DETAILED EMERGENCY DEPARTMENT TABLES FROM THE DRUG ABUSE WARNING NETWORK 2002

Office of Applied Studies
Substance Abuse and Mental Health Services Administration
Department of Health and Human Services

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Things to Remember

- These tables present estimates of drug abuse-related emergency department (ED) visits that occurred during one year throughout the coterminous U.S. The estimates are based on data reported to the Drug Abuse Warning Network (DAWN) sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). These estimates are based on data submitted by a representative sample of non-Federal, short-stay, general medical and surgical hospitals with 24-hour ED facilities.

- The content of these *Detailed ED Tables* reflects improvements in the DAWN drug vocabulary. Refer to *ED Trends From DAWN, Preliminary Estimates January-June 2001 with Revised Estimates 1994-2001* for more information.

- These *Detailed ED Tables* are published exclusively on the Internet.

- These *Detailed ED Tables* contain ED estimates for one year. Other reports that focus on DAWN ED Trends are published semi-annually. Medical examiner data from DAWN are presented once a year in a separate report entitled *Mortality Data From DAWN.*

- The terms **ED drug abuse episode** or **ED episode** refer to any ED visit that was induced by or related to drug abuse. Similarly, the terms **ED drug mention** or **ED mention** refer to a substance that was mentioned in a drug abuse episode. (Refer to the ***Glossary of Terms*** for a more complete list of terms.) Up to 4 substances can be reported for each ED episode, plus alcohol-in-combination with these substances. Thus, the number of ED mentions will always equal or exceed the number of ED episodes.

- Alcohol is reported to DAWN only for episodes in which at least one other drug is also mentioned.

- DAWN captures data on the abuse of illegal and legal drugs. However, not all cases involving prescription or over-the-counter (OTC) drugs are reportable to DAWN. DAWN cases **DO NOT** include accidental ingestion or inhalation of a substance with no intent to abuse, or adverse reactions to prescription or OTC medications taken as prescribed. Accidental overdoses of OTC or prescription drugs taken as directed are reportable only when used in combination with an illicit drug.

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Section 1

INTRODUCTION

These *Detailed ED Tables* present estimates of drug-related emergency department (ED) visits from the Drug Abuse Warning Network (DAWN) from 2002. DAWN is an ongoing, national surveillance system that collects data 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) has been responsible for DAWN operations since 1992.

This introduction presents a description of DAWN publications, an overview of the DAWN ED component, DAWN data collection methodology, considerations when interpreting DAWN data, and the structure and content of the newly redesigned *Detailed ED Tables*.

The content of this publication reflects major changes made in the underlying method by which drugs are coded and classified in DAWN. *Detailed ED Tables* for 2001 was the first edition to benefit from these changes. 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. Substantial changes to the existing vocabulary were implemented to ensure that reported substances could be accurately and consistently classified. Detailed information about the overhaul and replacement of the DAWN drug vocabulary is available in *Emergency Department Trends From the Drug Abuse Warning Network Preliminary Estimates January – June 2001 with Revised Estimates 1994 – 2000*.[1]

OTHER DAWN PUBLICATIONS

Other ED estimates from DAWN are published semi-annually in trend reports. Once each year, *ED Trends From DAWN* 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 From DAWN* publishes final estimates for the most recent full year and comparisons to previous years.

The DAWN system also collects data on drug-related deaths from a nonrandom sample of medical examiners (MEs) and coroners in death investigation jurisdictions. *Mortality Data From the Drug Abuse Warning Network*[2] is published annually.

A relatively new series called *The DAWN Report* focuses on topics of special interest in a brief publication format.[3] OAS receives many requests for specific information from potential and actual consumers of information from DAWN. We view these requests as expressions of

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[1] The classification of drugs currently in use by DAWN is derived from the *Multum Lexicon*, Copyright © 2002, Multum Information Services, Inc. The classification has been modified to meet DAWN's unique requirements (2003). The Multum Licensing Agreement governing use of the *Lexicon* is provided in Section 6 to this report and can be found on the Internet at http://www.multum.com/.

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

[3] Issues of *The DAWN Report* are available online at http://DAWNinfo.samhsa.gov/.

the need to improve or add to 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 that manifest in 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.

For these tables, 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.[4] and in the 21 metropolitan areas (see Section 3). The National Panel 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 Section 3). Population estimates used to derive the estimated rates for 2002 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;

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

- 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.

