Office of Applied Studies

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Suicidal Thoughts, Suicide Attempts, Major Depressive Episode, and Substance Use among Adults

In Brief

- Among adults aged 18 or older who experienced a past year major depressive episode (MDE), 56.3 percent thought, during their worst or most recent episode, that it would be better if they were dead, 40.3 percent thought about committing suicide, 14.5 percent made a suicide plan, and 10.4 percent made a suicide attempt
- Adults with a past year MDE who reported past month binge alcohol or illicit drug use were more likely to report suicidal thoughts and suicide attempts than their counterparts with a past year MDE who had not engaged in past month binge drinking or illicit drug use
- In 2004, an estimated 106,079 emergency department (ED) visits were the result of drug-related suicide attempts by persons aged 18 or older
- A psychiatric condition was diagnosed in 41 percent (43,176) of the drug-related suicide attempts treated in the ED; the most frequent psychiatric diagnosis was depression

Introduction

Suicide is a major public health problem in the United States. In 2003, suicide was the 11th leading cause of death among adults and accounted for 30,559 deaths among people aged 18 or older.[1] Suicide rates vary across demographic groups, with some of the highest rates occurring among males, whites, and the older population.[2] Suicide also is strongly associated with mental illness and substance use disorders.[3]

Individuals who die from suicide, however, represent a fraction of those who consider or attempt suicide. In 2003, there were 348,830 nonfatal emergency department (ED) visits by adults aged 18 or older who had harmed themselves.[4] Research suggests that there may be between 8 and 25 attempted suicides for every suicide death.[3] As with suicide completions, risk factors for attempted suicide in adults include depression and substance use.[5,6]

The mission of the Office of Applied Studies (OAS) in the Substance Abuse and Mental Health Services Administration (SAMHSA) is

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to collect, analyze, and disseminate critical public health data. OAS manages two national surveys that offer insight into suicidal ideation and attempts and, in particular, drug-related suicide attempts: the National Survey on Drug Use and Health (NSDUH) and the Drug Abuse Warning Network (DAWN).

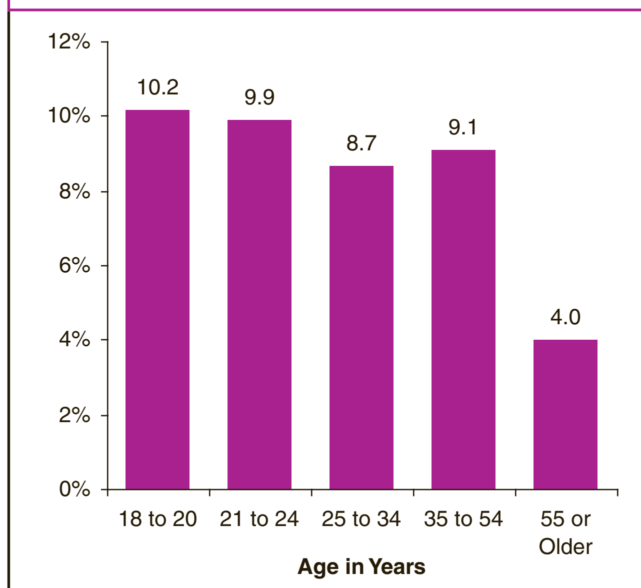
NSDUH is the Nation's primary source of information on the prevalence of illicit drug use among the civilian, noninstitutionalized population aged 12 or older and also provides estimates of alcohol and tobacco use and mental health problems in that population. NSDUH data provide information about the relationships between suicidal thoughts, suicide attempts, and substance use among adults aged 18 or older who have had at least one major depressive episode (MDE) during the past year.

DAWN is a public health surveillance system that measures some of the health consequences of drug use by monitoring drug-related visits to hospital emergency departments (EDs) in the United States. Data from DAWN provide information about the patients, types of drugs, and other characteristics of suicide-related DAWN ED visits.

NSDUH Methods and Findings

NSDUH asks adults aged 18 or older questions to assess lifetime and past year major depressive episodes (MDEs). MDE is defined using diagnostic criteria from the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*-IV),[7] which specifies a period of 2 weeks or longer during which there is either depressed mood or loss of interest or pleasure and at least four other symptoms that reflect a change in functioning, such as problems with sleep, eating, energy, concentration, and self-image.[8] Suicide-related questions are administered to respondents who report having had a period of 2 weeks or longer during which they experienced either depressed mood or loss of interest or pleasure. These questions ask if (during their worst or most recent[9] episode of depression) respondents thought it would be better if they

Figure 1. Percentages of Adults Aged 18 or Older Reporting a Past Year Major Depressive Episode, by Age Group: 2004 and 2005 NSDUHs



Source: SAMHSA, 2004 and 2005 NSDUHs.

were dead, thought about committing suicide, and, if they had thought about committing suicide, whether they made a suicide plan and whether they made a suicide attempt.

