant decreases in drug episodes were found in 2 metropolitan areas (Table 3.2):
  - New Orleans (-20%, from 4,664 to 3,729 episodes) and
  - San Diego (-2%, from 7,094 to 6,962).
- Adjusting for population differences, the highest rates of ED drug episodes in 2001 were apparent in (Table 13.2):
  - Philadelphia (573 ED drug episodes per 100,000 population),
  - Chicago (558),
  - San Francisco (546),
  - Seattle (538), and
  - Baltimore (505).
- Among the 21 metropolitan areas in DAWN, Dallas had the lowest rate of ED drug episodes (210 per 100,000 population) in 2001 (Table 13.2).

ALCOHOL-IN-COMBINATION

- Nationwide, there were 218,005 ED mentions of alcohol-in-combination in 2001 (Table 3.6). Mentions of alcohol-in-combination were stable for the coterminous U.S. from 2000 to 2001.
- From 2000 to 2001, significant increases in mentions of alcohol-in-combination were found in 7 metropolitan areas oversampled in DAWN (Table 3.6):
  - Minneapolis (26%, from 1,780 to 2,238 mentions),
  - Washington, DC (21%, from 2,300 to 2,774),
  - San Francisco (20%, from 1,804 to 2,155),
  - Boston (17%, from 4,976 to 5,818),
  - Miami (16%, from 3,168 to 3,679),
  - Phoenix (14%, from 2,303 to 2,627), and
  - Baltimore (11%, from 2,628 to 2,911).

- From 2000 to 2001, a significant decrease in mentions of alcohol-in-combination was found in New Orleans (-39%, from 1,948 to 1,181) (Table 3.6).

- Nationwide, there were 86 mentions of alcohol-in-combination per 100,000 population in 2001 (Table 13.6). Adjusting for population differences, the highest rates of ED mentions of alcohol-in-combination in 2001 were apparent in:

  - Detroit (219 alcohol-in-combination mentions per 100,000 population),
  - Philadelphia (205),
  - Atlanta (189),
  - Buffalo (183),
  - Miami (178), and
  - Chicago (176).

- Among the 21 metropolitan areas in DAWN, the lowest rates of ED mentions of alcohol-in-combination in 2001 (Table 13.6) were found in:

  - Dallas (58 alcohol-in-combination mentions per 100,000 population),
  - San Diego (66), and
  - Washington, DC (67).

COCAINE

- Nationwide, there were 193,034 ED mentions of cocaine in 2001 (Table 3.8). Cocaine mentions increased 10 percent in the coterminous U.S. from 2000 to 2001.

- From 2000 to 2001, significant increases in cocaine mentions were found in 4 metropolitan areas oversampled in DAWN (Table 3.8):

  - Atlanta (43%, from 6,229 to 8,891mentions),
  - Minneapolis (31%, from 841 to 1,105),
  - San Francisco (21%, from 2,054 to 2,482), and
  - Boston (20%, from 4,099 to 4,933).

- From 2000 to 2001, significant decreases in cocaine mentions were found in 3 metropolitan areas (Table 3.8):

  - New Orleans (-29%, from 1,998 to 1,422 mentions),
  - San Diego (-19%, from 1,002 to 812), and
  - Dallas (-19%, from 2,180 to 1,770).

- Nationwide, there were 76 mentions of cocaine per 100,000 population in 2001 (Table 13.8). Adjusting for population differences, the highest rates of cocaine ED mentions in 2001 were apparent in:
  - Chicago (277 cocaine mentions per 100,000 population),
  - Philadelphia (252),
  - Atlanta (244),
  - Miami (225), and
  - Baltimore (214). From 1994 to 1999, Baltimore had the highest rates of cocaine mentions in the 21 metropolitan areas represented in DAWN.
- Among the 21 metropolitan areas in DAWN, the lowest rates of ED cocaine mentions in 2001 (Table 13.8) were found in:
  - San Diego (32 cocaine mentions per 100,000 population) and
  - Minneapolis (43).

HEROIN

- Nationwide, there were 93,064 ED mentions of heroin in 2001 (Table 3.10). ED mentions of heroin remained stable in the coterminous U.S. from 2000 to 2001.
- From 2000 to 2001, significant increases in heroin mentions were found in 6 metropolitan areas oversampled in DAWN (Table 3.10):
  - Atlanta (75%, from 485 to 848 mentions),
  - Minneapolis (48%, from 228 to 338),
  - Detroit (16%, from 3,328 to 3,870),
  - Denver (16%, from 666 to 769),
  - Miami (15%, from 1,452 to 1,666), and
  - Boston (13%, from 3,867 to 4,358).
- From 2000 to 2001, significant decreases in heroin mentions were found in 6 metropolitan areas (Table 3.10):
  - New Orleans (-46%, from 982 to 530 mentions),
  - San Diego (-29%, from 1,031 to 733),
  - Seattle (-23%, from 2,490 to 1,927),

- Baltimore (-17%, from 5,405 to 4,481),
- Newark (-16%, from 4,399 to 3,718), and
- Los Angeles (-9%, from 3,177 to 2,878).

- Nationwide, there were 37 heroin mentions per 100,000 population in 2001 (Table 13.10). Adjusting for population differences, the highest rates of heroin ED mentions in 2001 were apparent in:
  - Newark (215 heroin mentions per 100,000 population),
  - Chicago (203), and
  - Baltimore (195). From 1994 to 1999, Baltimore had the highest rates of heroin mentions in the 21 metropolitan areas represented in DAWN.
- Among the 21 metropolitan areas in DAWN, the lowest rates of ED heroin mentions in 2001 (Table 13.10) were found in:
  - Minneapolis (13 heroin mentions per 100,000 population) and
  - Dallas (14).

MARIJUANA

- Nationwide, there were 110,512 ED mentions of marijuana in 2001 (Table 3.12). Mentions of marijuana rose 15 percent from 2000 to 2001.
- From 2000 to 2001, significant increases in marijuana mentions were found in 5 metropolitan areas oversampled in DAWN (Table 3.12):
  - Minneapolis (49%, from 803 to 1,200 mentions),
  - San Diego (16%, from 955 to 1,107),
  - Seattle (13%, from 1,414 to 1,596),
  - San Francisco (12%, from 627 to 704), and
  - Baltimore (10%, from 1,620 to 1,786).
- From 2000 to 2001, a significant decrease in marijuana mentions was found in New Orleans (-24%, from 1,068 to 814) (Table 3.12).

- Nationwide, there were 44 marijuana mentions per 100,000 population in 2001 (Table 13.12). Adjusting for population differences, the highest rates of marijuana ED mentions in 2001 were apparent in:
  - Philadelphia (122 marijuana mentions per 100,000 population),
  - Detroit (121), and
  - St. Louis (101).
- Among the 21 metropolitan areas in DAWN, the lowest rates of ED marijuana mentions in 2001 (Table 13.12) were found in:
  - Dallas (34 marijuana mentions per 100,000 population) and
  - Newark (37).

AMPHETAMINES AND METHAMPHETAMINE

- Nationwide, there were 18,555 mentions of amphetamines (Tables 3.14) and 14,923 mentions of methamphetamine (Table 3.16) in 2001. Mentions of amphetamines and methamphetamine remained stable from 2000 to 2001.
- Looking across the 21 DAWN metropolitan areas for 2001, the largest numbers of ED mentions of amphetamines and methamphetamine were concentrated in the same 5 cities in the western United States:

Amphetamines (Table 3.14)	**Methamphetamine (Table 3.16)**
Los Angeles (1,261 mentions)	Los Angeles (1,517 mentions)
San Diego (942)	San Diego (673)
Phoenix (888)	San Francisco (611)
San Francisco (786)	Phoenix (604)
Seattle (699)	Seattle (395)

- From 2000 to 2001, significant increases in mentions of amphetamines were found in 3 metropolitan areas (Table 3.14) and significant increases in mentions of methamphetamine were found in 3 other metropolitan areas (Table 3.16):

Amphetamines (Table 3.14)	**Methamphetamine (Table 3.16)**
San Francisco (112%, from 371 to 786 mentions)	Minneapolis (110%, from 153 to 321 mentions)
Baltimore (50%, from 175 to 262)	Atlanta (58%, from 109 to 172)
Phoenix (34%, from 661 to 888)	Los Angeles (10%, from 1,375 to 1,517)

- From 2000 to 2001, there was no significant decrease in mentions of amphetamines in any of the metropolitan areas with at least 100 mentions (Tables 3.14). Mentions of methamphetamine decreased only in Seattle (-27%, from 540 to 395) (Table 3.16).

- Nationwide, there were 7 mentions of amphetamines and 6 mentions of methamphetamine per 100,000 population in 2001 (Tables 13.14 and 13.16). Adjusting for population differences, the highest rates of ED mentions of amphetamine and methamphetamine in 2001 were often in the same metropolitan areas:

Amphetamines (Table 13.14)	**Methamphetamine (Table 13.16)**
San Francisco (50 mentions per 100,000 population)	San Francisco (39 mentions per 100,000 population)
San Diego (37)	San Diego (27)
Seattle (33)	Phoenix (21)
Phoenix (31)	Los Angeles (18)
Denver (21)	Seattle (18)
Los Angeles (15)	Minneapolis (12)

CLUB DRUGS

- National rates for the club drugs MDMA (Ecstasy), Ketamine, and GHB were low in 2001, with no more than 2 mentions per 100,000 population (Tables 13.18, 13.20, and 13.30). Estimates of flunitrazepam (Rohypnol) were too imprecise for publication (Tables 3.28 and 13.28).

- Nationwide, ED mentions of the club drugs MDMA (Ecstasy), Ketamine, and GHB remained stable from 2000 to 2001 (Tables 3.18, 3.20, and 3.30). However, ED mentions of MDMA (Ecstasy) rose 95 percent (from 2,850 to 5,542 mentions) from 1999 to 2001 (Table 3.18).

- Significant long-term increases in club drug mentions were found for MDMA (2,091%, from 253 to 5,542), Ketamine (3,474%, from 19 to 679), and GHB (5,864%, from 56 to 3,340) from 1994 to 2001 (Tables 3.18, 3.20, and 3.30).

MDMA (Ecstasy)

- Among the 11 metropolitan areas with at least 100 mentions of MDMA in 2000 or 2001, significant increases from 2000 to 2001 were evident in 4 (Table 3.18):

  - Atlanta (157%, from 68 to 175 mentions),

  - Miami (75%, from 105 to 184),

  - Philadelphia (44%, from 141 to 203), and

  - San Francisco (42%, from 107 to 152).

- Among the 11 metropolitan areas with at least 100 mentions of MDMA in 2000 or 2001, significant decreases from 2000 to 2001 were evident in 3 (Table 3.18):
  - Chicago (-44%, from 215 to 121 mentions),
  - Los Angeles (-20%, from 177 to 142), and
  - Seattle (-10%, from 128 to 115).
- Adjusting for population differences, the highest rates of ED MDMA mentions in 2001 were apparent in (Table 13.18):
  - San Francisco (10 MDMA mentions per 100,000 population),
  - Miami (9),
  - Atlanta (5),
  - Philadelphia (5), and
  - Seattle (5).

GHB

- Among the 5 metropolitan areas with at least 100 mentions of GHB in 2000 or 2001, there were no significant increases from 2000 to 2001, and only San Francisco increased significantly (15%, from 138 to 158) from 1999 to 2001. Significant decreases in GHB mentions from 2000 to 2001 were evident in 3 metropolitan areas (Table 3.30):
  - Los Angeles (-44%, from 149 to 83 mentions),
  - Atlanta (-35%, from 129 to 84), and
  - Chicago (-25%, from 139 to 104).
- Adjusting for population differences, the highest rates of ED GHB mentions in 2001 were apparent in (Table 13.30):
  - San Francisco (10 GHB mentions per 100,000 population),
  - New Orleans (6), and
  - Dallas (4).

OTHER TRENDS

- Nationwide, ED mentions of inhalants decreased 56 percent (from 1,522 to 676) from 2000 to 2001 (Table 3.32).

- Mentions of LSD, PCP, miscellaneous hallucinogens, and illicit combinations remained stable from 2000 to 2001 (Tables 3.22, 3.24, 3.26, and 3.34). Of these drugs, only LSD and PCP had 100 or more mentions in any metropolitan area in 2001.

LSD

- From 1999 to 2001, ED mentions of LSD have decreased 45 percent (from 5,126 to 2,821) (Table 3.22).
- Among the 5 metropolitan areas with at least 100 mentions of LSD in 2000 or 2001, there were no significant increases from 2000 to 2001. Significant decreases were evident in 4 metropolitan areas (Table 3.22):
  - Phoenix (-54%, from 135 to 62 mentions),
  - Seattle (-42%, from 107 to 62),
  - Chicago (-40%, from 115 to 69), and
  - Los Angeles (-19%, from 217 to 175).
- Nationwide, there was 1 mention of LSD per 100,000 population in 2001 (Table 13.22). Adjusting for population differences, the highest rates of LSD ED mentions in 2001 did not exceed 3 per 100,000 population (in Miami, San Francisco, and Seattle).

PCP

- Nationwide, there were 6,102 ED mentions of PCP in 2001 (Table 3.24). PCP mentions remained statistically unchanged from 2000 to 2001, but increased 67 percent from 1999 (3,663 mentions).
- Among the 8 metropolitan areas with at least 100 mentions of PCP in 2000 or 2001, significant increases were evident in 2 (Table 3.24):
  - Washington, DC (66%, from 317 to 525 mentions) and
  - Philadelphia (30%, from 604 to 785).
- Nationwide, there were 2 mentions of PCP per 100,000 population in 2001 (Table 13.24). Adjusting for population differences, the highest rates of PCP ED mentions in 2001 were apparent in:
  - Philadelphia (17 PCP mentions per 100,000 population),
  - Chicago (15),
  - Washington, DC (13), and
  - Los Angeles (12).

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TRENDS IN OTHER SUBSTANCES OF ABUSE IN 21 METROPOLITAN AREAS

This section presents findings for the 21 metropolitan areas oversampled in DAWN for an extensive collection of substances, most of which are marketed legally by prescription or over the counter. However, only ED visits involving the nonmedical use of prescription and OTC medications are reportable to DAWN. Since it is impossible to know patients' actual intentions when abusing a substance, these substances are classified based on their therapeutic uses. In this section, we focus only on the largest categories of drugs, leaving exploration of small subcategories and individual substances to readers interested in particular metropolitan areas.

This section of *ED Trends* focuses primarily on Tables 2.2.1 to 2.2.21 (episodes and mentions) and 12.2.1 to 12.2.21 (rates) to present findings for each metropolitan area for the selected drug categories.[18] As noted in the introduction, 3-part table numbers ending in "**.1**" to "**.21**" present estimates for each of the metropolitan areas. Because of the detail involved, metropolitan area summaries are not provided in this publication for each individual drug. For readers interested in findings for a particular metropolitan area, 21 complete sets of tables, one for each metropolitan area, are available online at http://www.samhsa.gov/oas/DAWN.htm.

Readers should note that very small changes in the estimates for particular metropolitan areas may produce statistically significant differences. This occurs when all or nearly all eligible hospitals are included in the sample for those cities. Those interested in making comparisons across metropolitan areas should rely on the rates per 100,000 population because these account for differences in population sizes across the metropolitan areas.

Small numbers can also yield huge changes in percentage terms. For ease of reference, the following discussion cites the number of mentions involved for each of the statistically significant changes noted in percentage terms.

PSYCHOTHERAPEUTIC AGENTS

- Nationwide, episodes involving psychotherapeutic agents increased 8 percent from 2000 to 2001 (Table 2.2.0). Nationally, there were 87 mentions of psychotherapeutic agents per 100,000 population in 2001 (Table 12.2.0).
- From 2000 to 2001, significant increases in mentions of psychotherapeutic agents were found in 9 metropolitan areas oversampled in DAWN (Tables 2.2.1 through 2.2.21):
  - Detroit (39%, from 3,722 to 5,168 mentions),
  - Baltimore (24%, from 1,790 to 2,225),

[18] In addition, demographic characteristics of patients are presented in Tables 4.2.1 to 4.2.21 (episodes and mentions) and 14.2.1 to 14.2.21 (rates). Estimates of episode characteristics are presented in Tables 5.2.1 to 5.2.21 (there are no rates calculated for episode characteristics). Because of the detail involved, these estimates are not discussed.

- Phoenix (23%, from 3,033 to 3,738),
- Minneapolis (22%, from 2,282 to 2,794),
- San Francisco (21%, from 1,301 to 1,580),
- Denver (17%, from 1,272 to 1,492),
- Dallas (15%, from 2,494 to 2,866),
- Seattle (10%, from 2,630 to 2,883), and
- San Diego (9%, from 2,377 to 2,599).

- From 2000 to 2001, a significant decrease in ED mentions of psychotherapeutic agents was found only in Los Angeles (-17%, from 4,460 to 3,694) (Tables 2.2.1 through 2.2.21).
- Adjusting for population differences, the highest rates of ED mentions of psychotherapeutic agents in 2001 were apparent in (Tables 12.2.1 through 12.2.21):
  - Philadelphia (172 mentions of psychotherapeutic agents per 100,000 population),
  - Boston (152),
  - Seattle (135),
  - Phoenix (131), and
  - Detroit (124).

Antidepressants

- From 2000 to 2001, mentions of antidepressants were stable for the coterminous U.S. (Table 2.2.0). However, mentions of antidepressants increased in 8 metropolitan areas during this time period (Tables 2.2.1 through 2.2.21):
  - Detroit (42%, from 993 to 1,413 mentions),
  - Denver (28%, from 332 to 425),
  - Atlanta (25%, from 503 to 626),
  - Minneapolis (18%, from 1,043 to 1,227),
  - Phoenix (17%, from 1,023 to 1,193),
  - San Francisco (16%, from 284 to 328),
  - San Diego (12%, from 623 to 695), and
  - Baltimore (5%, from 332 to 350).

- From 2000 to 2001, mentions of antidepressants decreased in 2 metropolitan areas (Tables 2.2.1 through 2.2.21):
  - Buffalo (-56%, from 101 to 44 mentions) and
  - Los Angeles (-20%, from 1,009 to 808).

Antipsychotics

- In the coterminous U.S., mentions of antipsychotics remained stable from 2000 to 2001 (Table 2.2.0), while mentions of antipsychotics increased in 7 metropolitan areas:
  - Detroit (84%, from 186 to 343 mentions),
  - Phoenix (46%, from 289 to 422),
  - Chicago (42%, from 216 to 306),
  - Dallas (36%, from 158 to 215),
  - Denver (28%, from 103 to 132),
  - Baltimore (26%, from 69 to 87), and
  - San Francisco (24%, from 117 to 145).
- From 2000 to 2001, mentions of antipsychotics decreased in 3 metropolitan areas (Tables 2.2.1 through 2.2.21):
  - New Orleans (-59%, from 64 to 26),
  - Buffalo (-59%, from 22 to 9 mentions), and
  - Los Angeles (-28%, from 397 to 287).

Anxiolytics, Sedatives, and Hypnotics

- Overall, anxiolytics, sedatives, and hypnotics, the most frequent category of psychotherapeutic agents mentioned in drug-related ED episodes, increased 13 percent (from 120,519 to 135,949 mentions) from 2000 to 2001 in the coterminous U.S. (Table 2.2.0).
- Anxiolytics, sedatives, and hypnotics increased from 2000 to 2001 in 10 of the 21 DAWN metropolitan areas (Tables 2.2.1 through 2.2.21):
  - Detroit (35%, from 2,498 to 3,364 mentions),
  - Minneapolis (31%, from 943 to 1,232),
  - Baltimore (29%, from 1,372 to 1,765),
  - Phoenix (25%, from 1,667 to 2,077),

- San Francisco (24%, from 885 to 1,096),
- Dallas (23%, from 1,453 to 1,780),
- Boston (16%, from 3,599 to 4,181),
- Seattle (15%, from 1,611 to 1,845),
- Denver (14%, from 805 to 917), and
- San Diego (11%, from 1,517 to 1,678).