Each report of a drug-related ED episode also 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 FINDINGS

When interpreting findings from these tables, the reader needs to recognize what DAWN can and cannot measure. DAWN does not measure the frequency or prevalence of drug abuse in the population, but rather the health consequences of drug abuse 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 2002 are the second 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 Section 3). It is important to note that the population denominator used to calculate rates per 100,000 population is considerably larger for 2002 due to the availability of 2000 decennial Census data. (Estimates for periods prior to 2001 used estimated yearly adjustments from the 1990 Census.)

- 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 these tables 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.

- 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 these tables did not reveal any factors that are unduly responsible for the trends reported.

ORGANIZATION OF TABLES

In this section, we explain the organization of the *Detailed ED Tables* and explain the classification of drugs in the context of these tables. The *Detailed ED Tables* examine the nature of drug-related ED episodes in the coterminous U.S. for the most recent year of data collected. These tables are designed to provide detailed tabulations of DAWN of drug-related ED episodes and specific drug mentions in the following domains:

1. Sampling and precision information,

2. Drug abuse episodes by demographic and episode characteristics,

3. Demographic and episode characteristics by selected drug categories, and the

4. Most frequently mentioned drugs and drug combinations.

1. Sampling and Precision Information

These tables present detailed information about the sample for the DAWN ED component. These tables include information such as the number of eligible and participating hospitals in the DAWN ED sample, the counties and cities that constitute DAWN ED metropolitan areas, the

number of ED visits, drug-related episodes and drug mentions in each metropolitan area, standard errors, relative standard errors, 95 percent confidence intervals, and the population data used to calculate rates per 100,000.

2. Drug Abuse Episodes by Demographic and Episode Characteristics

These tables show drug abuse episodes tabulated by demographic characteristics (gender, race/ethnicity, and age) and episode characteristics (drug concomitance, drug use motive, reason for ED contact, and patient disposition). Corresponding RSE tables are available. In cases where there is a table of estimates and a table of percents (e.g. Tables 2.2 and 2.3), please refer to the RSE tables corresponding to the estimates.

3. Demographic and Episode Characteristics by Selected Drug Categories

These tables show selected drug categories and, within these categories, selected individual drugs. The individual drugs are included based on their frequency and/or particular policy interest because of their potential for abuse. For a complete list of drugs included in each of these drug categories, refer to *ED Trends From DAWN*. Corresponding RSE tables are available. In cases where there is a table of estimates and a table of percents (e.g. Tables 3.1 and 3.2), please refer to the RSE tables corresponding to the estimates.

The following is a brief description of the drug classification system found in these tables:

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 MDMA (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 3.1) for ease of reference. The 15 major substances of abuse are:

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.

Heroin. ED estimates for heroin and morphine are tabulated separately (with ED morphine estimates presented under narcotic analgesics, below).[5]

Marijuana. This category includes both marijuana and hashish.

[5] 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 (central nervous system) 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 Glossary in Section 5).

Combinations not tabulated above (NTA). This category includes combinations 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 a combination NTA, whereas separate mentions of heroin and cocaine would be classified separately in the categories heroin and cocaine. Combinations 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 3.1) 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 purposes for which these substances are intended may be quite different from the effects 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. For example, cough preparations containing narcotics, such as codeine, are classified as respiratory agents, not narcotic analgesics.

Psychotherapeutic agents are divided as follows:

- Antidepressants
  - MAO inhibitors
  - SSRI antidepressants
    - citalopram
    - fluoxetine
    - fluvoxamine
    - paroxetine
    - sertraline
  - Trycyclic antidepressants
    - amitriptyline
    - desipramine
    - doxepin
    - imipramine
    - nortriptyline
    - tricyclic antidepressants-not otherwise specified (NOS)
  - Miscellaneous antidepressants
    - bupropion
    - mirtazapine
    - nefazodone
    - trazodone
    - venlafaxine
    - antidepressants-NOS
- Antipsychotics
  - Phenothiazine antipsychotics
    - chlorpromazine
    - fluphenazine
    - perphenazine
    - prochlorperazine
    - thiordaine
    - triflupromazine
  - Psychotherapeutic combinations
  - Thioxanthenes

- Miscellaneous antipsychotic agents
  - clozapine
  - haloperidol
  - lithium
  - olanzapine
  - quetiapine
  - risperidone