NSDUH also asks all respondents about their use of alcohol and illicit drugs during the 12 months prior to the interview. *Binge alcohol use* is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. *Any illicit drug* refers to marijuana/hashish, cocaine (including crack), inhalants, hallucinogens, heroin, or prescription-type drugs used nonmedically.[10]

This section of the report examines the prevalence of suicidal thoughts among adults who experienced at least one MDE during the past year. Because mental illness and substance use commonly co-occur,[11] the prevalence of past year MDE, suicidal thoughts, and suicide attempts is also examined by substance use status.

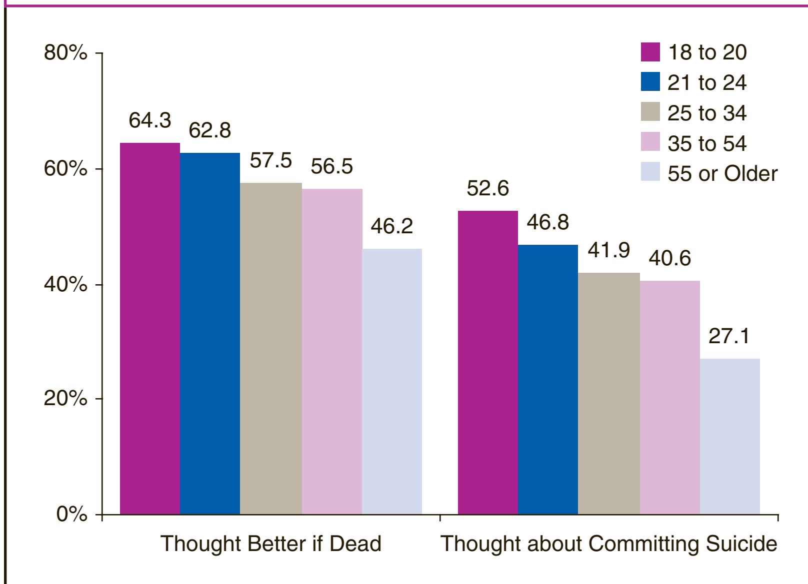
Prevalence of MDE. In 2004-2005, 14.5 percent of persons aged 18 or older (31.2 million adults) experienced at least one MDE in their lifetime, and 7.6 percent (16.4 million adults) experienced an MDE in the past year. Females

were almost twice as likely as males to have experienced a past year MDE (9.8 vs. 5.4 percent). Rates of past year MDE varied by age group, with adults aged 55 or older being less likely to have had a past year MDE than adults in all other age groups (Figure 1).

Suicidal Thoughts among Adults with MDE. Among adults aged 18 or older who experienced a past year MDE, 56.3 percent thought, during their worst or most recent MDE, that it would be better if they were dead, and 40.3 percent thought about committing suicide. There were some differences in suicidal thoughts by gender and age. Although males and females with past year MDE did not differ significantly in the percentage who thought that it would be better if they were dead, males were more likely than females to have thought about committing suicide (45.5 vs. 37.6 percent). Among adults with a past year MDE, those aged 55 or older were less likely than individuals in all other age groups to have thought that it would be better if they were dead and to have thought about committing suicide (Figure 2). There were no significant differences in the prevalence of suicidal thoughts by region or urbanicity.