- Among the metropolitan areas oversampled in DAWN, there were no significant decreases in mentions of anxiolytics, sedatives, and hypnotics (Tables 2.2.1 through 2.2.21).

Benzodiazepines

- Benzodiazepines, which accounted for 9 percent of total ED drug mentions in the coterminous U.S., increased 14 percent (from 91,078 to 103,972) from 2000 to 2001 (Table 2.2.0).
- Mentions of benzodiazepines increased from 2000 to 2001 in 11 of the 21 DAWN metropolitan areas (Tables 2.2.1 through 2.2.21):
  - Detroit (38%, from 1,721 to 2,381),
  - Dallas (31%, from 1,027 to 1,346),
  - Baltimore (26%, from 1,071 to 1,354),
  - San Francisco (24%, from 664 to 825),
  - Phoenix (22%, from 1,219 to 1,488),
  - Newark (21%, from 703 to 849),
  - Minneapolis (21%, from 587 to 708),
  - Boston (16%, from 2,920 to 3,388),
  - Denver (13%, from 568 to 644),
  - Seattle (11%, from 1,220 to 1,354), and
  - San Diego (10%, from 1,197 to 1,312).
- Mentions of benzodiazepines did not decrease significantly in any of the DAWN metropolitan areas from 2000 to 2001 (Tables 2.2.1 through 2.2.21).

- Nationally, there were 41 ED mentions of benzodiazepines per 100,000 population in 2001 (Table 12.2.0). The highest rates among the 21 metropolitan areas oversampled in DAWN were found in (Tables 12.2.1 through 12.2.21):
  - Boston (95),
  - Philadelphia (95),
  - New Orleans (67), and
  - Seattle (63).

Miscellaneous Anxiolytics, Sedatives, and Hypnotics

- Substances classified as miscellaneous anxiolytics, sedatives, and hypnotics were stable from 2000 to 2001 in the coterminous U.S. (Table 2.2.0). However, mentions of miscellaneous anxiolytics, sedatives, and hypnotics increased from 2000 to 2001 in 7 of the metropolitan areas oversampled in DAWN (Tables 2.2.1 through 2.2.21):
  - Detroit (44%, from 226 to 326 mentions),
  - Chicago (34%, from 397 to 530),
  - Phoenix (33%, from 324 to 432),
  - Minneapolis (31%, from 343 to 450),
  - San Diego (25%, from 175 to 219),
  - Denver (23%, from 164 to 201), and
  - Seattle (15%, from 261 to 300).
- Mentions of miscellaneous anxiolytics, sedatives, and hypnotics decreased from 2000 to 2001 in 2 DAWN metropolitan areas (Tables 2.2.1 through 2.2.21):
  - Baltimore (-18%, from 128 to 105 mentions) and
  - New Orleans (-36%, from 105 to 67).

CNS AGENTS

- Nationwide, episodes involving CNS agents remained statistically unchanged from 2000 to 2001 (Table 2.2.0).
- From 2000 to 2001, significant increases in mentions of CNS agents were found in 11 metropolitan areas oversampled in DAWN (Tables 2.2.1 through 2.2.21):
  - Chicago (33%, from 4,579 to 6,099 mentions),
  - Seattle (31%, from 3,040 to 3,991),

- Detroit (26%, from 3,758 to 4,738),
- Baltimore (25%, from 2,558 to 3,206),
- New York (22%, from 4,211 to 5,148),
- Boston (21%, from 3,401 to 4,101),
- Phoenix (20%, from 3,429 to 4,129),
- San Francisco (14%, from 1,389 to 1,589),
- Denver (13%, from 1,685 to 1,899),
- San Diego (12%, from 2,280 to 2,545), and
- Minneapolis (10%, from 2,671 to 2,927).

- From 2000 to 2001, there were no significant decreases in mentions of CNS agents in the 21 metropolitan areas (Tables 2.2.1 through 2.2.21).
- Nationally, there were 83 ED mentions of CNS agents per 100,000 population in 2001 (Table 12.2.0). Adjusting for population differences, the highest rates of CNS agents in 2001 were apparent in (Tables 12.2.1 through 12.2.21):
  - Seattle (187 mentions of CNS agents per 100,000 population),
  - Phoenix (145),
  - Baltimore (139),
  - Buffalo (127),
  - Philadelphia (120),
  - Boston (115),
  - Detroit (114),
  - New Orleans (114), and
  - Minneapolis (113).

Narcotic Analgesics and Narcotic Analgesic Combinations

- Overall, narcotic analgesics/combinations comprised 99,317 mentions or 9 percent of total ED mentions for the coterminous U.S. in 2001 (Table 2.2.0).
- Nationwide, narcotic analgesics/combinations mentions rose 21 percent (from 82,373) from 2000 to 2001 (Table 2.2.0). From 2000 to 2001, significant increases in mentions

of narcotic analgesics/combinations were found in 14 of the 21 metropolitan areas oversampled in DAWN (Tables 2.2.1 through 2.2.21):

- Washington, DC (63%, from 672 to 1,098 mentions),
- Chicago (59%, from 2,368 to 3,775),
- Seattle (51%, from 1,699 to 2,560),
- Boston (44%, from 2,011 to 2,902),
- Minneapolis (44%, from 664 to 953),
- Phoenix (38%, from 1,321 to 1,820),
- Baltimore (37%, from 1,913 to 2,624),
- St. Louis (35%, from 824 to 1,108),
- New York (34%, from 2,573 to 3,444),
- Denver (31%, from 607 to 797),
- San Diego (29%, from 1,013 to 1,304),
- San Francisco (21%, from 696 to 839),
- Detroit (15%, from 2,476 to 2,852), and
- Dallas (19%, from 775 to 925).

■ Nationally, there were 39 ED mentions of narcotic analgesics/combinations per 100,000 population in 2001 (Table 12.2.0). Adjusting for population differences, the highest rates of narcotic analgesics/combinations in 2001 were found in (Tables 12.2.1 through 12.2.21):

- Seattle (120),
- Baltimore (114),
- Buffalo (102),
- Boston (81),
- New Orleans (74),
- Detroit (69),
- Philadelphia (67),
- Chicago (65), and
- Phoenix (64).

Most frequently mentioned narcotic analgesics

- The 3 most frequently mentioned narcotic analgesics/combinations, from 2000 to 2001 in the coterminous U.S. were (Table 2.8.0):
  - Narcotic analgesics identified as hydrocodone or hydrocodone combinations (21,567 mentions, up 41 percent from 1999 but statistically unchanged from 2000);
  - Narcotic analgesics identified as oxycodone or oxycodone combinations (18,409 mentions, up 70 percent from 2000 and 186 percent from 1999); and
  - Narcotic analgesics not identified by specific ingredient—that is, narcotic analgesics-NOS (32,196 mentions, up 24 percent from 2000).
- From 2000 to 2001, ED mentions of hydrocodone/combinations increased in 9 of the 21 metropolitan areas in DAWN (Tables 2.8.1 through 2.8.21):
  - New York (58%, from 62 to 98 mentions),
  - Philadelphia (58%, from 132 to 208),
  - Minneapolis (54%, from 122 to 188),
  - Phoenix (53%, from 240 to 367),
  - Detroit (30%, from 371 to 483),
  - Dallas (24%, from 303 to 375),
  - San Diego (24%, from 238 to 294),
  - Baltimore (12%, from 41 to 46), and
  - San Francisco (11%, from 169 to 188).
- From 2000 to 2001, ED mentions of oxycodone/combinations increased in 16 of the 21 metropolitan areas in DAWN (Tables 2.8.1 through 2.8.21):
  - Washington, DC (157%, from 136 to 350 mentions),
  - Miami (136%, from 73 to 172),
  - Minneapolis (120%, from 101 to 222),
  - Chicago (108%, from 24 to 50),
  - New Orleans (100%, from 62 to 124),
  - San Francisco (74%, from 31 to 54),
  - Denver (69%, from 70 to 118),

- St. Louis (66%, from 92 to 153),
- Philadelphia (60%, from 662 to 1,062),
- Boston (59%, from 598 to 948),
- Baltimore (57%, from 129 to 203),
- New York (57%, from 56 to 88),
- Seattle (52%, from 167 to 254),
- Phoenix (44%, from 225 to 323),
- Atlanta (39%, from 110 to 153), and
- San Diego (33%, from 43 to 57)

- From 2000 to 2001, ED mentions of narcotic analgesics-NOS increased in 9 of the 21 metropolitan areas (Tables 2.8.1 through 2.8.21):
  - Chicago (89%, from 1,368 to 2,587 mentions),
  - New York (63%, from 1,143 to 1,857),
  - Boston (55%, from 934 to 1,450),
  - Seattle (54%, from 882 to 1,357),
  - Baltimore (40%, from 1,544 to 2,162),
  - Denver (30%, from 201 to 261),
  - Buffalo (30%, from 545 to 707),
  - San Diego (19%, from 526 to 627), and
  - San Francisco (12%, from 294 to 329).

- Nationally, DAWN estimates the rates of ED mentions of hydrocodone/combinations, oxycodone/combinations, and narcotic analgesics-NOS to be 9, 7, and 13 mentions per 100,000 population, respectively (Table 12.8.0). Among the 21 metropolitan areas oversampled in DAWN (Tables 12.8.1 through 12.8.21):
  - The highest rates of ED mentions of hydrocodone/combinations were found in: New Orleans (18), Phoenix (13), and Dallas, Denver, San Diego, and San Francisco (12).
  - The highest rates of oxycodone/combinations were found in: Boston (27), Philadelphia (24), Seattle (12), and New Orleans and Phoenix (11).

- The highest rates of narcotic analgesics-NOS were found in: Baltimore (94), Buffalo (84), Seattle (63), Detroit (38), Chicago (44), Boston (41), and New Orleans (36).

- Narcotic analgesics-NOS accounted for 32 percent of total narcotic analgesic mentions in the coterminous U.S., but the variation across metropolitan areas was substantial. As a share of total narcotic analgesics, reporting of narcotic analgesics-NOS was:

  - Highest (more than 80 percent) in Baltimore and Buffalo.

  - At least 50 percent in Boston (50%), Chicago (69%), Detroit (55%), New York (54%), Newark (57%), and Seattle (53%).

  - Lowest in Minneapolis (18%) and Washington, DC (26%).

RESPIRATORY AGENTS

- Nationwide, ED mentions of respiratory agents remained stable from 2000 to 2001 (Table 2.2.0). Nationally, there were only 5 mentions of respiratory agents per 100,000 population in 2001 (Table 12.2.0).

- Adjusting for population differences, the highest rates of respiratory agents in 2001 were found in (Tables 12.2.1 through 12.2.21):

  - Phoenix (12 episodes involving respiratory agents per 100,000 population), with mentions up 97 percent (from 179 to 353) from 2000 to 2001 and

  - Minneapolis (10), with mentions up 43 percent (from 183 to 262) from 2000 to 2001.

CARDIOVASCULAR AGENTS

- Nationwide, mentions of cardiovascular agents in ED episodes remained stable from 2000 to 2001 (Table 2.2.0). Nationally, there were only 4 mentions of cardiovascular agents per 100,000 population in 2001 (Table 12.2.0).

- Adjusting for population differences, the highest rates of cardiovascular agents in 2001 were found in (Tables 12.2.1 through 12.2.21):

  - Phoenix (9 mentions of cardiovascular agents per 100,000 population), with mentions up 50 percent (from 173 to 259) from 2000 to 2001,

  - Minneapolis (7), and

  - Philadelphia (7).

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TRENDS IN ED DRUG EPISODES BY PATIENT DEMOGRAPHICS

This section presents findings for demographic characteristics of patients, by gender, race/ethnicity, and age for drug-related ED episodes overall and for the 15 major substances of abuse. This represents an expansion from the past, when patient characteristics were tabulated only for cocaine, heroin, marijuana, and methamphetamine. Please note that the tables for the latter have been renumbered.

This section of *ED Trends From DAWN* focuses primarily on trends in episodes and mentions by patient demographic characteristics, as presented in Tables 4.1.0 and 4.2.0 (total episodes), and Tables 4.5.0 through 4.34.0 (mentions of the 15 major substances of abuse, which are new in this publication of *ED Trends*). Tables showing total drug mentions by patient demographics are provided as well (Tables 4.3.0 and 4.4.0), but our discussion focuses on the more meaningful episode-level analysis of patient characteristics. Although drug category estimates are expressed in mentions in these tables, mentions are equivalent to episodes when a single drug is under consideration.

This section also compares the rates of ED drug episodes and mentions for the major substances of abuse per 100,000 population for gender and age groups. It is important to use rates when making comparisons across demographic groups because the rates take into account the differing sizes of the gender and age groups in the population. For this discussion, we focus on Tables 14.1.0 and 14.2.0 (total episodes), and 14.5.0 through 14.34.0 (mentions of the major substances of abuse, which are new in this publication of *ED Trends*). Tables showing rates of total drug mentions by gender and age are provided (Tables 14.3.0 and 14.4.0) but not discussed for the reasons noted earlier.

To illustrate the different perspectives revealed from comparisons based on mentions or rates, Figure 7 shows trends from 1994 to 2001 in the number of drug-related episodes by age group. Figure 8 shows the same trends for the same age groups expressed in rates per 100,000 population. Figures 9 through 11 illustrate trends by age group in the rate of mentions of cocaine, heroin, and marijuana, respectively, from 1994 to 2001.

Population-based rates are not available for racial or ethnic subgroups because the race and ethnicity categories in DAWN do not match sufficiently the categories available from the Census. For the same reason, there can be no comparisons of estimates by race/ethnicity across the metropolitan areas in DAWN. For more information regarding DAWN reporting on race/ethnicity, see Appendix A.

All of the trends by patient demographics are available also for the 21 metropolitan areas oversampled by DAWN, but in the interests of space, these are not discussed. See the table of contents for a complete listing of tables and their locations.

TOTAL DRUG-RELATED EPISODES

- Overall, there was a 6 percent increase in total ED episodes from 2000 to 2001 (Table 4.2.0). During this time period, increases in total ED episodes occurred for males (up

8%, from 309,607 to 333,370 mentions), females (5%, from 281,793 to 296,313), patients age 26 to 29 (11%, from 55,151 to 61,210), and patients age 35 and older (9%, from 277,283 to 301,792) (Table 4.2.0). Total episodes for younger age groups and all the race/ethnicity subgroups were unchanged from 2000 to 2001.

ALCOHOL-IN-COMBINATION

- From 2000 to 2001, mentions of alcohol-in-combination increased among patients age 26 to 29 (19%, from 18,460 to 21,881) and decreased among patients age 12 to 17 (24%, from 10,133 to 7,683) (Table 4.6.0). There were no significant changes in alcohol-in-combination mentions among any of the gender or race/ethnicity subgroups during this period.

- From 1994 to 2001, the largest changes in alcohol-in-combination mentions occurred among patients age 35 and older (up 73%)—particularly those age 45 to 54 (up 126%)—and among those age 18 to 19 (up 60%) (Table 4.6.0). This is compared to a 36 percent increase in mentions of alcohol-in-combination overall from 1994 to 2001.

COCAINE, HEROIN, MARIJUANA

- From 2000 to 2001, increases in cocaine mentions occurred for female patients (up 11%, from 59,314 to 65,713), and patients age 35 and over (14%, from 93,357 to 106,810) (Table 4.8.0). Cocaine mentions for males, younger age groups, and all of the race/ethnicity subgroups were unchanged from 2000 to 2001.

- From 1994 to 2001, the largest increase in cocaine mentions (compared with 35% overall) occurred among patients age 45 and older (over 173%), 35 to 44 years (76%), and 18 to 19 years (86%). By race, a significant increase was found only for white patients (75%) (Table 4.8.0).

- There were no significant changes in heroin mentions for any gender, race/ethnicity, or age subgroups from 2000 to 2001 (Table 4.10.0).

- From 1994 to 2001, heroin mentions increased 47 percent overall, with much larger increases among patients age 18 to 19 (258%), 45 and older (over 135%), and 20 to 25 (86%) (Table 4.10.0). Considering patients by race and ethnicity, heroin mentions increased only for whites (78%) and patients whose race/ethnicity was unknown (98%).

- From 2000 to 2001, increases in marijuana mentions occurred for males (16%, from 61,621 to 71,591), white patients (18%, from 49,015 to 57,836), patients age 35 years and older (24%, from 28,271 to 35,123), and patients age 26 to 34 (16%, from 21,841 to 25,323) (Table 4.12.0). Marijuana mentions were unchanged for females and the other race/ethnicity and age subgroups.

- From 1994 to 2001, marijuana mentions increased 176 percent overall (Table 4.12.0). The most dramatic increases were seen among patients age 35 and older (323%)—particularly adults age 55 and older (1,176%) and age 45 to 54 (446%), although the former had relatively few mentions. During this period, marijuana mentions increased for all race and ethnicity subgroups, Hispanic patients (315%), whites (208%), blacks

(98%), and all other races (187%). Again there was an increase in mentions attributed to patients whose race and ethnicity were unknown (up 224%).

AMPHETAMINES AND METHAMPHETAMINE

- From 2000 to 2001, mentions of amphetamines increased 30 percent (from 3,077 to 3,986) among patients age 20 to 25 (Table 4.14.0). This was the only demographic subgroup that experienced a significant change in mentions of amphetamines during this time period.

- From 1994 to 2001, amphetamine mentions increased 83 percent overall, with the largest increases among patients age 45 to 54 (477%), 12 to 17 (146%), and 20 to 25 (127%), and among females (126%) (Table 4.14.0). By race and ethnicity, amphetamine mentions increased among whites (84%) and among patients whose race and ethnicity was unknown (434%).

- Full-year national estimates for methamphetamine are presented in Table 4.16.0 (mentions) and Table 14.16.0 (rates) and show no recent changes among any of the demographic subgroups. However, national estimates for methamphetamine tend to be quite volatile, so we refer readers instead to estimates by metropolitan area, with particular attention to the 5 metropolitan areas with the highest rates of methamphetamine mentions: San Francisco (39 methamphetamine mentions per 100,000 population), San Diego (27), Phoenix (21), Los Angeles (18), and Seattle (18). The rates of methamphetamine mentions for all 21 metropolitan areas are summarized in Table 13.16. The demographic characteristics by metropolitan area are available online in tables with numbers beginning with **4.16** (mentions) and **14.16** (rates).

CLUB DRUGS

In general, the club drugs had few mentions in 1994 and their mentions have increased substantially since then. Large percent increases often come from relatively few mentions. In addition, due to the small number of mentions, many of the estimates by demographic subgroup are suppressed, especially for age.

- More than three-quarters (77%) of MDMA (Ecstasy) mentions in 2001 were attributed to ED patients age 25 and under (Table 4.18.0). Although there were no significant changes in ED mentions of MDMA among these young age groups from 2000 to 2001, mentions in 2001 were significantly higher than in 1999 (age 12 to 17 up 159%; age 18 to 25 up 75%).

- From 2000 to 2001, increases in ED mentions of MDMA occurred for patients age 35 years and older (34%, from 156 to 209) (Table 4.18.0). MDMA mentions were unchanged from 2000 to 2001 for all gender and race/ethnicity subgroups, but increases from 1999 to 2001 were evident for both genders (males 75%, females 124%) and all race/ethnicity subgroups (from 67% to 289%).