- Anxiolytics, sedatives, and hypnotics
  - Barbiturates
    - phenobarbital
    - barbiturates-NOS
  - Benzodiazepines – This category excludes the benzodiazepine flunitrazepam (Rohypnol), which was assigned to major substances of abuse.
    - alprazolam
    - chlordiazepoxide
    - conazepam
    - clorazepam
    - clorazepate
    - diazepam
    - flurazepam
    - lorazepam
    - oxazepam
    - tempazepam
    - triazolam
    - benzodiazepines-NOS
  - Miscellaneous anxiolytics, sedatives, and hypnotics
    - buspirone
    - chloral hydrate
    - diphenhydramine
    - doxylamine
    - hydroxyzine
    - zolpidem
    - anxiolytics, sedatives, and hypnotics-NOS
- CNS stimulants. This category excludes the CNS stimulants that were assigned to major substances of abuse: amphetamines, methamphetamine, and MDMA (Ecstasy).
  - caffeine
  - methylphenidate

Central nervous system (CNS) agents are divided as follows:

- 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.
    - Codeine/combinations
    - Dihyrdrocodeine/combinations
    - Fentanyl/combinations
    - Hydrocodone/combinations
    - Meperidine/combinations
    - Methadone

  - Morphine/combinations
  - Opium/combinations
  - Oxycodone/combinations
  - Pentazocine/combinations
  - Phenacetin/combinations
  - Propoxyphene/combinations
  - Narcotic analgesics-NOS
  - All other narcotic analgesics/combinations not tabulated above (NTA)
- Nonsteroidal anti-inflammatory agents
  - ibuprofen
  - naproxen
- Salicylates/combinations
  - aspirin/combinations
  - salicylates-NOS
- Miscellaneous analgesics/combinations
  - acetaminophen/combinations
  - tramadol
  - analgesics-NOS
- Analgesic combinations NTA

- Anorexiants
  - phenylpropanolamine
  - anorexiants-NOS
- Anticonvulsants
  - carbamazepine
  - divalproex sodium
  - gabapentin
  - phenytoin
  - topiramate
  - valproic acid
- Antiemetic/antivertigo agents
- Antiparkinson agents
  - benztropine
- General anesthetics – This category excludes the anesthetic gases that were assigned to major substances of abuse as inhalants.
- Muscle relaxants
  - carisoprodol
  - chlorzoxazone
  - cyclobenzaprine
  - metaxalone
  - methocarbamol
  - tizanidine
- Miscellaneous CNS agents

Respiratory agents are divided as follows:

- 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 as follows:

- Antiandrenergic agents, centrally acting
  - clonidine
- Beta-andrenergic blocking agents
  - atenolol
  - propranolol
- 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.
  - ephedrine

Only generic drugs are listed in these tables; brand (trade) names are not reported by DAWN because estimates for particular brands are considered to be unreliable.[6] Therefore, for example, mentions of the miscellaneous analgesic acetaminophen are tabulated as "acetaminophen," not Tylenol. An index listing generic and brand (trade) names for prescription and over-the-counter substances is available on the DAWN website.

Finally, "drug unknown" does not appear in the Multum *Lexicon* but is 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.

4. Most Frequently Mentioned Drugs and Drug Combinations

These tables present the most frequently mentioned drugs in drug-related ED episodes. The 150 drugs mentioned most frequently are presented by frequency and alphabetically. In addition, the 15 drugs mentioned most frequently are presented for subgroups defined by demographic and episode characteristics. Finally, the most common drug combinations—that is, the drugs reported together in the same ED visit—are listed in detail. Often, these combinations reveal patterns of drug abuse that are never apparent in tabulations of individual drugs. Corresponding RSE tables are available.

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

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ADDITIONAL CONTENT AVAILABLE ON THE INTERNET

Updated indexes listing generic and brand names for prescription and over-the-counter substances are published on the Internet, and can be accessed at http://www.DAWNinfo.SAMHSA.gov/. Although 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 these tables.

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Section 2

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.[7] 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 Section 7.

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 1.10.[8] 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.[9] 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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[7] 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.

[8] 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.

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

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Section 3

DETAILED DESCRIPTION OF DAWN

This section gives a detailed description of the methods and some of the history behind the DAWN sample and analysis. The section begins with a description of the sample design and is followed by sections on 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 Section 5.)

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. Tables 1.6 and 1.7 show RSEs for total drug-related episodes in 2002 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 to which the estimates must apply, 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 together 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 on either 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 SE and RSE. 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, both because of differences in the target precision levels in the sample design, and 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. Only final estimates are published in *Detailed ED Tables*.

In recent years, the final publication of *ED Trends From DAWN* 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 (published exclusively in *ED Trends From DAWN*) 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. Newly eligible 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 or 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[10] 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

[10] Population estimates by age and gender by metropolitan area for 2002 are published in Table 1.9.