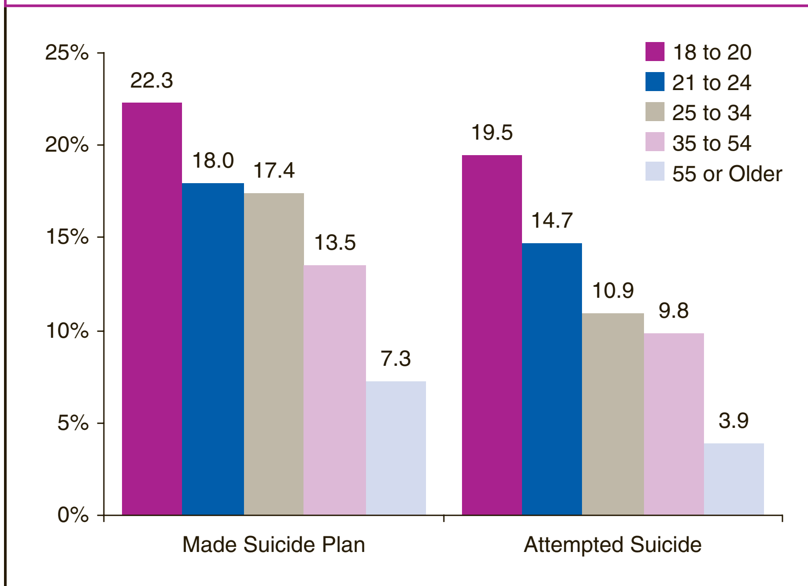
Suicide Plans and Attempts among Adults with MDE. Among persons aged 18 or older with a past year MDE, 14.5 percent made a suicide plan during their worst or most recent MDE. Also, 10.4 percent (1.7 million adults) made a suicide attempt during such an episode. There were no significant differences between males and females in attempting suicide, but males were more likely than females to have made a suicide plan (17.9 percent vs. 12.7 percent). There were also a few differences by age. Adults aged 55 or older with past year MDE were less likely than their counterparts in other age groups to have made a suicide plan (Figure 3). Adults aged 18

Figure 2. Percentages Reporting Suicidal Thoughts among Adults Aged 18 or Older with a Past Year Major Depressive Episode, by Age Group: 2004 and 2005 NSDUHs



Source: SAMHSA, 2004 and 2005 NSDUHs.

Figure 3. Percentages Reporting Suicide Plans and Attempts among Adults Aged 18 or Older with a Past Year Major Depressive Episode, by Age Group: 2004 and 2005 NSDUHs



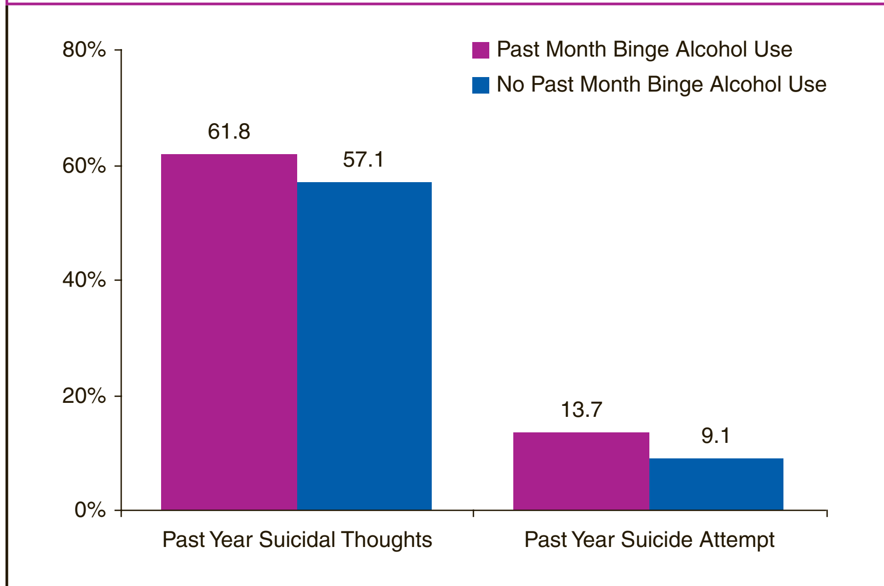
Source: SAMHSA, 2004 and 2005 NSDUHs.

to 20 were more likely than adults in all other age groups to have attempted suicide. Among adults aged 18 or older with past year MDE, there were no significant differences in suicide planning or attempts by region or urbanicity.

Past Month Substance Use, MDE, and Suicidal Thoughts and Behaviors. Adults aged 18 or older who reported binge alcohol use were more likely to report past year MDE than their counterparts who had not engaged in binge drinking (8.7 vs. 7.3 percent). In addition, adults with past year MDE and past month binge alcohol use were more likely to report past year suicidal thoughts and past year suicide attempts than those with MDE who did not binge drink (Figure 4).