- More than half (52%) of GHB mentions in 2001 were attributed to ED patients age 20 to 25 (Table 4.30.0). However, there were no significant changes in ED mentions of GHB among these young adults from 2000 to 2001 or from 1999 to 2001.

- Mentions of GHB decreased 61 percent (from 673 to 263) among patients age 30 to 34 from 2000 to 2001 (Table 4.30.0). There were no other significant changes in GHB mentions by gender, race/ethnicity or age subgroups.

- Estimates for Ketamine and flunitrazepam (Rohypnol) were too imprecise for publication when disaggregated across demographic subgroups.

OTHER TRENDS

- From 2000 to 2001, ED mentions of LSD decreased among males (-36%, from 2,990 to 1,929) and patients age 18 to 25 (-38%, from 2,158 to 1,348) (Table 4.22.0).

- Mentions of PCP increased from 2000 to 2001 among patients age 18 to 25 (38%, from 1,723 to 2,373) (Table 4.24.0).

POPULATION-ADJUSTED RATES BY GENDER

- Adjusting for population, males and females had similar rates of drug-related ED episodes overall (271 and 227 episodes per 100,000 population, respectively) (Table 14.2.0). However, the rates for males were approximately double the rates for females for cocaine (102 vs. 50), heroin (50 vs. 23), and marijuana (58 vs. 29), and PCP (3 vs. 1). Rates for males and females were not significantly different for any of the other major substances of abuse (Tables 14.2.0 through 14.34.0).

- In 2001, among the 21 metropolitan areas oversampled by DAWN:

  - Rates of drug-related ED episodes involving males were highest in Philadelphia (707 episodes per 100,000 population), San Francisco (699), Chicago (673), and Baltimore (627) (Tables 14.2.1 through 14.2.21). Rates for males were lowest in Dallas (201), Minneapolis (230), and Washington, DC (282).

  - Rates of drug-related ED episodes involving females were highest in Seattle (471), Chicago (443), and Philadelphia (436) (Tables 14.2.1 through 14.2.21). Rates for females were lowest in New York (213), Dallas (216), Los Angeles (217), and Washington, DC (219).

POPULATION-ADJUSTED RATES BY AGE

Trends in ED drug episodes from 2000 to 2001, by age group, can be shown in terms of numbers of episodes (Figure 7) or in rates of episodes per 100,000 population (Figure 8). Focusing on the number of episodes is useful for determining which age groups are most frequently seen in EDs for drug-related emergencies. This is an estimate of utilization. In the case of total episodes, patients age 35 to 97 are responsible for the greatest number of ED episodes and those age 12 to 17 for the fewest (Figure 7). However, we cannot use these findings to make valid comparisons across age groups because of differences in the size of the population for each age category. For example, episodes for the age 35 to 97 group may be highest simply because this age group is, by far, the largest in the population. The following

sections focus specifically on comparisons of rates, adjusted for population size, for the major demographic subgroups.

Overall

- In 2001, nearly half (47%, 301,792 episodes) of total ED drug episodes involved patients age 35 and over, followed in frequency by patients age 26 to 34 (23%, 145,408), patients age 18 to 25 (20%, 127,175), and patients age 12 to 17 (10%, 61,695) (Table 4.2.0 and Figure 7). However, when we account for differences in population size across these age groups (Figure 8), we find that patients age 26 to 34 have the highest rates of ED episodes, followed by patients age 18 to 25. Patients age 35 to 97 have considerably lower rates, similar to the rates for patients age 12 to 17 (254).

- For 2001, DAWN estimates the following rates for ED drug episodes (Table 14.2.0):

  - 254 per 100,000 population for patients age 12 to 17. This rate was statistically unchanged from 2000, but represented an 11 percent increase (from 229) from 1999.

  - 379 for patients age 18 to 25. This rate was statistically unchanged from 2000, but represents a 2 percent decrease (from 388) from 1999.

  - 478 for patients age 26 to 34. This rate was statistically unchanged from 2000, 1999, and 1994.

  - 215 for patients age 35 and over. This represents a 7 percent increase (from 201) from 2000, and a 38 percent increase (from 156) from 1994.

- In 2001, across the 21 metropolitan areas oversampled by DAWN, rates of drug-related ED episodes (Tables 14.2.1 through 14.2.21):

  - For patients age 12 to 17 ranged from a high of 465 episodes per 100,000 population in Phoenix to a low of 104 in New York. Three other metropolitan areas—Minneapolis (450), Seattle (436), and Philadelphia (426)—had rates exceeding 400.

  - For patients age 18 to 25 ranged from a high of 1,048 per 100,000 population in Philadelphia to a low of 323 in New York. No other metropolitan area oversampled in DAWN had a rate exceeding 1,000.

  - For patients age 26 to 34 ranged from a high of 1,222 per 100,000 population in Philadelphia to a low of 333 in Dallas. Two other metropolitan areas—Baltimore(1,068) and Chicago (1,027)—had rates exceeding 1,000.

  - For patients age 35 and older ranged from 585 per 100,000 population in Chicago to 164 in Dallas. San Francisco (569) and Detroit (525) also had rates over 500.

Major Substances of Abuse

- Across the age groups, the top 3 drugs mentioned (among the major substances of abuse) came from the same 4 drugs: alcohol-in-combination, cocaine, heroin, and marijuana. Dividing the age groups a little differently than is common in DAWN, we can see some interesting patterns (Tables 14.6.0, 14.8.0, 14.10.0, and 14.12.0):
  - Marijuana was the most commonly mentioned drug, followed by alcohol-in-combination, then cocaine among youth age 12 to 19.
  - Cocaine ranked first, followed by alcohol-in-combination among those age 26 to 44.
  - Alcohol-in-combination ranked first, followed by cocaine, then heroin among patients age 45 and older.
  - Heroin ranked third among those age 35 and older and fourth among patients age 18 to 34, although the younger patients had higher rates of heroin ED admissions.
- Considering these 4 major substances of abuse (alcohol-in-combination, cocaine, heroin, and marijuana) in 2001 (Tables 14.6.0, 14.8.0, 14.10.0, and 14.12.0):
  - Rates for patients age 26 to 34 were consistently higher than rates for patients age 35 and over.
  - Rates for patients 12 to 17 were consistently lower than rates for older patients, except for marijuana. Patients age 12 to 17 had higher rates of marijuana mentions than patients age 35 and over (68 vs. 25) and rates similar to those for patients 18 to 25 (99) and 26 to 34 (83).
  - Rates for patients age 18 to 25 were lower than rates for patients age 26 to 34 for alcohol-in-combination (113 vs. 174) and cocaine (85 vs. 176). These age groups had similar rates of heroin mentions (52 vs. 75).
- Considering the 4 age groups (age 12 to 17, 18 to 25, 26 to 34, and 35+) in 2001 Tables 14.6.0, 14.8.0, and 14.10.0):
  - Rates for alcohol-in-combination, cocaine, and heroin appeared to rise with age and peak in the 26 to 34 age group (with 174, 176, and 75 mentions per 100,000 population, respectively).
  - Rates for marijuana were similar (68, 99, and 83 mentions per 100,000 population) across a broad range of ages (from age 12 to 34), and the rate for marijuana mentions was substantially lower for patients age 35 and over (25 mentions per 100,000 population).
  - Rates for MDMA (Ecstasy) mentions appeared to peak (at 10 mentions per 100,000 population) in the 18 to 25 age group with lower rates in both the younger and older age groups (4 mentions per 100,000 population for ages 12 to 17 and 26 to 34; less than 1 mention per 100,000 population for patients age 35 and over).

Age 12 to 17

- From 2000 to 2001, the rate of alcohol-in-combination mentions for patients age 12 to 17 decreased 27 percent (from 43 to 32 mentions per 100,000 population) (Table 14.6.0).

- The rates of cocaine and heroin mentions for adolescents age 12 to 17 were stable from 2000 to 2001 and have remained stable since 1994 (Tables 14.8.0 and 14.10.0 and Figures 9 and 10).

- The rate of marijuana mentions for patients age 12 to 17, although stable from 2000 to 2001, has increased 23 percent from 1999 to 2001 (from 55 to 68 per 100,000 population) and 126 percent (from 30 to 68 per 100,000 population) since 1994 (Table 14.12.0 and Figure 11).

Age 18 to 25

- For young adults age 18 to 25, the rates of ED mentions of alcohol-in-combination (113), cocaine (85), and heroin (52) were stable from 2000 to 2001 (Tables 14.6.0, 14.8.0, and 14.10.0). However, the rate of heroin mentions has increased 74 percent (from 30 to 52) since 1994.

- Marijuana ED mentions per 100,000 population have risen 103 percent (from 49 to 99) for young adults age 18 to 25, but have been stable since 1999 (Table 14.12.0).

Age 26 to 34 Years

- For adults age 26 to 34, the rates of ED mentions of alcohol-in-combination (174), cocaine (176), and heroin (75) have been relatively stable since 1994 and from 2000 to 2001 (Tables 14.6.0, 14.8.0, and 14.10.0).

- The rate of marijuana mentions among patients age 26 to 34 increased 26 percent (from 66 to 83 per 100,000 population) from 2000 to 2001 and 163 percent (from 32) since 1994 (Table 14.12.0).

Age 35 Years and Older

- For adults age 35 and over, the rate of alcohol-in-combination mentions, although stable from 2000 to 2001, increased 50 percent (from 56 to 85 mentions per 100,000 population) from 1994 to 2001 (Table 14.6.0).

- Among patients age 35 and older, the rate of cocaine mentions increased 13 percent (from 68 to 76 per 100,000 population) from 2000 to 2001 (Table 14.8.0). Since 1994, this rate has increased 71 percent (from 45).

- The rate of heroin mentions among patients age 35 and older in 2001 (37 per 100,000 population) was statistically unchanged from the rate in 2000, but notably, heroin mentions for these patients increased 8 percent (from 34) from 1999 to 2001 and 37 percent (from 27) since 1994 (Table 14.10.0).

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Figure 7
Number of drug-related episodes by age group: 1994 through 2001

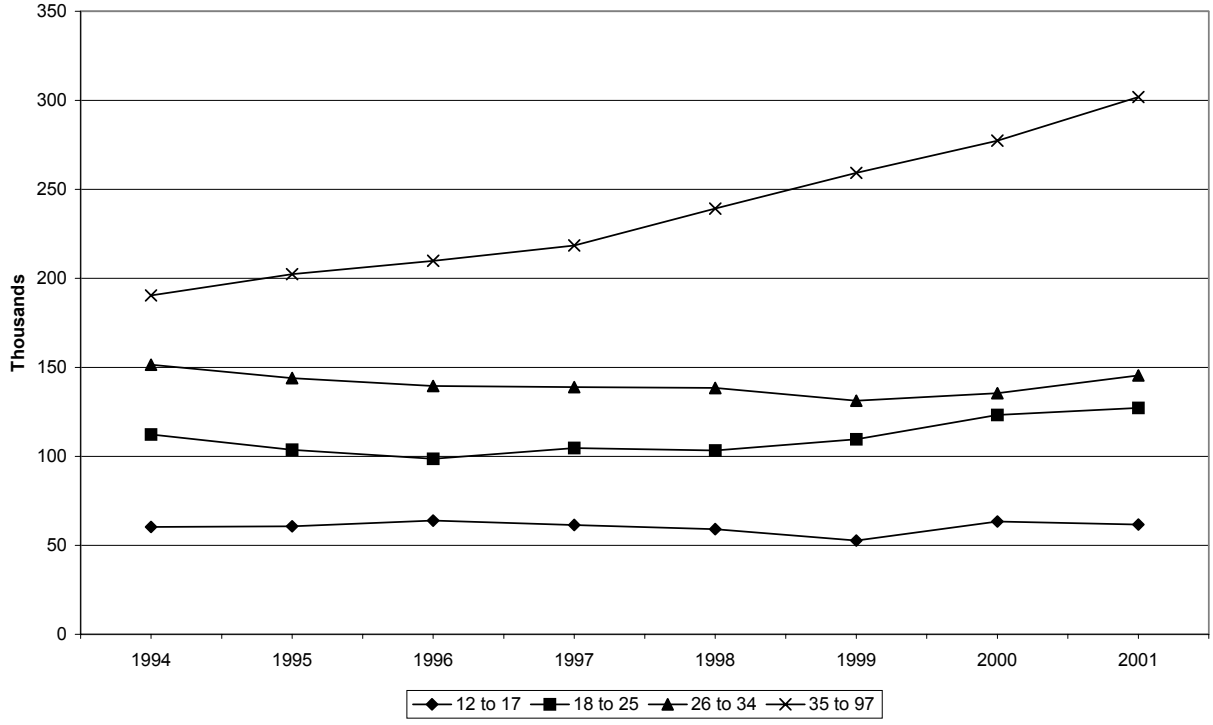

Figure 8
Rate of drug-related episodes per 100,000 population by age group: 1994 through 2001

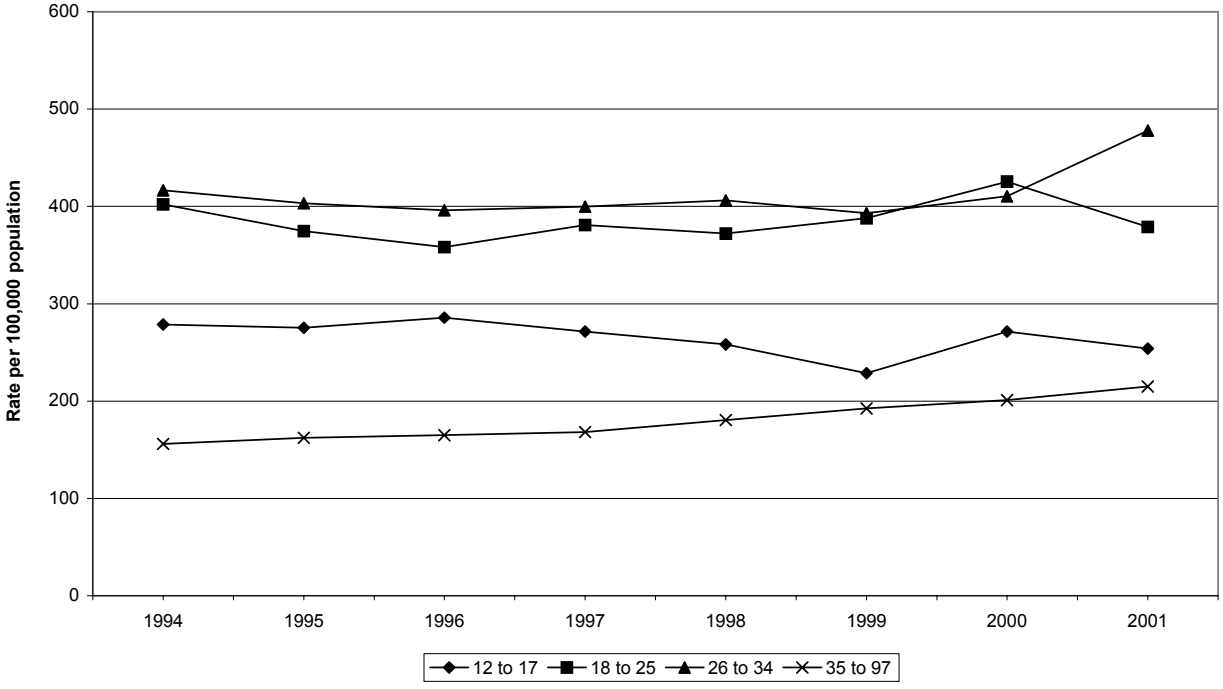

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Figure 9
Rate of cocaine mentions per 100,000 population by age group: 1994 through 2001

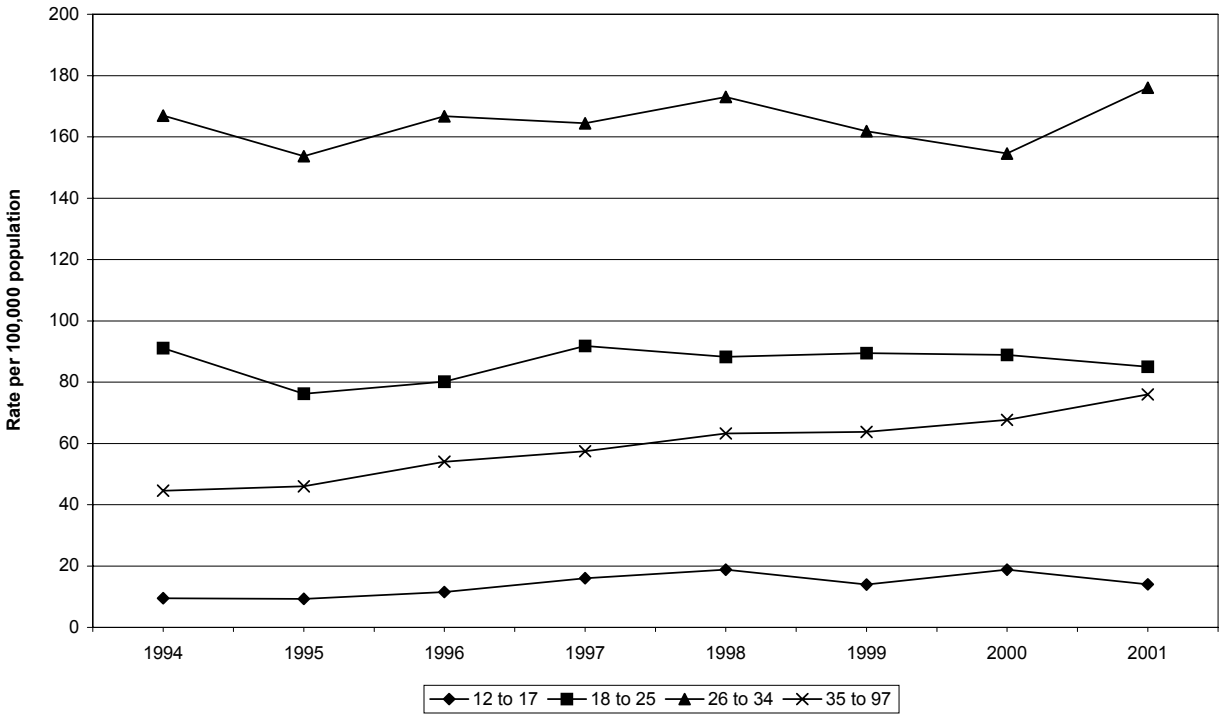

Figure 10
Rate of heroin mentions per 100,000 population by age group: 1994 through 2001