- 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.

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 2002, which are based on the 2000 Census, are considerably higher than population estimates generated for recent years. As a result, the incidence rates for 2002 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 2002 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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Section 4

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 is not 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 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 IN DATA FOR 2001 AND 2002

Unlike data systems that rely on samples of patients or discrete time periods, DAWN expects continuous data collection from a census of ED cases throughout the year in each sampled facility. For a variety of reasons, the ideal of 100-percent complete data is not always feasible. In most instances, the nonresponse adjustment to the sampling weight for a facility is utilized to compensate for periodic, but infrequently missing data. Occasionally, depending on the particular sampled unit and/or time period affected, missing data may jeopardize estimates for an entire metropolitan area. The national estimate in DAWN is equal to the sum of the metropolitan area estimates and the National Panel estimate. Consequently, if data are insufficient to produce reliable final estimates for any metropolitan area, the national estimate is also compromised. In these instances, we have 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 procedures.

In 2001, we experienced significant missing data in the Atlanta metropolitan area. Reliable Atlanta estimates could not be produced for January to June 2001 because insufficient data were submitted by participating facilities for this period. More Atlanta data were available for the second half of 2001, although missing data were still a concern. 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.

In 2002, we experienced significant missing data in 5 metropolitan areas represented in DAWN: Boston, Detroit, Los Angeles, New York, and St. Louis. We used imputation to address the missing data problem in each of these areas and preserve the integrity of the national estimates. In this case, the imputation approach consisted of two steps. First, we used statistical time series models to estimate the likely 2002 episode and drug-specific mention counts for each unit and month with missing data. Second, we sampled reported episodes from 2001 within the same unit at rates that would allow us to match the modeled monthly 2002 episode and mention counts for the unit, taking patterns of drug combinations into account. Some data were imputed for both the first and second halves of 2002 in each of the 5 metropolitan areas.

As a conservative measure, we have suppressed final estimates for 2002 that were derived from more than 25 percent imputed data (indicated by "---"). This suppression affects the DAWN areas listed above and some of the estimates for the coterminous U.S. as well.

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Section 5

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 medical examiner/coroner (ME/C) jurisdictions. As a result, there are a number of terms that are unique to each component of DAWN.

This appendix is divided into 3 sections. The first section contains terms common to both the ED component and the ME/C or 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 has 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 central nervous system (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 the club drugs in DAWN.

- *Combinations not tabulated above (NTA)* – This category includes combinations composed of 2 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 a combination NTA, whereas separate mentions of heroin and cocaine would be classified separately in the categories heroin and cocaine. Combinations 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).

- *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 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 2. 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.

- *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 ED system, also with a few exceptions. Users of DAWN should note that the ED 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 percent of the MSA is represented in those counts.

Not otherwise specified (NOS): A 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 OMB in 1997.[11] 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.

[11] 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.

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 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 NTA* – This includes those categories that are too small to report independently including: 2 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 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 tabulations. 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 EDs; 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: A measure of the probability (*p*) that the difference between 2 estimates could have occurred by chance, if the estimates being compared were really the same. The larger the *p*-value, the more likely the difference could have occurred by chance. For example, if the difference between 2 DAWN estimates has a *p*-value of 0.01 that means there is a 1 percent probability that the difference observed could be due to chance alone.

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 RSEs 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 he or she 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 ED 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 an estimate's relative precision. The RSE of an estimate is equal to the estimate's standard error (SE) divided by the estimate itself. For example, an estimate of 2,000 cocaine mentions with an SE of 200 mentions has an RSE of 10 percent. Estimates with an RSE of 50 percent or more are not published by DAWN. (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 ED 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.

Significance level: The *p*-value cut-off point that is used to determine whether the difference between two estimates is statistically significant. By convention in most public health research, a difference is considered statistically significant if the *p*-value is less than 0.05; in other words, if there is less than a 5 percent probability that the difference between the estimates is due to chance. In DAWN, only results with a *p*-value less than 0.05 are considered statistically significant.

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 2 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 and Prevention, 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 or 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 <u>not</u> 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 3 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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Section 6

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LEXICON LICENSE

Multum Lexicon[1]

End-User License Agreement

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Section 7

DAWN EMERGENCY DEPARTMENT REPORT FORM

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FORM NUMBER

XXXXXXX

(Sample Form Only)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE

SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES ADMINISTRATION

DRUG ABUSE WARNING NETWORK (DAWN) EMERGENCY DEPARTMENT REPORT

(Sample Form Only)

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

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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