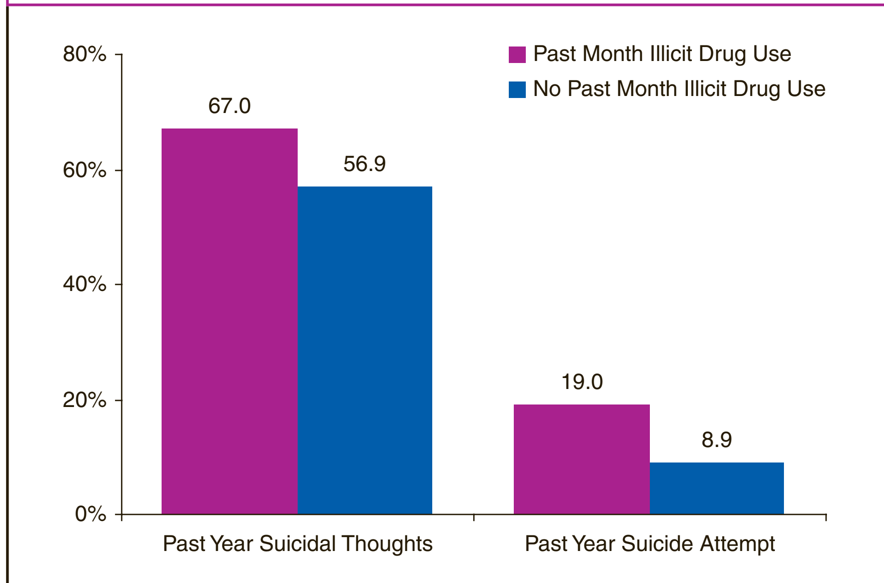
Similarly, adults aged 18 or older who reported having used illicit drugs during the past month were more likely to report past year MDE than adults who had not used illicit drugs during the past month (14.2 vs. 7.1 percent). Rates of past year suicidal thoughts and suicide attempts were also higher among adults with past year MDE who had used illicit drugs during the past month than adults with past year MDE who had not used illicit drugs (Figure 5).

Figure 4. Percentages Reporting Suicidal Thoughts and Suicide Attempts among Adults Aged 18 or Older with a Past Year Major Depressive Episode, by Past Month Binge Alcohol Use: 2004 and 2005 NSDUHs



Source: SAMHSA, 2004 and 2005 NSDUHs.

Figure 5. Percentages Reporting Suicidal Thoughts and Suicide Attempts among Adults Aged 18 or Older with a Past Year Major Depressive Episode, by Past Month Illicit Drug Use: 2004 and 2005 NSDUHs



Source: SAMHSA, 2004 and 2005 NSDUHs.

DAWN Methods and Findings

DAWN is a public health surveillance system that monitors drug-related ED visits in the United States. Data are collected from a nationally representative sample of short-stay, general, non-Federal hospitals that operate 24-hour EDs.[12] In DAWN, a drug-related ED visit is defined as any ED visit related to drug use. The drug must be implicated in the ED visit, either as the direct cause or as a contributing factor. For each drug-related ED visit, information is gathered from medical records about the number and types of drugs involved. These include illegal or illicit drugs, such as cocaine, heroin, and marijuana;[13] prescription drugs; over-the-counter medications; dietary supplements; inhalants; and alcohol.[14] DAWN differs from NSDUH in that it captures medical as well as nonmedical use of pharmaceuticals and includes pharmaceuticals sold over the counter as well as by prescription. DAWN also collects demographic information about the patients, their diagnoses, and their disposition (i.e., outcome) at the time of their discharge from the ED.

In this report, ED visits associated with drug-related suicide attempts[15] among persons aged 18 or older are examined. Although DAWN includes only those suicide attempts that involve drugs, these attempts are not limited to overdoses. Also included are suicide attempts made by other means (e.g., by firearm) when drugs are involved. National estimates of the number of ED visits involving drug-related suicide attempts in 2004 are presented, along with percentages of visits and visit rates per 100,000 population. The patients, types of drugs, and other characteristics of drug-related suicide attempts treated in EDs are described.[16]

Characteristics of Patients Involved in ED Visits for Drug-Related Suicide Attempts. In 2004, an estimated 106,079 ED visits were the result of drug-related suicide attempts by persons aged 18 or older. Females had a higher rate of these drug-related suicide attempts (57 visits per 100,000 population) than males (39 visits per 100,000 population) (Table 1). Comparing age groups, adults aged 18 to 34 had the highest rates of drug-related suicide attempts treated in the ED (from 75 to 90 visits per 100,000 population), while adults aged 55 or older had the lowest rate (10 visits per 100,000 population). Comparisons based on race and ethnicity are not possible because the racial/ethnic categories used by the Census Bureau are incompatible with the categories used by DAWN. Therefore, population data are not available to calculate rates.