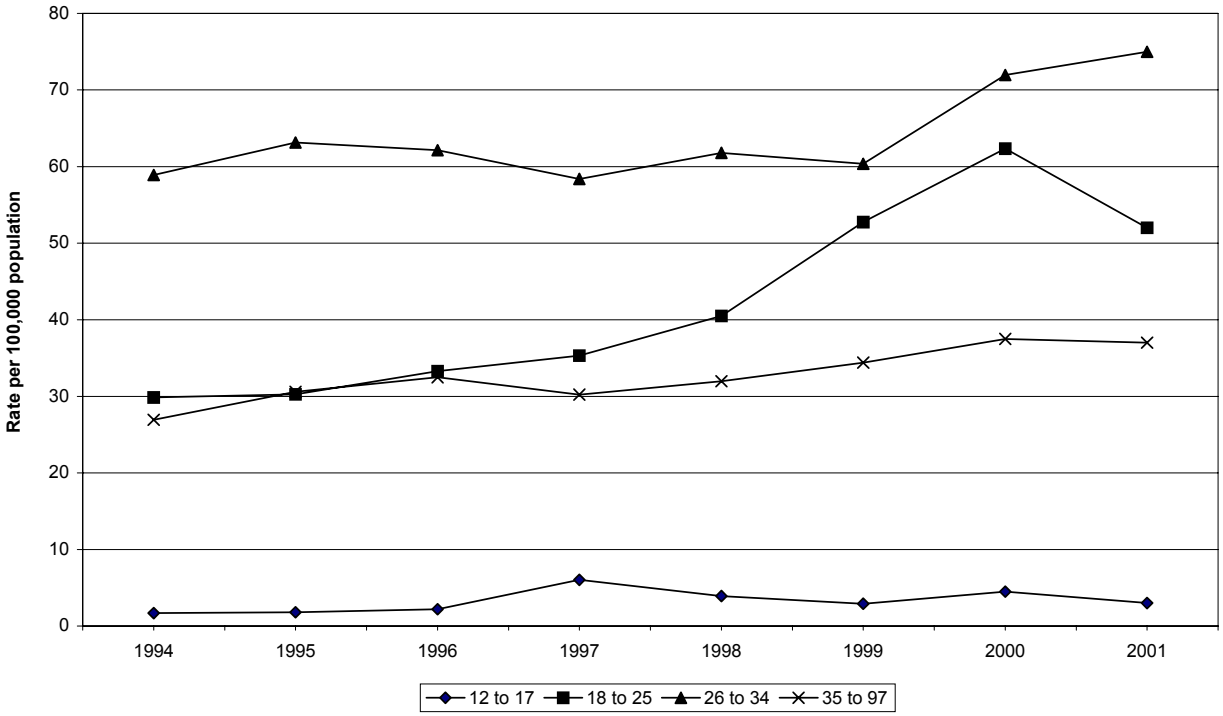

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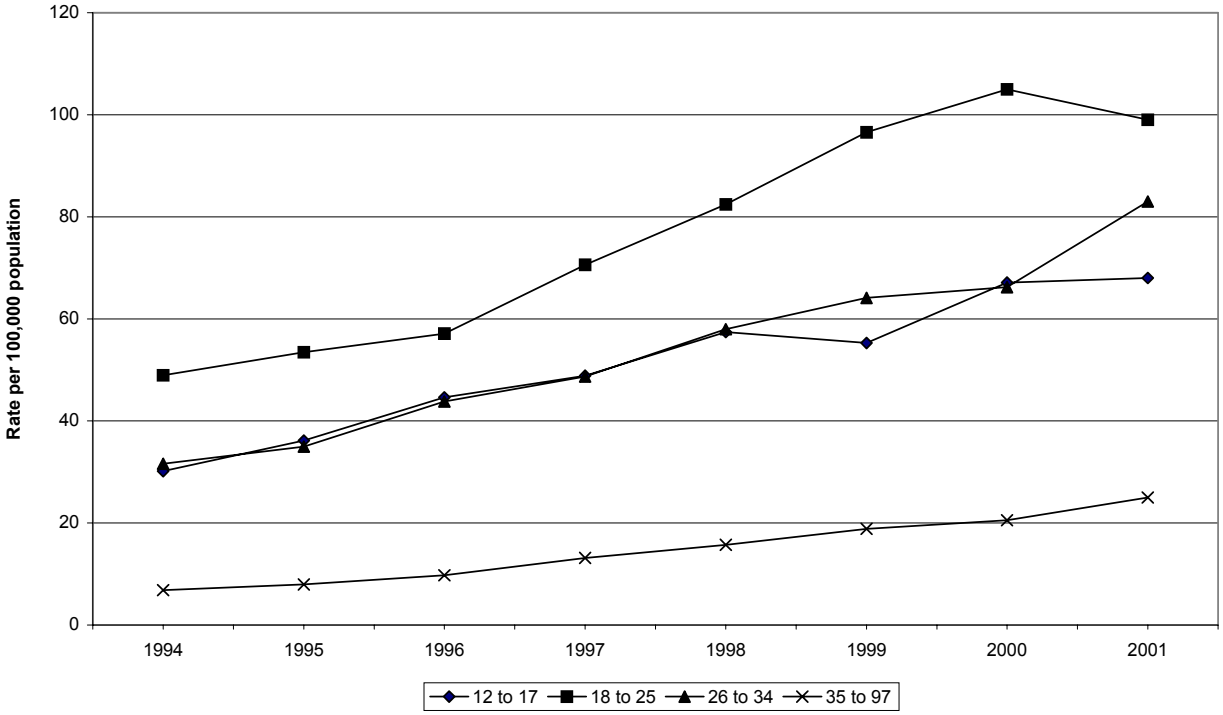
Figure 11
Rate of marijuana mentions per 100,000 population by age group: 1994 through 2001



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TRENDS IN ED DRUG EPISODES BY EPISODE CHARACTERISTICS

This section presents findings of episode characteristics for drug-related ED episodes overall (in Tables 5.1.0 and 5.2.0, total episodes) and for the 15 major substances of abuse (Tables 5.5.0 through 5.34.0). This represents an expansion from the past, when episode characteristics were tabulated only for cocaine, heroin, marijuana, and methamphetamine. Please note that the tables for the latter have been renumbered.

Population-based rates for episode characteristics are not produced, so comparisons of episode characteristics across metropolitan areas are not advised. Differences among metropolitan areas may simply reflect differences in the size of the populations available to visit an ED.

DRUG CONCOMITANCE

- The majority (56%, 358,858 episodes in 2001) of drug-related ED episodes involve more than one drug (Table 5.2.0).
- From 2000 to 2001, single-drug episodes reported to DAWN increased 6 percent (from 263,513 to 279,626), as did overall episodes (Table 5.2.0). However, from 1994 to 2001, multiple-drug episodes increased 35 percent (from 265,820 to 358,858), while episodes overall rose 23 percent (from 518,880 to 638,484).
- In 2001, nearly half (45%) of episodes involving heroin involved only heroin (Table 5.10.0), and nearly half (45%) of episodes involving methamphetamine involved only methamphetamine (Table 5.16.0). By contrast, only 28 percent of episodes involving cocaine involved cocaine alone (Table 5.8.0), and only 24 percent of episodes involving marijuana involved marijuana alone (Table 5.12.0). By definition, all DAWN ED episodes involving alcohol also involved another drug (Table 5.6.0).
- In 2001, among the other major substances of abuse, episodes involving MDMA (14% single-drug), Ketamine (26%), LSD (24%), PCP (21%), and GHB (26%) were the least likely to involve only one drug (Tables 5.18.0, 5.20.0, 5.22.0, 5.24.0, and 5.30.0).

DRUG USE MOTIVE

- In drug-related ED episodes during 2001, *dependence* (36%, 228,994 episodes) and *suicide* (30%, 194,324) were the most frequently cited motives for taking substances, followed by *psychic effects* (20%, 194,324) (Table 5.2.0). However, motive was *unknown* in a relatively high number of cases (12%, 75,886).
- From 2000 to 2001, episodes with a motive of *psychic effects* increased 9 percent (from 118,700 to 129,007) (Table 5.2.0).
- In 2001, 5 of the major substances of abuse—heroin (6%), methamphetamine (10%), MDMA (8%), Ketamine (2%), and LSD (7%)—had relatively low rates of motive *unknown* (Tables 5.10.0, 5.16.0, 5.18.0, 5.20.0, and 5.22.0). Among these,

dependence was the motive for the majority of episodes involving heroin (83%) and methamphetamine (50%), and *psychic effects* was the motive for the majority of episodes involving MDMA (57%), Ketamine (65%), and LSD (54%). Among the major substances with relatively high rates of *unknown* motives, *dependence* was the predominant motive for episodes involving cocaine (56%, with 14% unknown, Table 5.8.0) and *psychic effects* was the predominant motive among episodes involving GHB (71%, with 18% unknown, Table 5.30.0).

REASON FOR ED CONTACT

- By far, the most common reason for ED contact cited in drug-related ED episodes in 2001 was *overdose* (41%, 264,086 episodes) (Table 5.2.0). *Unexpected reaction* (17% of total episodes) was the next most frequent reason for ED contact, with a 17 percent increase (from 92,508 to 108,309) from 2000 to 2001 (Table 5.2.0).

- In 2001, taken together, *unexpected reactions* and *overdoses* were the predominant reasons for ED contact in episodes involving alcohol-in-combination (55%), cocaine (41%), marijuana (53%), amphetamines (61%), methamphetamine (49%), MDMA (60%), Ketamine (59%), LSD (56%), PCP (57%), GHB (86%), and inhalants (41% for unexpected reaction alone) (Tables 5.4.0 through 5.34.0). It is important to remember that only one reason for ED contact is coded, regardless of the number of drugs involved, and that one reason is attributed to all the drugs. For the major substances of abuse, all episodes involving alcohol-in-combination and a high proportion of episodes involving virtually all other major substances (from 51% of episodes involving inhalants to 86% of episodes involving MDMA) involve multiple drugs.

- In 2001, *seeking detoxification* was a relatively frequent reason for ED contact in episodes involving cocaine (28%, 53,853 episodes), heroin (38%, 35,345), and LSD (22%, 615) (Tables 5.4.0 through 5.34.0). Anecdotal evidence suggests that the volume of cases *seeking detoxification* varies widely across place (and time), as a reflection of administrative policies that, in some hospitals, require patients to receive medical clearance from the ED prior to their admission for detoxification or substance abuse treatment.

PATIENT DISPOSITION

- In 2001, half of drug-related ED episodes resulted in admission to the hospital (50%, 319,212 episodes) (Table 5.2.0).

- From 2000 to 2001, drug-related ED episodes resulting in the patient being treated and released (47% of episodes) increased 9 percent (from 274,814 to 299,839) (Table 5.2.0).

- In 2001, admission to the hospital occurred for the majority of episodes involving alcohol-in-combination (54%) (Table 5.6.0). Patients were treated and released in the majority of episodes involving cocaine (50%), heroin (56%), marijuana (54%), amphetamines (53%), methamphetamine (60%), MDMA (60%), Ketamine (77%), LSD (59%), PCP (55%), miscellaneous hallucinogens (75%), GHB (68%), inhalants (50%), and combinations NTA (72%) (Tables 5.8.0 through 5.34.0). Again, it is important to

remember that a high proportion of episodes involving major substances of abuse involve multiple drugs.

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DISCUSSION OF RESULTS

This is the second issue of a revamped publication series under a new title *Emergency Department Trends From the Drug Abuse Warning Network*, and its focus is the final estimates for 2001 as well as trends in the data from 1994 to 2001. **Because of the numerous changes contained within, *ED Trends From DAWN*, beginning with the last publication, is intended to replace earlier publications on our readers' shelves. Estimates in this publication supersede those published previously for 1994 to 2001.**

We use this section of *ED Trends* to highlight issues that cut across topics discussed previously and to discuss the possible implications of those findings. Given the wealth of information in this publication, limiting the number of topics for discussion has been a challenge. We have selected topics for discussion that correspond to the topics of most interest to those consumers of DAWN who contact us with feedback or questions.

OVERVIEW OF TRENDS

Estimates of drug-related ED episodes and mentions reveal a number of significant changes between 2000 and 2001. The total number of drug-related ED episodes increased 6 percent—similar to the 5 percent increase among total ED visits for the same time period. Over the long-term, presented here as 1994 to 2001, we find a 23 percent rise in drug-related ED episodes and a 30 percent rise in ED drug mentions. In contrast, from 1994 to 2001, total ED visits increased only 12 percent.

The *ED Trends* highlight a selected list of "major substances of abuse" as distinct from "other substances of abuse." The former is comprised of 15, mostly illicit substances of high frequency or substantial policy interest; the latter is primarily those substances that are marketed legally by prescription or over the counter.

MAJOR SUBSTANCES OF ABUSE

Among the 15 major substances of abuse, ED mentions increased from 2000 to 2001 for marijuana (up 15% from 2000 to 2001 and 176% since 1994) and cocaine (up 10% from 2000 to 2001 and 35% from 1994 to 2001) but decreased for inhalants (-56%). Although this change in mentions of inhalants is large and statistically significant, the number of mentions is quite low (676 in 2001). ED mentions were stable from 2000 to 2001 for all other major substances of abuse including alcohol-in-combination, heroin, methamphetamine, "designer" or "club" drugs (MDMA, Ketamine, and GHB), and the hallucinogens (LSD, PCP, and miscellaneous). Two of these major substances have increased over the long-term, but leveled off in recent years: heroin (up 47% from 1994 to 2001) and alcohol-in-combination (up 36% from 1994 to 2001).

Among the major substances of abuse, ED mentions of the club drugs MDMA (Ecstasy), GHB, and Ketamine had extremely low numbers in 1994 (253, 56, and 19 respectively) and significant growth from 1994 to 2001. MDMA mentions rose from 253 to 5,542 mentions; GHB from 56 to 3,340; and Ketamine from 19 to 679. This growth is enormous in percentage terms (2,091%, 5,864%, and 3,474% respectively). However, we caution readers to consider the size of estimates, not just the percentage changes. Very small numbers often yield percentage

changes that are very large, but not particularly meaningful even though statistically significant. For example, a change from 1 to 2 mentions is a 100 percent increase but could hardly be considered meaningful. However, a goal of *ED Trends* is to make all of this information more accessible to readers than ever before, and arraying small estimates alongside large ones provides opportunities to consider the relative magnitudes of the estimates in context.

DAWN also shows variations across the major substances of abuse in the motives for taking drugs and in the reasons for ED contact. Overall, *dependence* and *suicide* were the most frequently cited motives for taking the substances reported to DAWN, and *dependence* was the motive for the majority of episodes involving heroin and methamphetamine. However, *psychic effects* was the most common motive for the majority of episodes involving cocaine, marijuana, the club drugs (GHB, Ketamine, and MDMA), and LSD. Similarly, *overdose* was, by far, the most common reason for ED contact cited in DAWN ED episodes overall, and *unexpected reaction* was the next most frequent reason. However, *seeking detoxification* was the most frequent reason in episodes involving cocaine and heroin.

OTHER SUBSTANCES OF ABUSE

The expanded content of *ED Trends* provides the opportunity for in depth analysis of ED mentions of prescription and over-the-counter (OTC) drugs. This analysis shows that ED mentions are most concentrated in 2 categories—psychotherapeutic agents (220,289 mentions in 2001) and CNS agents (210,685)—in nearly equal proportions (19% and 18% of total mentions, respectively).

Anxiolytics, sedatives, and hypnotics (the category that includes the benzodiazepines, barbiturates, and other anxiolytics, sedatives, and hypnotics) are the most frequent of the psychotherapeutic agents mentioned in drug-related ED visits. Anxiolytics, sedatives, and hypnotics are followed in frequency by the antidepressants and antipsychotics.

The analgesics are, by far, the most frequent subcategory of CNS agents, with the narcotic analgesics/combinations more prevalent among ED episodes than any of the non-narcotic analgesics. We found significant increases in narcotic analgesics that were concentrated in a few of the narcotics, specifically, the hydrocodones, the oxycodones, and methadone.

It is important to remember that, while ED visits may be one indicator of the drug abuse problem in communities, the population that presents to a hospital ED may differ dramatically from the drug-using population at large. According to the 2000 National Household Survey on Drug Abuse (NHSDA),[19] 3.8 million Americans age 12 and over had used certain prescription drugs nonmedically in the past month. This number rose to 8.8 million when the period was expanded to include nonmedical use of such drugs in the preceding year. The types of prescription drugs cited by the NHSDA are: pain relievers (2.8 million users), tranquilizers (1.0 million users), stimulants (0.8 million users), and sedatives (0.2 million users). Although these categories do not match the DAWN categories exactly, they are certainly consistent and underscore the importance of monitoring the abuse of these particular classes of prescription drugs.

[19] Substance Abuse and Mental Health Services Administration, *Summary of Findings from the 2001 National Household Survey on Drug Abuse*. Office of Applied Studies, NHSDA Series H-13, DHHS Publication No. (SMA) 01-3549. Rockville, MD, 2001.

EMERGING DRUG ABUSE TRENDS

A primary mission of DAWN is to identify and track the new and emerging substances whose abuse results in major health consequences, i.e., those that result in ED admissions and deaths. Historically, DAWN has not been capable of identifying emerging trends due to delays in publication of estimates, focus on the most frequently mentioned illicit drugs (i.e., cocaine, heroin, marijuana, and methamphetamine), and an inconsistent drug classification system.

We have been addressing these issues one by one. Estimates from DAWN are being published in a more timely manner, and we expect further improvements. *ED Trends* does not limit its focus to drugs mentioned frequently, and DAWN now has a mechanism for coding all types of drugs, with a consistent method for classification. New drugs enter the choice set for DAWN as they are approved for marketing by the FDA.

Given these improvements, it may now be possible to begin to ask the question: What can DAWN tell us about emerging trends in drug abuse?

In the following discussion, we address this question from 2 perspectives: First, we will focus on new drugs, that is, drugs new to the marketplace for which there may be no pre-existing information about abuse potential. For this approach, we will highlight drugs that had no mentions in early years followed by growing numbers of mentions more recently. Second, we will examine those drugs with substantial increases and decreases over the period 1994 to 2001. Third, we will focus on the size and strength of changes in ED mentions within 2 classes of drugs with high abuse potential. For this, we highlight psychotherapeutic agents and CNS agents, the substances most likely to have a psychoactive effect if used contrary to standard medical practice.

ED Mentions of New Drugs

Monitoring ED mentions of a drug beginning shortly after it gains FDA approval for the marketplace may offer the opportunity to identify emerging problems associated with prescription drugs at their earliest point. Policymakers and regulators may find this type of information useful, as might pharmaceutical manufacturers interested in tracking misuse of their products early on. To address the issue of new drugs, we have identified the set of drugs that were never reported to DAWN (i.e., had 0 mentions) in 1994 and subsequent years and then grew to have over 1,000 mentions by 2001.

Three antidepressants met these criteria (Table 2.6.0):

- **Citalopram**, an SSRI antidepressant, had 0 mentions from 1994 through 1998, appeared with 1,563 mentions in 1999, then increased 186 percent, to 4,474 mentions in 2001. According to the FDA Orange Book,[20] citalopram was first approved by the FDA in 1998. From 1999 to 2001, mentions of citalopram increased 186 percent (from 1,563 to 4,474 mentions).

[20] All information about drug approvals is derived from: Food and Drug Administration, Center for Drug Evaluation and Research, *Approved Drug Products with Therapeutic Equivalence Evaluations*. The electronic *Orange Book* can be queried online (go to http://www.fda.gov/cder/orange/default.htm).

- **Mirtazapine**, a miscellaneous antidepressant, had 0 mentions from 1994 through 1996 followed by 606 mentions in 1998 and 1,898 mentions in 2001. Mirtazapine was first approved by the FDA in 1996.

- **Nefazodone**, another miscellaneous antidepressant, had 0 mentions in 1994, 234 mentions in 1995 and 1,494 mentions in 2001. Nefazodone was first approved by the FDA in 1994.

Two antipsychotics met these criteria (Table 2.6.0):

- **Olanzapine**, a miscellaneous antipsychotic, had 0 mentions from 1994 through 1996, 1,449 mentions in 1997, increasing to 5,217 mentions in 2001. Olanzapine was first approved by the FDA in 1996. From 1999 to 2001, mentions of olanzapine increased 59 percent (from 3,285 to 5,217 mentions).

- **Quetiapine**, another miscellaneous antipsychotic, had 0 mentions in 1994 through 1997, 484 mentions in 1998, rising to 4,346 mentions in 2001. Quetiapine was first approved by the FDA in 1997. Mentions of quetiapine increased 385 percent (from 896 to 4,346 mentions) from 1999 to 2001.

Two CNS agents met these criteria (Table 2.8.0):

- **Tramadol**, a miscellaneous analgesic, had 0 mentions in 1994 followed by 645 mentions in 1995, more than 1,000 mentions in each of the succeeding years, rising to 2,329 mentions in 2001. Tramadol was first approved by the FDA in March 1995. From 1999 to 2001, tramadol mentions increased 109 percent (from 1,113 to 2,329).

- The non-narcotic analgesic category, **Cox-2 inhibitors**, had 0 mentions from 1994 to 1998, an estimate in 1999 that was too imprecise for publication, 1,002 mentions in 2000 (all attributed to celecoxib), and 1,314 mentions in 2001. The change in mentions from 2000 to 2001 was not statistically significant. In the last publication of *ED Trends*, celecoxib met our criteria for inclusion in this list. However, from 2000 to 2001, celecoxib mentions dropped below the 1,000 mention cut-off (although the change was not statistically significant) and a new Cox-2 inhibitor, rofecoxib first appeared with 552 mentions. Celecoxib was the first Cox-2 inhibitor to be approved by the FDA in 1998. Rofecoxib was first approved by the FDA in 1999.

Most of these new drugs are psychotherapeutic agents; the remainder are CNS agents. No respiratory (Table 2.10.0) or cardiovascular agents (Table 2.12.0) met the selection criteria for new drugs. It is important to note here that this is a limited look at new drugs. ED mentions will not occur for all new drugs, and although drugs with no mentions at all are present in the tabulations in *ED Trends*, we have not examined each and every one. In addition, there are many other examples of drugs approved well before 1994, which had new formulations approved between 1994 and 2001. Since DAWN data cannot be used to track mentions of drugs by brand (trade) names, it is much more difficult to identify instances where newly approved formulations may be affecting a previously stable trend. It may be informative, however, to assess whether new approvals may be affecting an upward trend, and we have done this below.

Drugs with Increasing and Decreasing Trends

It may be important also to assess how increases in one drug may be associated with countervailing decreases in other drugs in the same or related categories. Substitution may occur, when one drug falls out of favor or for some other reason is replaced by another drug in the same category or having similar effects. DAWN data may reflect changes in prescribing practices, with physicians prescribing (and individuals abusing) new drugs as they appear on the market, with concomitant decreases in prescriptions (and abuse) of older formulations. If substitution is occurring, it would be important to examine both increasing and decreasing trends to gain a more complete picture of change. Focusing only on specific drugs (e.g., new drugs) to the exclusion of others may provide a different and (possibly) misleading perspective.

Although an in depth analysis of therapeutic uses and possible substitution effects among drugs goes beyond DAWN's capabilities, we can use DAWN data to identify potential candidates for such an analysis. Table A summarizes the psychotherapeutic, CNS, respiratory, and cardiovascular agents that had at least 1,000 ED mentions in 1994, followed by significant decreases and those that had at least 1,000 mentions in 2001, preceded by significant increases.[21]

Among the psychotherapeutic agents, we find substantial declines in ED mentions of one SSRI (fluoxetine) and substantial increases in another (paroxetine). The large decreases in the specific tricyclic antidepressants are accompanied by a large increase in tricyclic antidepressants-NOS. It is impossible to know whether this is a change in drugs or an artifact of coding. In addition, there were substantial increases in ED mentions of the miscellaneous antidepressants bupropion and venlafaxine.

Several of the phenothiazine and miscellaneous antipsychotics had significant declines, while mentions of risperidone, another miscellaneous antipsychotic, rose substantially. One barbiturate, phenobarbital, decreased, while nonspecific mentions of barbiturates (barbiturates-NOS) increased significantly. The benzodiazepines, chlordiazepoxide and flurazepam decreased, while mentions of the more frequent alprazolam, clonazepam, and benzodiazepines-NOS increased. Among the anxiolytics, sedatives, and hypnotics (ASH), there were several decreases in mentions (of diphenhydramine, hydroxyzine, and ASH-NOS) and one increase (of zolpidem). Mentions of caffeine (classified as a CNS stimulant) decreased.

Among the CNS agents, we find that ED mentions of the narcotic analgesic codeine/combinations decreased from 1994 to 2001, while mentions of several other narcotic analgesics—hydrocodone/combinations, methadone, morphine/combinations, oxycodone/combinations, and narcotic analgesics-NOS—rose rather dramatically. Aspirin/combinations (non-narcotic analgesics) decreased from 1994 to 2001. Thus, the only countervailing trend within the narcotic analgesics appears to be a decline in codeine mentions, but this is insufficient to balance the increases in other narcotics. Similarly, substantial long-term declines in ED mentions of NSAIDs (a group of non-narcotic analgesics not shown in Table A) and salicylates (aspirins) cannot balance the increases in the more powerful narcotics.

Mentions of the anticonvulsants carbamazepine and phenytoin declined, and divalproex sodium in the same subcategory increased. Mentions of the muscle relaxant, methocarbamol, decreased while the muscle relaxant, carisoprodol, increased. We also find a decrease in mentions of benztropine (an antiparkinson agent) and phenylpropanolamine (an anorexiant).

[21] Please note that drugs with 0 mentions in 1994 or in 2001 are excluded from this analysis because, mathematically, tests of statistical significance cannot be performed or percent changes computed when 0 mentions is part of the calculation.

Only a few respiratory or cardiovascular agents met our selection criteria. Among the respiratory agents, mentions of theophylline (a bronchodilator) and pseudoephedrine (a decongestant) fell, while acetaminophen-chlorpheniramine (an upper respiratory combination with decongestant properties) rose. Among the cardiovascular agents, we find that mentions of one beta blocker (propranolol) and one calcium channel blocker (nifedipine) fell, and ephedrine (classified as a miscellaneous cardiovascular agent) also declined.

Classes of Drugs with High Abuse Potential

Figure 12 shows that 82 percent of ED drug mentions come from only 7 categories: alcohol-in-combination, cocaine, heroin, marijuana, benzodiazepines, antidepressants, and analgesics. Because they are illicit drugs, cocaine, heroin, and marijuana are well known, long-standing problems that receive much attention from many data systems. The benzodiazepines, antidepressants, and analgesics are different in this respect. Few data systems are capable of monitoring the abuse of these substances at all, and none matches the level of detail present in DAWN. Taken together, the benzodiazepines, antidepressants, and analgesics constituted 339,484 ED mentions in 2001, or nearly 30 percent of total ED drug mentions. Therefore, it makes sense to focus on these classes of drugs to search for concentrations of abuse.

ED mentions of narcotic analgesics and their combinations are clearly on the rise, with a 21 percent increase from 2000 to 2001, a 44 percent increase from 1999 to 2001, and a 123 percent increase over the 8-year period 1994 to 2001.

As noted previously, from 1994 to 2001, mentions more than doubled for 5 narcotic analgesics: narcotic analgesics-NOS (288%, 32,196), hydrocodone/combinations (up 131%, 21,567 mentions in 2001), oxycodone/combinations (352%, 18,409), methadone (230%, 10,725), and morphine/combinations (210%, 3,403). Among these, the relative frequencies are remarkable. According to DAWN, there are approximately 6 ED mentions of hydrocodone and 5 of oxycodone for every 1 mention of morphine.

In recent years, mentions of analgesics containing hydrocodone and those containing oxycodone have been growing. In contrast, mentions of analgesics containing morphine have been relatively stable, and mentions of analgesics containing codeine have declined. In the one-year period from 2000 to 2001, mentions of the oxycodones rose 70 percent. From 1999 to 2001, mentions of the hydrocodones rose 41 percent and mentions of the oxycodones rose 186 percent. These indicators suggest that narcotic analgesic abuse is a growing problem, and both the hydrocodones and the oxycodones should be monitored closely. Based on a nonscientific analysis of recent media reports, abuse of pharmaceuticals containing oxycodone is receiving considerable attention, while abuse of hydrocodone is not.

ED mentions of methadone also have grown substantially (37% from 2000 to 2001 and 98% from 1999 to 2001), but this finding is especially difficult to interpret. Is this evidence of methadone abuse per se, or is it that methadone is often coincident with another reportable drug? DAWN data show that ED episodes involving methadone usually (65% of episodes) involve multiple drugs, and 13 percent of the multi-drug episodes include heroin among the other drug(s) reported. The remainder of these other drugs is concentrated in alcohol-in-combination (22%), cocaine (14%), marijuana (6%), benzodiazepines (benzodiazepines-NOS, 6%; diazepam, 6%; and alprazolam, 5%), and to a lesser extent, other narcotic analgesics.

Finally, one other narcotic analgesic is mentioned much less frequently in ED episodes but has grown substantially from 1994 to 2001. Fentanyl mentions grew from 28 in 1994 to 337 in 1999 to 710 in 2001. Given the small numbers, it is somewhat surprising that this particular change is statistically significant, but the RSEs associated with the fentanyl estimates for these years are relative modest (19% and 35%, respectively).

CONCLUSION

It is important to recognize that findings from DAWN alone cannot define an emerging drug abuse problem or quantify precisely the abuse potential of prescription drug products. Instead, DAWN identifies sentinel events—indicators of a potential drug abuse problem—which DAWN can then monitor over time. This information can be put together with information from other sources (other indicators) to determine whether a new drug abuse problem is emerging. Relying on information from DAWN alone would likely result in false positives—identification of problem substances when no problem exists—but this is a hazard when trying to track any problem in its early stages and it is not a hazard peculiar to DAWN.

In addition, with all prescription and OTC drugs, it is possible that some proportion of ED mentions will be prescription drugs taken as directed and present coincident with another reportable substance. It is not possible to quantify this issue, but we urge public policymakers, regulators, and others to take these factors into account. Beginning in 2003, we plan to introduce changes to the DAWN data collection protocol designed to eliminate this problem. Success will depend on the extent that medical record documentation can distinguish the drugs taken for legitimate therapeutic purposes.

We also have demonstrated that the timing of drug approvals needs to be factored into the decision process about which new drugs represent a new drug abuse problem. Nonetheless, it is important to look for emerging drugs, even if they contribute only a few mentions to the total of ED drug-related visits reported by DAWN. Emerging drugs and rapidly increasing drug mentions can indicate an impending problem that can become more serious over time.

The presence of mentions not specific to a particular drug (e.g., narcotic analgesics-NOS, benzodiazepines-NOS, tricyclic antidepressants-NOS) is also problematic, especially when the nonspecific mentions are very frequent and/or changing over time. This phenomenon can occur, for example, when medical record documentation is incomplete or when toxicology test results define the class of drug (e.g., opiate) but not the specific substance (e.g., morphine). If nonspecific mentions occur randomly, their segregation would affect the level but not the relative distribution of specific drugs in the same category. However, nonspecific mentions may not be random (i.e., they may reflect a disproportionate concentration of particular drugs). Since it is not possible to determine the exact nature of the nonspecific mentions, the potential impact of this factor also must be taken into account when evaluating DAWN's findings. Whether the planned changes to the DAWN data collection protocol can alleviate the problem of nonspecific mentions is uncertain, again depending on the nature of the medical record documentation available.

DAWN data show only one dimension of the total consequences of drug abuse, specifically the impact of drug use that manifests in visits to hospital EDs. DAWN does not measure the prevalence of drug use in the population, the untreated health consequences of drug use, or the impact of drug use on health care settings other than hospital EDs. For measures of

prevalence, we refer readers to the National Household Survey on Drug Abuse (NHSDA), a national survey of households that explores drug abuse in the population.

Many other factors can influence the DAWN estimates of ED visits and mentions of particular substances. Changes in the number of drug-related emergencies may also be due to changes in the use of drug combinations; patterns of drug use, such as route of administration; amount of drug used per administration; drug purity; or drug price. For example, a decrease in the purity of cocaine or heroin could result in fewer users experiencing unexpected reactions and overdoses. Estimates of drug-related ED episodes could increase or decrease over time for reasons unrelated to the size of the drug using population, such as factors that affect reporting patterns. For example, some possible factors are:

- Greater awareness of these problems by hospital staff who therefore report drug use more carefully on medical charts,
- Changing patterns of use of EDs by drug users,
- Different ED usage patterns by population subgroups, and
- Other data collection or sample composition changes (see Appendix B).

Appendix B includes a detailed account of known procedural anomalies in DAWN. Analysis of procedural factors that might contribute to spurious results suggests that procedural factors are unlikely to account for the differences reported here.

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Table A – Selected psychotherapeutic, CNS, respiratory, and cardiovascular agents with large and significant changes, 1994 to 2001

		1994	2001	% change
Psychotherapeutic agents				Decreasing
Fluoxetine	SSRI antidepressants	9,110	6,362	-30%
Amitriptyline	Tricyclic antidepressants	11,266	4,673	59%
Desipramine	Tricyclic antidepressants	1,240	236	-81%
Doxepin	Tricyclic antidepressants	4,272	772	-82%
Imipramine	Tricyclic antidepressants	2,757	390	-86%
Nortriptyline	Tricyclic antidepressants	2,707	658	-76%
Chlorpromazine	Phenothiazine antipsychotics	2,607	636	-76%
Fluphenazine	Phenothiazine antipsychotics	1,475	47	-97%
Thioridazine	Phenothiazine antipsychotics	3,189	201	-94%
Haloperidol	Misc. antipsychotic agents	3,014	1,016	-66%
Lithium	Misc. antipsychotic agents	5,964	3,410	-43%
Phenobarbital	Barbiturates	2,479	1,117	-55%
Chlordiazepoxide	Benzodiazepines	2,563	953	-63%
Flurazepam	Benzodiazepines	1,497	603	-60%
Diphenhydramine	Misc. anxiolytics, sedatives, & hypnotics	13,958	7,670	-45%
Hydroxyzine	Misc. anxiolytics, sedatives, & hypnotics	3,150	1,458	-54%
Anxiolytics, sedatives, & hypnotics-NOS	Misc. anxiolytics, sedatives, & hypnotics	2,808	1,685	-40%
Caffeine	CNS stimulants	3,176	1,834	-42%
				Increasing
Paroxetine	SSRI antidepressants	3,914	8,923	128%
Tricyclic antidepressants-NOS	Tricyclic antidepressants	1,301	5,515	324%
Bupropion	Misc. antidepressants	757	4,145	448%
Venlafaxine	Misc. antidepressants	341	3,994	1071%
Risperidone	Misc. antipsychotic agents	588	4,046	588%
Barbiturates-NOS	Barbiturates	2,852	7,209	153%
Alprazolam	Benzodiazepines	17,168	25,644	49%
Clonazepam	Benzodiazepines	12,165	19,117	57%
Benzodiazepines-NOS	Benzodiazepines	9,139	30,302	232%
Zolpidem	Misc. anxiolytics, sedatives, & hypnotics	1,410	8,289	488%
CNS agents				Decreasing
Codeine/combinations	Narcotic analgesics/combinations	9,439	3,720	-61%
Aspirin/combinations	Salicylates/combinations	16,875	7,235	-57%
Phenylpropanolamine	Anorexiants	1,487	129	-91%
Carbamazepine	Anticonvulsants	3,879	1,827	53%
Phenytoin	Anticonvulsants	3,266	1,795	-45%
Benztropine	Antiparkinson agents	2,790	735	-74%
Methocarbamol	Muscle relaxants	1,127	597	-47%
				Increasing
Hydrocodone/combinations	Narcotic analgesics/combinations	9,320	21,567	131%
Methadone	Narcotic analgesics/combinations	3,252	10,725	230%
Morphine/combinations	Narcotic analgesics/combinations	1,099	3,403	210%
Oxycodone/combinations	Narcotic analgesics/combinations	4,069	18,409	352%
Narcotic analgesics-NOS	Narcotic analgesics/combinations	8,307	32,196	288%
Divalproex sodium	Anticonvulsants	1,762	5,365	205%
Carisoprodol	Muscle relaxants	6,569	11,239	71%
Respiratory agents				Decreasing
Theophylline	Bronchodilators	1,662	43	-97%
Pseudoephedrine	Decongestants	2,050	846	-59%
				Increasing
Acetaminophen-chlorpheniramine	Upper respiratory combinations	20	1,991	9855%
Cardiovascular agents				Decreasing
Propranolol	Beta-andrenergic blocking agents	1,424	521	-63%
Nifedipine	Calcium channel blocking agents	1,342	378	-72%
Ephedrine	Cardiovascular agents NTA	1,992	728	-64%

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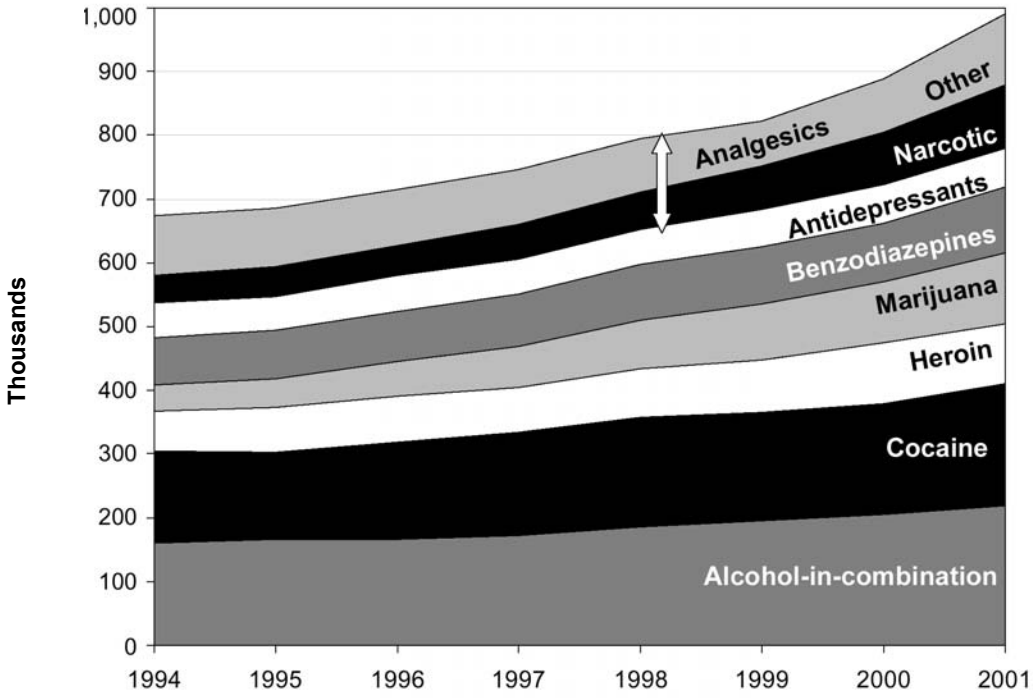
Figure 12
ED mentions of selected drugs: 1994 through 2001



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APPENDIX A:
RACE AND ETHNICITY DATA IN DAWN

Beginning in January 2000, the race and ethnicity categories on DAWN data collection forms changed to match a revised standard protocol.[22] The new protocol permits separate reporting of race and Hispanic ethnicity, and it incorporates the ability to capture more than one race for an individual, a few modifications in nomenclature (e.g., "Black" was changed to "Black or African American"); division of certain categories ("Asian or Pacific Islander" was split into 2 categories, "Asian" and "Native Hawaiian or Other Pacific Islander"); and elimination of the "Other" category. The complete DAWN report form is reproduced in Appendix F.

Despite the increased detail allowed by the new categories, the actual race and ethnicity data extracted from source records and submitted to DAWN changed very little. This is because the source documents—ED medical records from which DAWN data are abstracted—rarely contain such detailed information on race and ethnicity of patients.

For reference, estimates of race and ethnicity in drug-related ED visits are presented in Table R.1.[23] This analysis, which is based on the most detailed coding of race and ethnicity in DAWN case reports, reveals that estimates for the following categories are too small to be meaningful:

- Two or more races (that is, 2 or more races were documented in the source record for the same individual),
- Hispanic or Latino ethnicity with any specific race indicated,
- American Indian or Alaska Native,
- Asian, and
- Native Hawaiian or Other Pacific Islander.