A psychiatric condition was diagnosed in 41 percent (43,176) of the drug-related suicide attempts treated in the ED. The most frequent psychiatric diagnosis was depression, which was documented in 36 percent of the total visits (37,886 visits).

Table 1. Demographic Characteristics of Patients Aged 18 or Older Treated in Emergency Departments (EDs) for Drug-Related Suicide Attempts: National Estimates, 2004 DAWN

Demographic Characteristics	Population (in millions)	Estimated ED Visits	ED Visits per 100,000 Population
Gender+			
Male	144.5	41,430	39
Female	149.1	64,632	57
Age in Years++			
18-20	12.4	11,145	90
21-24	16.9	13,180	78
25-34	40.0	30,076	75
35-54	85.7	45,111	53
55 or Older	65.4	6,568	10

Source: SAMHSA, 2004 DAWN (September 2005 update).

Substances Involved in Drug-Related Suicide Attempts Treated in EDs. In 2004, an average of 2.3 drugs were implicated in suicide attempts by adults aged 18 or older that were treated in the ED. Over 33 percent (35,560 visits) involved only one drug, 51.3 percent involved two or three drugs, and 15.2 percent involved four or more drugs.

About one third of the drug-related suicide attempts treated in the ED involved alcohol (Table 2). Alcohol is always reported to DAWN if the patient was younger than age 21. If the patient was aged 21 or older, alcohol is reported only if it was used with another drug. Although it is an illegal substance for persons under age 21, alcohol was involved in approximately 25 percent (2,504 visits) of the suicide-related DAWN ED visits by patients aged 18 to 20 and frequently was combined with another drug (2,504 visits). The suicide-related DAWN ED visits involving patients aged 55 or older had the lowest rate of alcohol involvement, although it should be noted that DAWN only captured these visits for adults if alcohol was used with another drug.

Illicit drugs[13] were involved in an estimated 28.4 percent (30,109 visits) of the drug-related suicide attempts treated in the ED (Table 2). The most frequently reported illicit drug was cocaine (13,620 visits), followed by marijuana (8,490 visits).

Almost 59 percent (62,502) of the drug-related suicide attempts treated in the ED involved a psychotherapeutic drug. Among these, drugs used to treat anxiety and sleeplessness (anxiolytics, sedatives, and hypnotics) were involved in 38.8 percent (41,188) of the drug-related suicide attempts; most of the drugs reported in these visits were benzodiazepines. Antidepressants were involved in 22.0 percent (23,359) of the visits. It should be noted that it is not possible in the DAWN system to distinguish the patients who had been prescribed antidepressants to treat preexisting depression and other mental health problems from those who obtained antidepressants by other means.

Pain medications (analgesics) were involved in 36.0 percent (38,238) of the drug-related suicide attempts treated in the ED. Analgesics containing opiates were involved in an estimated 15,706 suicide attempts. They were followed in frequency by drugs containing acetaminophen (14,410 visits) and nonsteroidal anti-inflammatory agents (NSAIDs) (8,167 visits).

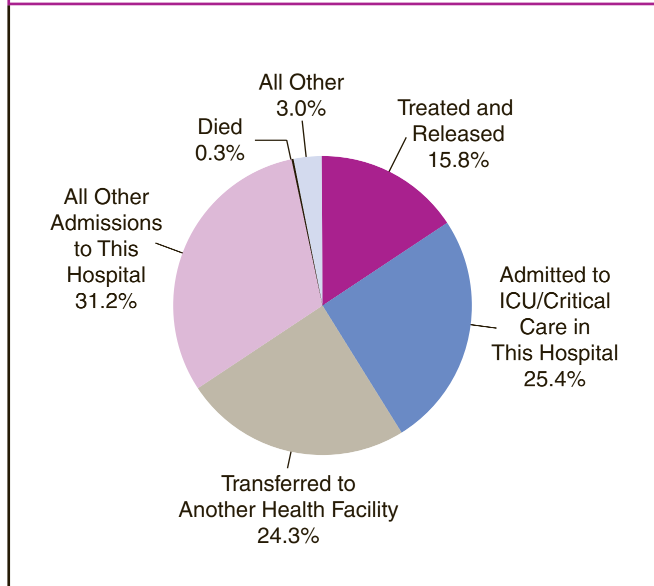
Table 2. Selected Drugs Involved in Emergency Department (ED) Visits for Drug-Related Suicide Attempts among Persons Aged 18 or Older: National Estimates, 2004 DAWN