Therefore, in the tables of estimates in this and other DAWN publications we have retained the categories used previously to tabulate DAWN data, with one exception. A new category called "Race/ethnicity not tabulated above (NTA)" is used to tabulate those categories that are too small to report independently.[24] All cases reported to DAWN as Hispanic or Latino ethnicity are tabulated as Hispanic race/ethnicity, regardless of race.

This lack of detailed race and ethnicity data in DAWN case reports also prevents us from generating rates per 100,000 population for race and ethnicity categories. Data from the 2000 decennial Census were collected and are being tabulated according to the revised race and ethnicity protocol and are therefore incompatible with DAWN estimates.

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[22] See Office of Management and Budget, *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, Federal Register,* 62 FR 58782, October 30, 1997.

[23] These detailed estimates conform to the OMB guidance on tabulation of race and ethnicity data in Office of Management and Budget, *Draft Provisional Guidance on the Implementation of the 1997 Standards for the Collection of Federal Data on Race and Ethnicity*, February 17, 1999.

[24] One exception is that if 2 races are reported and the second is reported as unknown, the episode is coded for the known race.

Table R.1 – ED drug episodes by detailed race and ethnicity: Estimates for the coterminous U.S.[1], 2001

Race	Ethnicity			Total
	Hispanic	Not Hispanic	Ethnicity unknown	
SINGLE RACE				
White	41,475	243,288	107,937	392,700
Black/African American	435	80,609	58,749	139,794
Asian	26	2,286	1,366	3,678
American Indian/Alaska Native	23	528	473	1,024
Native Hawaiian/Other Pacific Islander	18	201	255	474
Race unknown	37,511	4,327	58,811	100,649
TWO RACES				
White + Black/African American	2	9	3	14
White + Asian		10		10
White + American Indian/Alaska Native	2			2
White + Native Hawaiian/Other Pacific Islander		3		3
White + Unknown	11	8	13	32
Black/African American + Asian		1		1
Black/African American + American Indian/Alaska Native			2	2
Black/African America + Unknown	8	4	12	23
Asian + American Indian/Alaska Native		2		2
Asian + Native Hawaiian/Other Pacific Islander		56		56
Asian + Unknown		1	1	2
Native Hawaiian/Other Pacific Islander + Unknown	4		10	15
THREE RACES				
Black/African American + American Indian/Alaska Native + Unknown			1	1
TOTAL DRUG ABUSE EPISODES	79,517	331,332	227,635	638,484

[1] This detailed tabulation of the racial and ethnic characteristics of DAWN cases is provided in accordance with the *Draft Provisional Guidance on the Implementation of the 1997 Standards for the Collection of Federal Data on Race and Ethnicity* (Office of Management and Budget, 10/2000). During 2000, DAWN began to implement the revised Federal standards whereby race and ethnicity are collected as separate data elements, and one or more races for an individual can be collected, when available. This level of detail is not shown in most tables because of the need to report consistently from the data collected using old and new categories. Further, at this level of detail, small sample sizes produce some estimates that are unreliable and could pose a threat to patient confidentiality. Up to 5 race categories can be indicated for each patient, but only those categories that had at least 1 entry are reported here.

NOTE: These estimates are based on a representative sample of non-Federal, short-stay hospitals with 24-hour emergency departments in the coterminous U.S.

ED = emergency department.

SOURCE: Office of Applied Studies, SAMHSA, Drug Abuse Warning Network, 2001 (03/2002 update).

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APPENDIX B:
DETAILED DESCRIPTION OF DAWN

This section gives a detailed description of the methods and some of the history behind DAWN analysis. The section begins with a description of the sample design, followed by weighting, precision of the estimates, preliminary versus final estimates, rates per 100,000 population, and revision of the estimation system.

SAMPLE DESIGN

The Drug Abuse Warning Network (DAWN) is a voluntary, national data collection system that gathers information on substance abuse that manifests in visits to hospital emergency departments (EDs) in the coterminous U.S. Currently, DAWN provides semi-annual and annual estimates of the number of drug-related visits to hospital EDs from a nationally representative sample of hospitals located throughout the coterminous U.S. The DAWN system is managed by the Office of Applied Studies (OAS), a component of the Substance Abuse and Mental Health Services Administration (SAMHSA) of the U.S. Department of Health and Human Services (DHHS).

Several changes have been made to the sample design since DAWN began in 1972 under the Drug Enforcement Administration (DEA). In the early 1970s, the DAWN sample consisted of a random sample of hospital EDs. Over time, however, a number of facilities were lost from the original sample because of closures, mergers, attrition, or voluntary termination. New hospitals were recruited to participate, but no sample maintenance plan was devised for selecting new hospitals to sustain the randomness of the sample. As a result, attrition and nonrandom replacement led to a sample that was no longer representative of all hospital EDs in the coterminous U.S.

When the National Institute on Drug Abuse (NIDA) assumed responsibility for DAWN in 1980, one of the agency's goals was to implement a new sample that could be used to produce estimates for the Nation as a whole and for the separate DAWN metropolitan areas. Once a design was determined and the units were selected, the sample required the recruitment of 300 new hospitals. The cost of the project delayed its initiation until early 1986.

Hospitals eligible for DAWN are non-Federal, short-stay general surgical and medical hospitals in the coterminous U.S. that have a 24-hour ED. The American Hospital Association's (AHA) 1984 and 1985 Annual Surveys of Hospitals were used to obtain a sampling frame. (For a definition of sampling frame and other technical terms used in this publication, see the Glossary of Terms in Appendix D.)

Hospitals in the sampling frame were stratified according to several characteristics. First, the sampling frame was divided into the 21 DAWN metropolitan areas and the remainder of the country (called the National Panel). Hospitals having 80,000 or more annual ED visits were assigned to a single stratum for selection with certainty. Then, the remaining hospitals in the 21 metropolitan areas were classified by location (inside or outside the central city) and by whether the hospital had an organized outpatient department and/or a chemical/alcohol inpatient unit

(that is, whether they had zero, one, or both types of units). Similarly, hospitals in the National Panel were classified by the presence/absence of such units.

The 21 metropolitan area boundaries correspond to the Office of Management and Budget (OMB) 1983 definitions of Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs) with a few exceptions. In the case of the Boston metropolitan area, the OMB definition was replaced by the definition for the New England County Metropolitan Area (NECMA). In several metropolitan areas, use of the PMSAs excluded some counties covered by DAWN prior to 1988, such as Nassau and Suffolk Counties in New York, certain counties in the Chicago area, and Niagara County in the Buffalo area. In other areas, such as Atlanta, counties not previously covered in DAWN were included. In addition to geographic coverage, the central cities in the new statistical areas differ from those in the old MSAs used previously in DAWN. For example, Hialeah joined Miami as a central city in the new Miami-Hialeah area, and Long Beach joined the Los Angeles-Long Beach area. In some instances in this publication, only the first city name is cited, but it always refers to the complete metropolitan area.

Sample sizes for the metropolitan areas and the National Panel were determined for each stratum so as to achieve specified levels of precision in the estimates. In this context, precision refers to the amount of sampling fluctuation inherent in the estimate; the less the fluctuation, the greater the precision. Target precision levels were expressed as relative standard errors (RSEs), defined as the ratio of the standard error (SE) of an estimate to the value of the estimate, expressed as a percentage. Lower RSE values are associated with higher levels of precision and, other things being equal, increases in sample size serve to reduce the RSE and thus increase the level of precision of the estimates. Estimates are considered unreliable and are suppressed in DAWN if their RSEs exceed 50 percent. Target RSEs for total episodes were 6 percent for the national estimates; 6 percent for the Chicago, Los Angeles, and New York metropolitan areas; and 8 percent for all other metropolitan areas. In 5 of the metropolitan areas (Baltimore, Buffalo, Denver, San Diego, and San Francisco), such a large proportion of facilities in each area would have been required to reduce the RSE to 8 percent that the decision was made simply to select all eligible hospitals. Figure 1 shows RSEs for total drug-related episodes in 2000 by metropolitan area.

Once the sample size for each metropolitan area and the National Panel was determined, the number of sample units was allocated to the various strata based on the theory of optimal allocation. With this approach, strata with greater variability in drug-related episodes (from hospital to hospital) receive a proportionally larger number of sample units. Optimal allocation serves to reduce the RSE of the estimates for a given overall sample size or to enable a specified RSE to be achieved with a smaller sample, relative to proportional or random allocation to strata.

A total of 685 hospitals was selected for the new sample. Many of the facilities selected, particularly the larger ones, were already participating in DAWN. As noted earlier, 300 new hospitals had to be recruited. Recruitment started in April 1986 and proceeded in phases. By 1988, recruitment of the selected facilities was sufficiently complete to produce estimates based on the new sample.

Some facilities already participating in DAWN were not selected for the new sample. These facilities were retained in the system for sufficient time to obtain overlapping data for calibrating the estimates and developing estimation procedures for prior years. The period of overlap differed by metropolitan area but generally included the last quarter of 1988 and the first half of

1989. Most terminations of nonselected facilities were made in the second half of 1989 or in 1990.

The total number of eligible sample facilities has not remained at the original 685 because some hospitals have closed or become ineligible since the sample was selected while others have been added as part of sample maintenance. To preserve the integrity of the sample and ensure that the DAWN estimates will continue to be representative, sample maintenance is performed annually. Maintaining the sample involves updating the sampling frame with the most recent available information on the population of eligible hospitals. One purpose for updating the sampling frame is to identify newly eligible hospitals, or hospitals that are eligible and previously did not have a chance of selection, so that they can be sampled. A second purpose, which focuses on the estimation process, is to determine the population of eligible hospitals that the estimates must apply to, as well as the total number of ED visits among this population, which is used in the calculation of the analytical weights.

SAMPLING WEIGHTS

By 1988, hospital recruitment progressed to a point where national estimates and estimates for each of the 21 metropolitan areas could be made with reasonable precision. National estimates are obtained by adding the estimates from the 21 metropolitan areas and the estimate from the National Panel for each estimation category.

The development of estimates from the sample data involves the application of analytical weights calculated on the basis of data from the sampling frame and from DAWN reporting records. Weights are calculated for each quarter of data using a 3-component model that considers:

- The base sampling weight calculated as the reciprocal of the sampling probability;
- An adjustment for nonresponse based either on complete nonparticipation or failure to provide data on all the reporting days in a given time period; and
- A correction (benchmark) factor, applied within metropolitan areas, that adjusts the total number of ED visits among participating sample hospitals to the total for the population of hospitals as determined from the sampling frame.

The estimation procedure was modified in 1989 to include the adjustments for 2 types of nonresponse and the ratio or benchmark adjustment based on ancillary data from AHA.

PRECISION OF THE ESTIMATES AND STANDARDS FOR PUBLICATION

Each estimate from the DAWN ED sample data is subject to sampling variability, which is the variation in the estimate that would be observed if different samples were drawn from the same population using the same procedures. The sampling variability of an estimate is measured by its standard error (SE) and relative standard error (RSE), which is defined as the SE expressed as a percentage of the value of the estimate. The precision of an estimate is inversely related to the degree of sampling variability as measured by the RSE; the greater the RSE value, the lower the precision.

If there are 10,000 estimated mentions of a given drug and this estimate has an SE of 500, then the RSE value is 5 percent. Therefore,

$$RSE = SE/Estimate$$

Confidence intervals (CIs) for estimates can be calculated using the corresponding RSE values published in these tables. If the sampling distribution for the estimate is normal, then the 95-percent CIs would be calculated as

$$CI = Estimate \pm 1.96 \times RSE \times Estimate$$

where 1.96 comes from the table of normal distribution z-values. Ninety-five percent of the normal distribution lies between the z-values of ± 1.96.

Applying the formula in our example, the confidence limits would be as follows:

$10{,}000 \pm 1.96 \times 0.05 \times 10{,}000 = 10{,}000 \pm 980.0$
Lower limit: 10,000 - 980 = 9,020
Upper limit: 10,000 + 980 = 10,980
Confidence interval: 9,020 to 10,980

This means that if new samples were drawn from the same population of hospitals using the same sampling and data collection procedures, then the estimated total mentions of the drug in question would lie between 9,020 and 10,980 in 95 percent of the sample hospitals.

One simple rule is that in 68 percent of the episodes, estimates derived from repeated sampling would be expected to differ from the observed estimate by a percentage no more than the RSE value in either direction.

It is important to recognize when this CI formula should and should not be used. This formula can be used to calculate CIs around individual estimates, but some statistical comparisons between estimates (e.g., tests for differences across time) should not be made using this formula. For example, a reader might want to calculate CIs around two estimates and use those CIs to make a statistical comparison for which we did not publish a statistical test. (We publish only a fraction of the statistical tests that might be of interest.) However, the CI formula above may yield overlapping CIs even though the difference between the two estimates is statistically significant. This is because a comparison of two estimates must take into account not only the variance (var) of each estimate but also the covariance (cov) between the estimates as follows:

$$var(x - y) = var(x) + var(y) – 2cov(x,y)$$

Therefore, the above method for calculating CIs can be used only to compare independent estimates (i.e., where the covariance is zero). Whenever two estimates are not independent, as with ED episodes from two different years, their covariance must be taken into account.

The tests of statistical significance published in *ED Trends* account for the covariance between estimates from different years. From this, we know that the covariance between DAWN estimates is often sizable. Given the tremendous number of possible comparisons

between DAWN estimates, it is not possible to publish comprehensive covariance matrices at this time.

Examples of estimates, SEs, RSEs, and CIs are shown in Tables 1.6 and 1.8. RSE values for total episodes vary according to metropolitan area, not only because of differences in the target precision levels in the sample design, but also because of nonresponse. Table 1.8 shows data for estimates of mentions of the selected drug groups in the total coterminous U.S. As illustrated in this table, larger estimates tend to have lower RSE values, at least in the national estimates.

DAWN estimates with an RSE value of 50 percent or higher are regarded as too imprecise and are not published. With an RSE of 50 percent, the 95-percent CI for an estimate ranges from 2 percent to 198 percent of the estimate's value. In the tables, the symbol "…" is substituted for estimates that have an RSE of 50 percent or higher. The 3-dot symbol identifies cells in which the estimates do not meet the standard of precision required for publication.

Historically, estimates of less than 10 were not shown in the tables because we deemed them and their associated RSEs to be unreliable. Percentages corresponding to these numbers were shown or suppressed according to the same rules.

Beginning with the 1999 ED data, estimates of less than 10 are no longer suppressed in DAWN Detailed ED Tables or other ED publications. Many estimates as small as this will be suppressed by virtue of having RSEs greater than 50 percent. For those that are shown in the tables, we note for the reader that small numbers and their associated RSEs should be interpreted with caution.

Beginning with the 1999 ED and 1997 ME data, we began suppressing small cells in selected tables to protect the confidentiality of individuals who are the subjects of these data. We will continue this practice for tables that involve detailed cross tabulations of patient and geographic characteristics.

PRELIMINARY VERSUS FINAL ESTIMATES

Final estimates are produced annually when all hospitals participating in DAWN have submitted their data for that year and when ancillary data used in estimation have become available. In recent years, the final publication has included separate final estimates for the first half and the second half of the year (quarterly estimates were produced in earlier years). In addition to the final estimates, preliminary estimates are also produced semi-annually based on responding hospitals. Data are weighted to produce national and metropolitan area estimates of ED drug-related mentions. The following factors clarify differences between preliminary and final estimates:

- Preliminary estimates may be based on less complete data than final estimates. Data from a small number of late-reporting hospitals are used in the production of final estimates. Data are continuously updated for a fixed time period. As such, final estimates usually have higher response rates.

- The DAWN sample is updated once annually, before the production of final estimates. Additional hospitals are added to the sample and incorporated into the final estimates for a given year (not the preliminary estimates for that same year). Most of these

hospitals are "newly eligible" because they became DAWN eligible sometime after the original sample was selected. The final DAWN estimates are produced after we receive the most current AHA Annual Survey of Hospitals file. This file is used initially to establish a sampling frame for DAWN. The most current AHA file is used once a year to maintain representativeness of the sample. Between the releases of the preliminary and final estimates, the use of the newer AHA survey can result in hospitals being added to the sample and incorporated into the final estimates.

- Data from the most current AHA file also are used to produce the final benchmark-adjusted weights.

ESTIMATES OF RATES PER 100,000 POPULATION

Rates of ED episodes or mentions per 100,000 population are generated using population data from the U.S. Bureau of the Census. The Office of Management and Budget (OMB) defines *Metropolitan Area* as the city core and its immediately adjacent geographic areas that are highly integrated economically and socially with the city core. Estimates of incidence rates are obtained by taking the estimates of total episodes and mentions for a given demographic category, dividing by the population estimate for that demographic category, and dividing by 100,000. These standardized measures provide the means for comparing drug abuse episodes and mentions across cities and over time. Semi-annual estimates are based on preliminary data from the first half of the year and are not comparable to annual estimates, which are based on 12 months of data.

Population estimates are derived from the following U.S. Census Bureau files:

- Civilian Noninstitutional Population of the United States by Age, Sex, and Race, which provides monthly population estimates by age, gender, race, and Hispanic origin for the total United States;

- Decennial Census Counts by Age, Sex, and Race, which provides population estimates by state and county, broken out by combinations of age, gender, race, and Hispanic origin; and

- County-Level Population Estimates, which provides estimates of annual total population by county as of July 1 of each year.

Population estimates[25] are obtained by:

- Adjusting the annual County-Level Population Estimates to the Census Counts by Age, Sex, and Race to produce annual county demographic counts;

- Adjusting the annual county demographic counts to the Civilian Noninstitutional Population data to produce monthly county demographic counts; and

- Summing the monthly county demographic counts across all counties in the metropolitan area and across all months in the quarter (half-year or year), to produce semi-annual or annual demographic counts for each DAWN area.

[25] Population estimates by age and gender by metropolitan area for 2001 are published in Table 1.9.

Population estimates for 1994 through 2000 rely on 1990 Census data, and those beginning with 2001 use data from the 2000 Census. Inevitably, the accuracy of population estimates deteriorates over time relative to actual census counts. Population estimates for 2001, which are based on the 2000 Census, are considerably higher than population estimates generated for recent years. As a result, the incidence rates for 2001 may appear to have decreased significantly (or not to have increased as much as expected), but this may be an artifact of the increase in the population denominators for these rates. Changes in rate estimates between 2001 and prior years should be verified by comparing changes in the corresponding episode or mention estimates and their significance levels. If a statistically significant change in episode or mention estimates did not occur, it is likely that the statistically significant change in the rate was due to the changes in population.

REVISION OF ESTIMATION SYSTEM

In 1997 and 1998, a thorough review of the DAWN estimation system was undertaken by Westat. As a result of this review, the computer programs that compute the weighted estimates were rewritten to make them more accurate and efficient. While the methodology for computing weights did not change, errors were discovered in the prior programs that affected the estimates for 1995 and 1997. Final estimates for these 2 years were presented for the first time in *Mid-year 1998 Preliminary ED Data from DAWN*. The 1995 estimate of total drug-related episodes decreased by less than 1 percent (from 517,800 to 513,600) while the 1997 estimate increased by 5.5 percent (from 487,600 to 514,300). These changes had varying effects on the metropolitan area estimates.

The following changes had the greatest effect on the estimates:

- A change was made in the method for assigning eligibility status to a hospital. The current system tracks partial year eligibility, which improves the sensitivity of the DAWN nonresponse adjustment. Formerly, there was no recognition that a hospital could change its eligibility status during the year.

- A concerted effort was made to ascertain the current eligibility status of all nonparticipating DAWN sampled hospitals. Changes in status from eligible nonrespondent to ineligible (or vice versa) also affected the nonresponse adjustment.

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APPENDIX C:
SOURCES OF ERROR IN DAWN ESTIMATES

When producing estimates from any sample survey, 2 types of errors are possible—sampling and nonsampling errors. The sampling error of an estimate is the error caused by the selection of a sample instead of a census of hospitals. Sampling error is reduced by selecting a large sample or by using efficient sample design and estimation strategies such as stratification, optimal allocation, and ratio estimation. Nonsampling errors include nonresponse, difficulties in the interpretation of the collection form, coding errors, computer processing errors, errors in the sampling frame, and reporting errors.

Many procedures, such as data auditing and periodic retraining of data collectors, are used in DAWN data collection to minimize nonsampling errors. Moreover, nonrespondent hospitals are identified for additional recruitment. Late reporters are assigned for priority data collection and respondents with changes in reporting are designated for followup. Since data are abstracted from medical records completed by hospital staff who treated the patients, the accuracy of these reports depends on their careful recording of these conditions.

It is also important to recognize that DAWN does not provide a complete picture of problems associated with drug use, but rather focuses on the impact that these problems have on hospital EDs in the United States. If a patient is admitted to another part of the hospital for treatment, or treated in a physician's office or at a drug treatment center, the episode would not be included in DAWN.

CHANGES IN SAMPLE COMPOSITION AND REPORTING OF EPISODES

Periodic minor modifications are made to the sample to keep it current. Adjustments are made in the weights to account for lapses in reporting by the sampled hospitals. It is unlikely that modifications to the sample will affect estimates of the total drug, cocaine, and heroin mentions over time. Analyses of the previous changes in the sample composition have found them to have little impact on trends across several years.

It is important to consider the potential impact on DAWN trends from changes in the sample composition or reporting anomalies in key sample hospitals, particularly for metropolitan area data. Historically, DAWN analysts and field staff have attempted to identify and document such situations in the period before data release, and events that may have had a significant impact on the estimates were published in this section.

However, choosing the particular situations to highlight often involves more art than science, given that the actual impact on the estimates rarely has been known at the time of publication. This practice led us to question whether the situations that were being highlighted actually had the anticipated impact on DAWN estimates.

We analyzed some specific situations highlighted in recent DAWN publications to determine if those situations had the anticipated effect on DAWN estimates. These analyses have shown that generally, the types of situations published previously as limitations did not have the anticipated effects. Changes in small hospitals do not have a large impact on the estimates, and the DAWN estimation system already corrects for many nonsampling errors. Extensive

quality control measures have been implemented to investigate and address irregularities in the data prior to publication.

As a result of this analysis, we have concluded that listing inconsequential, nonsampling errors discredits the DAWN system unnecessarily and possibly contributes to misinterpretation of DAWN data. Therefore, we have decided to discontinue reporting data limitations unless the impact on the estimates is clear.

NOTEWORTHY SOURCES OF ERROR: ATLANTA DATA FOR 2001

We experienced significant missing data in Atlanta for 2001. Reliable Atlanta estimates could not be produced for January – June of 2001 because insufficient data were submitted by participating facilities for this period. The column of estimates for January – June 2001 have been suppressed and are indicated by "---" in tables for Atlanta in this publication and published online. More Atlanta data were available for the second half of 2001, although missing data was still a concern.

The missing data from Atlanta also affects DAWN's national estimates, which depend on estimates from the 21 metropolitan areas. The national estimate is equal to the sum of the metropolitan area estimates and the National Panel estimate. Therefore, we adopted an imputation approach to preserve the integrity of the national estimates. Imputation refers to the assignment of values to replace missing data and typically involves standard statistical methods and practices. In this case, the imputation used statistical models to determine what characteristics (e.g., drug mentions and patient demographics) the imputed episode records should contain. The statistical models used data submitted by all Atlanta hospitals prior to 2001 along with the available Atlanta data for 2001. As a conservative measure, we have also suppressed any Atlanta estimates for the second half July – December 2001 that were derived from more than 25 percent imputed data (also indicated by "---"). This suppression rule affected only a few Atlanta estimates for the second half of 2001 and none of the national estimates.

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APPENDIX D: GLOSSARY OF TERMS

This glossary defines terms used by the Drug Abuse Warning Network (DAWN), in data collection activities, analyses and publications. DAWN collects data and publishes findings separately for emergency departments (EDs) and death investigation jurisdictions. As a result, there are a number of terms that are unique to each component of DAWN.

This Appendix is divided into three sections. The first section contains terms common to both the ED component and the mortality data component of DAWN. The second section focuses on terms specific to the DAWN ED system, while the third section focuses on terms specific to the mortality data system.

DEFINITIONS OF TERMS COMMON TO DAWN'S ED AND MORTALITY COMPONENTS

Drug abuse: The nonmedical use of a substance for any of the following reasons: psychic effect, dependence, or suicide attempt/gesture. In DAWN, nonmedical use means:

- the use of prescription drugs in a manner inconsistent with accepted medical practice;
- the use of over-the-counter drugs contrary to approved labeling; or
- the use of any substance (e.g., heroin, marijuana, peyote, glue, aerosols) for psychic effect, dependence, or suicide.

Drug category: A generic grouping of substances reported to DAWN, based on the classification of generic drugs by Multum Information Services. Multum Information Services is a subsidiary of the Cerner Corporation and a developer of clinical drug information systems and a drug knowledge base. More information is available at http://www.multum.com. The DAWN system has accumulated a vocabulary of thousands of substance names that have been mentioned in incidents of abuse. This vocabulary is updated monthly by the inclusion of new abuse substances and, through receipt of identifying information, the reclassification of drugs. Occasionally, this reclassification may result in a drug being shifted to a different drug grouping. The DAWN drug groupings are periodically reviewed in order to reflect the most recent changes in pharmaceutical classifications and drug legislation. Occasional changes in drug classification should be taken into consideration when comparing drug data from this publication with other DAWN publications. These classifications may involve street names and brand names, which are sometimes used to identify a substance and its generic drug group. Individual drugs comprising the most commonly reported drug categories can be found in Tables 2.3 to 2.7 of *Emergency Department Trends From DAWN.*

Additional clarification is provided for the following drug categories:

- *Alcohol-in-combination* – DAWN does not gather data on alcohol used alone, only alcohol used concomitantly with another abused substance. Therefore, all alcohol mentions are combination mentions.

- *All other substances not tabulated above (NTA)* – This category contains any substance reported to DAWN that could not be classified in other categories and have too few mentions to warrant being reported independently in DAWN tables. This category also includes certain terms that cannot be assigned reliably to any new category such as: (1) ambiguous, nonspecific terms that could fall into any of several categories (e.g., "AIDS medicine" could be an anti-infective, an anticonvulsant, or any number of other drugs); (2) undocumented, nonspecific terms (e.g., "thought organizer"); and (3) street terms for illicit substances that could not be linked reliably to a particular illicit substance (e.g., "T," "butterflies").

- *Amphetamines* – This class of substances has been extracted from the category of CNS stimulants because of its importance as a major substance of abuse. For purposes of classification, "amphetamines" (plural) includes a class of compounds derived from or related to the drug amphetamine. Although some "designer" drugs fall into the class of amphetamines, we choose to report some of them individually as major substances of abuse (e.g., methamphetamine). This category does not include other CNS stimulants, such as caffeine or methylphenidate.

- *Club drugs* – During the 1990s, use of certain illicit drugs was linked to "raves" and dance clubs. These substances are commonly referred to as "club drugs." When used in DAWN, the term "club drugs" includes Ketamine, flunitrazepam (Rohypnol), gamma-hydroxy butyrate (GHB, or its precursor, gamma butyrolactone [GBL]), and methylenedioxymethamphetamine (MDMA or Ecstasy). Although commonly used in the rave scene, methamphetamine and hallucinogens are classified separately from club drugs in DAWN.

- *Drug unknown* – "Drug unknown" may be recorded when drug abuse was known or suspected to have been involved, but the specific substance could not be determined. This includes 2 types of cases: those in which the drug was reported to DAWN as "unknown" and those in which drugs were reported to DAWN as "polysubstances." For the purposes of DAWN, polysubstance refers to the abuse of more than one substance when the individual substances were not identified by the source record. Because DAWN cases are identified through retrospective medical chart review, there will always be cases in which the drug abuse was known but the particular substance was unknown or unknowable.

- *Heroin* and *Heroin/morphine* – This is the only drug classified differently in the ED and mortality components of DAWN. In the ED publications, heroin is classified as a major substance of abuse, separate from morphine, which is classified as a narcotic analgesic under central nervous system (CNS) agents. In the mortality data publications, heroin and morphine are classified together in a single category. When heroin is ingested, it is metabolized to morphine, so that the toxicology testing commonly used in death investigations often does not distinguish between the two. Therefore, a mention of either substance is recorded as heroin/morphine. A case mentioning both heroin and morphine will be "de-duplicated" and counted as a single heroin/morphine mention.

- *Illicit combinations* – This category includes compounds composed of two or more major substances of abuse that are mixed and taken together. For example, "speedball," which usually refers to the combination of heroin and cocaine taken at once, would be classified as an illicit combination, whereas separate mentions of

heroin and cocaine would be classified separately in the categories heroin and cocaine. Compounds consisting of a major substance of abuse and another substance are classified in the category of the major substance (e.g., heroin with scopolamine is classified as heroin).

- *Inhalants* – This category includes anesthetic gases and psychoactive nonpharmaceutical substances for which the documented route of administration was inhaled, sniffed, or snorted. Psychoactive nonpharmaceuticals fall into one of the following 3 categories: (1) volatile solvents—adhesives (model airplane glue, rubber cement, household glue), aerosols (spray paint, hairspray, air freshener, deodorant, fabric protector), solvents and gases (nail polish remover, paint thinner, correction fluid and thinner, toxic markers, pure toluene, cigar lighter fluid, gasoline, carburetor cleaner, octane booster), cleaning agents (dry cleaning fluid, spot remover, degreaser), food products (vegetable cooking spray, dessert topping spray such as whipped cream, whippets), and gases (butane, propane, helium); (2) nitrites—amyl nitrites ("poppers," "snappers") and butyl nitrites ("rush," "locker room," "bolt," "climax," "video head cleaner"); or (3) chlorofluorohydrocarbons (Freons). Anesthetic gases (e.g., nitrous oxide, ether, chloroform) are presumed to have been inhaled.

- *Major Substances of Abuse* – We use this term to refer to the most commonly abused drugs (e.g., alcohol-in-combination and cocaine) and those drugs that are typically referred to as "illicit."

- *Other Substances of Abuse* – We use this term to refer to pharmaceutical agents not included in the Major Substances of Abuse.

Drug mention – This refers to a substance that was recorded ("mentioned") in a DAWN case report. In addition to alcohol-in-combination, up to 4 substances ("mentions") can be reported for each ED episode, and up to 6 substances can be reported for each drug abuse death. Therefore, the total number of drug mentions exceeds the total number of ED visits or deaths. Even when only one drug is mentioned, it should not be assumed that the substance was the sole and direct cause of the episode or death; allowances should be made for reportable drugs not mentioned or other contributory factors. (See also ***Single-drug episode/death***.)

Metropolitan area: An area comprising a relatively large core city or cities and the adjacent geographic areas. Conceptually, these areas are integrated economic and social units with a large population nucleus. The current DAWN ED sample, which was redesigned in the 1980s, is based on the definitions of Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Area (PMSAs) issued by the Office of Management and Budget (OMB) in 1983, with a few exceptions. Metropolitan areas represented in the DAWN mortality data system are consistent with those represented in the DAWN emergency department system, also with a few exceptions. Users of DAWN should note that the emergency department component provides estimates for each of the 21 metropolitan areas. However, in the mortality data component, only raw counts are provided, and in many instances less than 100% of the MSA is represented in those counts.

Not otherwise specified (NOS): Catch-all category for substances that are not specifically named in the listing. Terms are classified into an NOS category only when assignment to a more specific category is not possible based on information in the source documentation (ED patient charts and death investigation case files).

Not tabulated above (NTA): Designation used when categories are not presented in complete detail; smaller units are combined in the NTA category.

Race/ethnicity: Beginning in January 2000, the race and ethnicity categories collected on DAWN case report forms changed to match a change in the standard protocol issued by the Office of Management and Budget in 1997.[26] The new protocol permits separate reporting of race and Hispanic ethnicity; the ability to capture more than one race for an individual; modifications in nomenclature (e.g., "Black" was changed to "Black or African American"); division of certain categories ("Asian or Pacific Islander" was split into 2 categories, "Asian" and "Native Hawaiian or Other Pacific Islander"); and elimination of the "Other" category.

The race/ethnicity categories on the DAWN data collection forms are as follows:

Race

- *White* – A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
- *Black or African American* – A person having origins in any of the black racial groups of Africa.
- *American Indian or Alaska Native* – A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
- *Asian* – A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
- *Native Hawaiian or Other Pacific Islander* – A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- *Unknown* – Used when documentation of race is not available from source records.

Ethnicity

- *Hispanic or Latino* – A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.
- *Not Hispanic or Latino* – Ethnicity does not meet the definition of Hispanic or Latino.
- *Unknown* – Used when documentation of ethnicity is not available from source records.

Despite the increased detail allowed by the new categories, the actual race/ethnicity data reported to DAWN changed very little because race and ethnicity are often not documented with this level of specificity in patient/decedent records. As a result, we have retained the classification used previously to tabulate DAWN data. The one exception is that we now

[26] See Office of Management and Budget, *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity*, *Federal Register*, 62 FR 58782, October 30, 1997.

collapse the less commonly used categories into a category termed "Not tabulated above (NTA)" instead of "Other." Categories used to tabulate race and ethnicity data in the ED publications are:

- *White* – Anyone meeting the definition of white (above). Those who are identified as white and Hispanic are classified as Hispanic.
- *Black* – Anyone meeting the definition of black or African American (above). Those who are identified as black or African American and Hispanic are classified as Hispanic.
- *Hispanic* – Anyone whose ethnicity is Hispanic or Latino is placed in the category Hispanic, regardless of race.
- *Race/ethnicity not tabulated above (NTA)* – This includes those categories that are too small to report independently including: two or more races, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander.
- *Unknown* – Race and ethnicity are unknown. Those who are identified only as Hispanic are classified as Hispanic.

In *Mortality Data from DAWN*, race/ethnicity data are tabulated as White, Black, Hispanic, and All others, where "All others" includes other reported races and ethnicities as well as unknown or missing data.

Route of drug administration: DAWN reporters are asked to record the method by which the substance was taken into the drug abuser's body according to the following categories:

- *Oral* – Substance was ingested through the mouth (swallowed).
- *Injection* – Substance entered the body through a vein (intravenously), into the muscle (intramuscularly), or under the skin (subcutaneously).
- *Inhaled* – Gases or fumes of a substance were taken into the body by inhaling through the nose or mouth into the lungs (e.g., inhaling the fumes of glue, aerosols, paints, gasoline).
- *Smoked (includes freebase)* – Substance was consumed by smoking a cigarette, pipe, or similar device.
- *Sniffed/snorted* – Substance, acquired in a powder or crystalline form, was forcefully inhaled through the nose.
- *Other* – This category is used when the route of administration of the substance cannot logically be included as any of the above.

Readers should note that this information is often not documented in patient/decedent files and is therefore missing in DAWN tabulations. Caution should therefore be exercised in interpreting this information.

Single-drug episode/death: A single-drug episode or death is that in which only one drug was involved. Because multiple substances may be recorded for each DAWN case (see ***Drug mention***), readers should exercise caution in interpreting the relationship between a given drug and the number of associated ED visits or deaths. For example, if records for a given patient "mentioned" marijuana, this does not mean that marijuana was the only drug involved in the ED visit or that the marijuana caused the ED visit. One should always consider whether and how many other drugs were used in combination, but even then attributing a causal relationship between the visit and a particular drug may not be possible. Additionally, because alcohol is only documented if used in combination with another drug, DAWN cannot provide single-drug episode/death totals for alcohol.

DEFINITIONS OF TERMS FOR THE DAWN ED COMPONENT

Coterminous U.S.: The contiguous 48 continental States and Washington, DC. Excludes Alaska and Hawaii. National estimates from DAWN refer only to the coterminous U.S.

Disposition of ED patient: Suggestions or recommendations made or actions taken by the hospital as they relate to the patient's presenting problem:

- *Treated and released or referred* – The patient was given appropriate ED treatment and was released or, after appropriate ED treatment, the hospital referred the patient to another agency or to a private physician for additional services.
- *Admitted to hospital* – The patient was admitted as an inpatient to a hospital.
- *Left against medical advice* – The patient left the treatment setting without a physician's approval.
- *Died* – The patient expired.

Drug abuse episode: A reported ED visit that involved drug abuse. Episodes involving patients under the age of 6 or over the age of 97 are not reported to the DAWN system. The number of ED patients in DAWN is not synonymous with the number of patients involved. One patient may make repeated visits to an ED or to several EDs, thus producing a number of episodes. It is impossible to determine the number of unique patients involved in the reported ED episodes because no patient identifiers are collected.

Drug concomitance: This term refers to whether a drug abuse episode involved a single drug (one mention) or multiple drugs (multiple mentions).

Drug use motive: DAWN classifies ED drug abuse episodes according to one or more of the following reasons for taking a substance(s):

- *Psychic effects* – A conscious action to use drugs to improve or enhance any physical, emotional, or social situation or condition. Two categories of psychic effect are:
  - Use of drugs for experimentation or to enhance a social situation (e.g., curiosity, peer pressure, "just wanted to know what it felt like," "wanted to have fun," "to get high," "for kicks," "to party"); and

- Use of drugs to improve or enhance any mental, emotional, or physical state (e.g., depression, anxiety, to relieve headache, reduce pain, stay awake, lose weight, relax, help study, get to sleep). Referred to in DAWN as "other psychic effects."

- *Dependence* – A physiological or psychological condition characterized by a compulsion to take the drug on a continuous or periodic basis in order to experience its effects or to avoid the discomfort of its absence (e.g., had to take, had to have, needed a fix).

- *Suicide attempt or gesture* – Successful or unsuccessful action(s) taken for the purpose of self destruction or to gain attention.

- *Other reason* – Used when the reason for taking the substance cannot be classified into the categories above.

Estimate: A statistical estimate is the value of a parameter (such as the number of drug-related ED episodes) for the universe that is derived by applying sampling weights to data from a sample. DAWN produces representative statistical estimates for 21 metropolitan areas based on data from a sample of EDs in each of the 21 areas. An estimate for the coterminous U.S. is produced by summing estimates for the 21 metropolitan areas and an estimate for the National Panel.

Form in which drug was acquired: The form in which the substance was received by the user/abuser, not the form in which the substance was consumed. Categories are: tablet/capsule/pill, aerosol, liquid, powder/crystal, paper, pieces/chunks, injectable liquid, cigarette, plant material, unknown, and other. Readers should note that this information is often not documented in ED records and is therefore missing in DAWN tabluations. Caution should therefore be exercised in interpreting this information.

Hospital emergency department (ED): Only hospitals that meet eligibility criteria for DAWN are recruited to participate. To be eligible, hospitals must be non-Federal, short-stay, general medical and surgical facilities with EDs that are open 24 hours a day, 7 days a week, and located in the coterminous U.S. Specialty hospitals; hospital units of institutions; long-term care facilities; pediatric hospitals; hospitals operating part-time emergency departments; hospitals in Alaska and Hawaii; and hospitals operated by the Veterans Health Administration and the Indian Health Service are excluded.

National Panel: This term is used to denote 2 concepts relative to DAWN ED data: (1) The universe of eligible hospitals outside the 21 DAWN metropolitan areas but within the coterminous U.S. and (2) The sample of hospitals in DAWN that were selected from this universe. The National Panel sample is weighted to produce estimates for the National Panel universe. (See also ***Metropolitan area***.)

p-value: The probability value is the actual probability associated with a statistical estimate; this is then compared with the significance level to determine whether that value is statistically significant. For a statistically significant result, the *p*-value must be less than or equal to the significance level. The traditional significance levels are *p* less than 0.001, 0.01, 0.05, and 0.10. A result with a *p*-value less than 0.05 is considered statistically significant in DAWN ED publications.

Population: See ***Universe***.

Precision: The extent to which an estimate agrees with its mean value in repeated sampling. The precision of an estimate is measured inversely by its standard error (SE) or relative standard error (RSE). In DAWN publications, estimates with an RSE of 50 percent or higher are regarded as too imprecise to be published. ED table cells where such estimates would have appeared contain the symbol "…" (3 dots). (See also ***Relative standard error***.)

Rank: A rank indicates the relative frequency of a measure, such as mentions for a particular drug category. For example, a drug category ranked second indicates that it accounted for the second highest number of mentions among all drug categories. When 2 or more drugs receive equal numbers of mentions, they are assigned the same rank. A difference in rank should be considered only as indicative of a difference in frequency among drugs reported to DAWN, regardless of the size of the difference. Such differences are not necessarily meaningful or statistically significant.

Reason for present ED contact: The reason for the patient's visit to the ED, based on documentation provided in the medical record. Categories are:

- *Overdose/toxic ingestion* – Either intentional or accidental (e.g., effects of suicide attempt, coma). Anyone whose reason for contact is overdose is placed in this category, regardless of other reasons.
- *Unexpected reaction* – The drug's effect was different than anticipated, thus causing concern (e.g., bad trip, panic, hallucinations).
- *Withdrawal* – Symptoms which occur when a patient stops taking a substance upon which she/he is physiologically dependent and suffers physical symptoms, including abdominal pain, cold sweat, hyperactivity, and tremors that require treatment.
- *Chronic effects* – Secondary conditions resulting from habitual use or dependence, including malnutrition, tetanus, blood poisoning, and so forth.
- *Seeking detoxification* – Patients with identified problems with chronic substance abuse who seek admission to a detoxification program and receive treatment from emergency department staff. This category was added to the data collection form in 1987. Some hospitals require patients to be processed in the ED prior to admission for detoxification. Caution should therefore be exercised in interpretation of this category and the remaining information.
- *Accident/injury* – Injuries resulting from accidents that were caused by or related to drug abuse. This category was added to the data collection form in 1987.
- *Other* – Reasons which cannot be classified into one of the aforementioned categories.

Reason for taking substance: See ***Drug use motive***.

Relative standard error (RSE): A measure of the sampling variability or precision of an estimate defined as the estimate's standard error (SE) expressed as a percentage of the estimate's value. For example, an estimate of 2,000 cocaine mentions with an SE of 200 mentions has an RSE of 10 percent. (See also ***Precision*** and ***Standard error***.)

Sampling: Sampling is the process of selecting a proper subset of elements from the full population so that the subset can be used to make inference to the population as a whole. A probability sample is one in which each element has a known and positive chance (probability) of selection. A simple random sample is one in which each member has the same chance of selection. In DAWN, a sample of hospitals is selected in order to make inference to all hospitals; DAWN uses simple random sampling within strata.

Sampling frame: A list of units from which the ED sample is drawn. All members of the sampling frame have a probability of being selected. A sampling frame is constructed such that there is no duplication and each unit is identifiable. Ideally, the sampling frame and the universe are the same. The sampling frame for the DAWN hospital ED sample is derived from the American Hospital Association (AHA) Annual Survey of Hospitals.

Sampling unit: A member of a sample selected from a sampling frame. For the DAWN sample, the units are hospitals, and data are collected for all drug-related ED episodes at the responding hospitals selected for the sample.

Sampling weights: Numeric coefficients used to derive population estimates from a sample.

Source of substance: The immediate source of the substance that the patient abused is coded as follows:

- *Patient's own legal prescription* – This is coded only when the abuser was legally prescribed the drug of abuse. If one patient obtains a drug by legal prescription and sells it to another who abuses it, the source to the abuser is marked "street buy." If the patient for whom the prescription was issued gives the drug to another patient who abuses it, the source to the abuse is "other unauthorized procurement."

- *Street buy* – The drug abuser purchased a drug and/or prescription from a source other than legitimate channels.

- *Other unauthorized procurement* – The drug was acquired in a manner not consistent with accepted medical care but was not bought on the street. This category includes drugs purchased using forged prescriptions, stolen, or received as a gift.

- *Other* – Used when the source of the substance cannot logically be included as any of the above. This category includes all over-the-counter medications.

- *Unknown* – Reported when information on source was unavailable.

Readers should note that this information is often not documented in ED records and is therefore missing in DAWN tabulations. Caution should therefore be exercised in interpreting this information.

Standard error (SE): A measure of the sampling variability or precision of an estimate. The SE of an estimate is expressed in the same units as the estimate itself. For example, an estimate of 10,000 cocaine mentions with an SE of 500 indicates that the SE is 500 mentions.

Strata (plural), stratum (singular): Subgroups of a population within which separate ED samples are drawn. Stratification is used to increase the precision of estimates for a given

sample size, or, conversely, to reduce the sample size required to achieve the desired level of precision. The DAWN ED sample is stratified into 21 metropolitan area cells plus an additional cell for the National Panel. Then, within these cells strata are defined according to the annual number of ED visits, whether the hospital is located inside or outside the central city of the metropolitan area, and by the presence or absence of an organized outpatient department, alcohol/chemical dependence inpatient unit, or both. The strata are as follows:

Stratum	Annual ED visits	Location within metropolitan area	Outpatient department or alcohol/chemical dependence inpatient unit
In the 21 DAWN metropolitan areas:			
0	≥80,000	Not applicable	Not applicable
1	<80,000	Central city	Both
2	<80,000	Central city	One only
3	<80,000	Central city	Neither
4	<80,000	Outside Central city	Both
5	<80,000	Outside Central city	One only
6	<80,000	Outside Central city	Neither
In the National Panel:			
0	≥80,000	Not applicable	Not applicable
7	<80,000	Not applicable	Both
8	<80,000	Not applicable	One only
9	<80,000	Not applicable	Neither

Note: Stratum "0" is defined for each of the 21 metropolitan areas and the National Panel cells. See *Drug Abuse Warning Network Sample Design and Estimation Procedures: Technical Report*, November 1997.

Statistically significant: A difference between 2 estimates is said to be statistically significant if the value of the statistic used to test the difference is larger or smaller than would be expected by chance alone. For DAWN ED estimates, a difference is considered statistically significant if the *p*-value is less than 0.05. (See also ***p-value***.)

Universe: The entire set of units for which generalizations are drawn. The universe for the DAWN ED sample is all non-Federal, short-stay, general medical and surgical hospitals in the coterminous U.S. with EDs open 24 hours a day, 7 days a week. (See also ***Coterminous U.S.***).

DEFINITIONS OF TERMS FOR THE DAWN MORTALITY COMPONENT

Cause of death: Cases are reportable to DAWN if the death investigation concludes that the death was either directly or indirectly caused by drug abuse. If a death was directly caused by drug abuse (e.g., a drug overdose), DAWN refers to the death as ***drug-induced***. If drug abuse was a contributing factor in the death, but not the immediate or sole cause, then DAWN refers to the death as ***drug-related***. It is important to note that DAWN data include both types of deaths. It is also important to note that a drug-induced death may involve more than a single drug. (See ***Single-drug episode***.)

Certified death: Any case accepted and reviewed by a medical examiner or coroner, who uses information from the death investigation to complete the death certificate.

Consistent panel: DAWN does not impute missing data for jurisdictions that have not reported for all or part of a given year. Therefore, tables and charts showing trends in deaths over time are based on a ***consistent panel*** of reporting jurisdictions. A consistent panel includes those jurisdictions that have reported data for at least 10 months of each year reflected in the trend table/chart. The reason for a consistent panel is to ensure that apparent changes over time are not a result of gaps in reporting. Because participating jurisdictions may change from year to year, consistent panels used in published reports will also change from year to year. This means that trends published in one annual publication are not necessarily comparable to trends published in subsequent annual publications.

Coroner: Death investigation jurisdictions typically use either a medical examiner system or a coroner system. Unlike medical examiners, coroners need not be physicians; usually the only prerequisite for serving as a coroner is that the individual be more than 18 years of age and a resident of the county or district to be served. Coroners are typically elected rather than appointed. They may have jurisdiction over counties or districts within states. (See also ***Jurisdiction*** and ***Medical examiner***.)

Drug combinations: Published tables from the DAWN mortality data refer to "drug combinations" rather than "drug concomitance" (the term used in the ED component). This term refers to multiple drug mentions for a single death, and tables show particular combinations of substances reported for deaths. Readers should note that DAWN cannot differentiate between drugs actually *used* in combination (simultaneously) and drugs used sequentially.

Drug-induced death: A death directly resulting from drug abuse or other substance abuse, such as drug overdoses or the interactive effects of drug combinations. When more than one drug is mentioned, it cannot be determined which or whether one drug was the sole and direct cause of the episode or death.

Drug-related death: A death in which the abuse of a drug is a contributing factor, but is not the sole cause of death. Such cases include drug abuse that exacerbates a pre-existing *physiological condition*; drug abuse in combination with an *external physical event* (e.g., a fall or automobile accident); or a *medical disorder* that was itself caused by drug abuse (e.g., hepatitis contracted through injection drug use). Drug-related deaths are classified into two types, *confirmed* and *presumed*. The drug-relatedness is "confirmed" if documentation in the decedent's file substantiates that conclusion. The drug-relatedness is "presumed" if the investigation suggests drug involvement, but the medical examiner/coroner has insufficient evidence to list drug abuse as a contributing cause on the death certificate. Both confirmed and presumed deaths are included in the published mortality data tables.

Jurisdiction: DAWN uses the term "jurisdiction" to mean the geographic area for which a medical examiner/coroner's office is responsible. In many states, there is a 1:1 correspondence between jurisdictions and counties. In some states, there are multiple medical examiner/coroner offices within a given county, or there may be multiple counties covered by a "district" that includes one or more medical examiners/coroners. A few states are organized as a single statewide jurisdiction.

Understanding jurisdictions is important because this assists readers in interpreting aggregated data. Published DAWN mortality data are aggregated into metropolitan areas, which often comprise multiple jurisdictions. In some states, there are different death investigation procedures for different jurisdictions (most notably, some jurisdictions have medical examiner systems, while others have coroner systems). There are nearly always some differences in death investigation procedures across states (and notably, some metropolitan areas include jurisdictions in multiple states). Readers should be mindful of these variations when interpreting or comparing data.

Information on death investigation practices and an updated list of jurisdictions throughout the U.S. and Canada are available from the Centers for Disease Control's Epidemiological Program Office at www.cdc.gov/epo/dphsi/mecisp/death_investigation.htm.

Manner of death: This variable is used to describe how the decedent died. It is applicable to both drug-induced and drug-related deaths. On the DAWN data collection form, manner of death is coded into the following categories:

- *Accidental/Unexpected* – Although the drug abuse was deliberate, the resulting death was unintended.
- *Suicide* – Death in which there is evidence that the decedent deliberately used drugs to bring about his/her demise.
- *Homicide* – Death in which the decedent's life was taken by another individual by means of drugs. These cases, which do not involve the intentional abuse of drugs by the decedent, are not currently included in published tabulations of DAWN mortality data.
- *Natural* – Death was due to natural causes such as a medical disorder or disease process, if drug abuse caused or worsened the decedent's condition.
- *Undetermined* – The manner of death cannot be determined from all available evidence.

In *Mortality Data from DAWN*, manner of death is collapsed into three categories: suicide, accidental/unexpected, and "All others." The "All others" category includes cases for which manner of death was recorded as natural, unknown, or undetermined, and cases for which manner of death was missing.

Medical Examiner (ME): Death investigation jurisdictions typically use either a medical examiner system or a coroner system. Most medical examiners are licensed physicians or forensic pathologists, and are generally appointed (rather than elected). They may have jurisdiction over a county, district, or entire state. (See also ***Coroner*** and ***Jurisdiction***.)

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APPENDIX E:
MULTUM LICENSE AGREEMENT

LEXICON LICENSE

Multum Lexicon[1]

End-User License Agreement

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APPENDIX F: DAWN EMERGENCY DEPARTMENT REPORT FORM

FORM NUMBER

XXXXXXX

(Sample Form Only)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE

SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES ADMINISTRATION

FORM APPROVED:
OMB NO. 0930-0078
Expires: 11/30/2002

DRUG ABUSE WARNING NETWORK (DAWN) EMERGENCY DEPARTMENT REPORT

(Sample Form Only)

1. PROVIDER NUMBER

2. CROSS REFERENCE *(Facility Use Only)*

PATIENT INFORMATION

3. DATE OF VISIT — Month / Day / Year

4. TIME OF VISIT — Hours / Minutes *(Mark [X])*
   1. ☐ am
   2. ☐ pm
   3. ☐ military

5. AGE *(Must be 06-97 yrs.)*

6. SEX
   1 ☐ Male 2 ☐ Female

7a. ETHNICITY *(mark [x] one response)*
   1 ☐ Hispanic or Latino
   2 ☐ Not Hispanic or Latino
   3 ☐ Unknown

7b. RACE *(mark [x] for all that apply)*
   ☐ White
   ☐ Black or African American
   ☐ American Indian or Alaska Native
   ☐ Asian
   ☐ Native Hawaiian or Other Pacific Islander
   ☐ Unknown

8. PATIENT'S HOME ZIP CODE — –
   (Otherwise mark [X] one response)
   1 ☐ Unknown 2 ☐ No Fixed Address *(See reverse side)*

9. REASON FOR TAKING SUBSTANCE(S) *(Mark [X] one response)*
   1 ☐ Dependence
   2 ☐ Suicide Attempt or Gesture
   3 ☐ Psychic Effects: "Recreational Use" *(e.g., to get high, kicks)*
   4 ☐ Other Psychic Effects *(See reverse side)*
   5 ☐ Unknown
   6 ☐ Other *(Specify)* _____

10. REASON FOR PRESENT CONTACT
   A. Was This an Overdose/Toxic Ingestion?
   1 ☐ Yes ☐ No
   B. If "No," mark one response
   2 ☐ Unexpected Reaction
   3 ☐ Chronic Effects *(See reverse side)*
   4 ☐ Withdrawal
   5 ☐ Seeking Detoxification
   6 ☐ Accident/Injury
   7 ☐ Unknown
   8 ☐ Non-toxic Ingestion/Other *(Specify)* _____ *(See reverse side)*

11. DISPOSITION FROM EMERGENCY DEPARTMENT
   1 ☐ Treated and Released or Referred
   2 ☐ Admitted as Inpatient to This or Any Hospital
   3 ☐ Left Against Medical Advice
   4 ☐ Died

DRUG/SUBSTANCE INFORMATION

12. ALCOHOL INVOLVED *(Mark [X] one response)*
   1 ☐ Yes 2 ☐ No 3 ☐ Unknown

13. LIST EACH DRUG/SUBSTANCE SEPARATELY *(Generic, Trade, or Street Name)* IN ONE OF THE SPACES BELOW **(Do NOT list alcohol)**

SAMHSA USE ONLY		Mark [x] if confirmed by toxicology tests
1		☐
2		☐
3		☐
4		☐

*For each non-alcohol substance listed above, mark [X] **one** response in each data item below.*

14. FORM IN WHICH DRUG WAS ACQUIRED		SUBSTANCES 1	2	3	4
Tablet/Capsule/Pill	01				
Aerosol	02				
Liquid *(oral)*	03				
Powder/Crystal	04				
Paper *(e.g., LSD/Acid)*	05				
Pieces/Chunks *(e.g., Crack)*	06				
Injectable Liquid	07				
Cigarette	08				
Plant Material	09				
Unknown	10				
Other	11				

15. ROUTE OF ADMINISTRATION		SUBSTANCES 1	2	3	4
Oral	1				
Injection	2				
Inhaled *(e.g., fumes)*	3				
Smoked *(Includes Freebase)*	4				
Sniffed, Snorted	5				
Unknown	6				
Other	7				

16. SOURCE OF SUBSTANCE		SUBSTANCES 1	2	3	4
Patient's Own Legal R_x	1				
Street Buy	2				
Other Unauthorized Procurement *(e.g., stolen, gift, etc.)*	3				
Unknown	4				
Other (Includes Over-The-Counter [OTC])	5				

17. CODED REMARKS
(If case involves an IV drug user with HIV+/AIDS, please write "HIV+" or "AIDS" in the first four spaces below.)

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(Sample Form Only)

SELECTED REPORTING GUIDELINES AND INSTRUCTIONS DRUG ABUSE WARNING NETWORK (DAWN) EMERGENCY DEPARTMENT REPORT

I. General

The following abbreviated guidelines and instructions highlight critical reporting items. Please refer to the detailed instructions found in the Instruction Manual for Emergency Departments for further information.

II. Reporting Guidelines

Report data on all patients seen in the emergency department for problems induced by or related to drug abuse. For DAWN, drug abuse is defined as the use of any illegal drug or the nonmediacal use of a legal drug where the reason for taking the substance was for: psychic effects, dependence, or suicide attempt or gesture.

Detailed discussion of the "nonmedical" use definition and other case selection criteria can be found in Chapter II, Case Identification Guidelines, of the Instruction Manual for Emergency Departments.

III. Abbreviated Instructions for Completing Selected Items

Data Item #8 - Patient's Home Zip Code

Use *"no fixed address"* for the homeless (even if staying at a shelter) and for prisoners brought into the hospital.

Data Item #9 - Reason for Taking Substance(s)

The response categories are: Dependence, Suicide Attempt or Gesture, Psychic Effects: "Recreational Use," Other Psychic Effects, Unknown, and Other (Specify). The definitions are as follows:

1. *Dependence* - A physiological or psychological condition characterized by a compulsion to take the drug on a continuous or periodic basis in order to experience its effects or to avoid the discomfort of its absence (i.e., to avoid withdrawal).

2. *Suicide Attempt or Gesture* - Successful or unsuccessful action(s) taken for the purpose of self-destruction or to gain attention.

3. *Psychic Effects: "Recreational Use"* - Use of drug(s) for experimentation or to enhance social situations or conditions. Examples of common patient responses are: "just wanted to know what it felt like," "wanted to have fun," or "to get high."

4. *Other Psychic Effects* - Use of drug(s) to improve or enhance, any mental, emotional, or physical state. Examples of common patient responses concerning this self-applied medication are: "needed to relax," "wasn't feeling well," "to stay awake," "depression," "anxiety," "lose weight," "fight with a boyfriend/mate."

5. *Unknown* - Should be used only if information is unobtainable or unavailable.

6. *Other* (Specify) - Should be used only when the Reason for Taking the Substance cannot be classified into the categories above. Write the appropriate reason in the space provided.

Data Item #10 - Reason for Present Contact

This data item has two parts, A and B. Part A requires a selection of "YES" or "NO" to indicate whether the case is an Overdose / Toxic Ingestion. If the response to part A is "NO," part B requires a response.

3. *Chronic Effects* - Includes Hepatitis, Abscess, Cellulitis, Tremors, and AIDS contracted by IV drug abuse (see manual for additional examples).

8. *Non-Toxic Ingestion / Other* (Specify) - Should be used only when Reason for Present Contact cannot be classified into the categories above. (For example, police bring patient in for toxicological testing related to commission of a crime or parents force a child to come in to be checked because of strange behavior.) If Other, write reason in space provided.

Data Item #17 - Coded Remarks

Please be certain to write "HIV+" or "AIDS" in the first four blocks if the patient is a confirmed IV drug user.

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