Selected Drug Category/ Drug	Estimated ED Visits	Percentage of ED Visits
Alcohol	35,242	33.2
Illicit Drugs	30,109	28.4
Cocaine	13,620	12.8
Marijuana	8,490	8.0
Psychotherapeutic Medications	62,502	58.9
Antidepressants	23,359	22.0
Anxiolytics/sedatives/ hypnotics	41,188	38.8
Antipsychotics	11,968	11.3
Pain Medications	38,238	36.0
Opioids	15,706	14.8
Nonsteroidal anti-inflammatory agents (NSAIDs)	8,167	7.7
Acetaminophen/ combinations	14,410	13.6
Anticonvulsants	7,961	7.5
Cardiovascular Medications	5,859	5.5

Source: SAMHSA, 2004 DAWN (September 2005 update).

Outcomes from Drug-Related Suicide Attempts. The disposition of an ED visit provides information about the patient's outcome, as well as clues to the suicide attempt's severity (Figure 6). Of the estimated 106,079 drug-related suicide attempts treated in EDs, less than 1 percent ended in death in the ED. However, this estimate is based solely on ED records, which do not include patients who died before coming to the ED or after leaving the ED (e.g., after admission to the hospital). Patients in about 81 percent (85,789) of the visits received further treatment, either as inpatients at the same hospital (60,020) or by transfer to another health care facility (25,769). In an estimated 16 percent (16,811) of visits, the patients were released after treatment in the ED.

Figure 6. Disposition from ED Visits for Drug-Related Suicide Attempts among Adults Aged 18 and Older: National Estimates, 2004 DAWN



Source: SAMHSA, 2004 DAWN (September 2005 update).

End Notes

1 Centers for Disease Control and Prevention, National Center for Injury Prevention and Control [Producer]. (2006, January 30). *Web-based Injury Statistics Query and Reporting System (WISQARS): Leading causes of death reports, 1999-2003.* Retrieved June 19, 2006, from http://webappa.cdc.gov/sasweb/ncipc/leadcaus10.html

2 See p. 8 of Anderson, R. N., & Smith, B. L. (2005). Deaths: Leading causes for 2002. *National Vital Statistics Reports*, *53*(17), 1-89. [Available as a PDF at http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_17.pdf]

3 Moscicki, E. K. (2001). Epidemiology of completed and attempted suicide: Toward a framework for prevention. *Clinical Neuroscience Research*, *1*, 310-323.

4 Centers for Disease Control and Prevention, National Center for Injury Prevention and Control [Producer]. (2005, November 30). *Web-based Injury Statistics Query and Reporting System (WISQARS): Nonfatal injury reports.* Retrieved June 19, 2006, from http://webappa.cdc.gov/sasweb/ncipc/nfirates2001.html

5 Kessler, R. C., Borges, G., & Walters, E. E. (1999). Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry*, *56*, 617-626.

6 Petronis, K. R., Samuels, J. F., Moscicki, E. K., & Anthony, J. C. (1990). An epidemiologic investigation of potential risk factors for suicide attempts. *Social Psychiatry and Psychiatric Epidemiology*, *25*, 193-199.

7 American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

8 In assessing MDE, no exclusions were made for MDE caused by medical illness, bereavement, or substance use disorders.

9 Individuals who could not recall the period of time when their depression was the worst were asked to report about the most recent time period.

10 NSDUH measures the nonmedical use of prescription-type pain relievers, sedatives, stimulants, or tranquilizers. Nonmedical use is defined as the use of prescription-type drugs not prescribed for the respondent by a physician or used only for the experience or feeling they caused. Nonmedical use of any prescription-type pain reliever, sedative, stimulant, or tranquilizer does not include over-the-counter drugs.

11 Hasin, D. S., & Nunes, E. (1997). Comorbidity of alcohol, drug and psychiatric disorders: Epidemiology. In H. R. Kranzler & B. Rounsaville (eds.), *Dual diagnosis and treatment: Substance abuse and comorbid mental and psychiatric disorders* (pp. 1-31). New York: Marcel Dekker Inc.

12 Specialty hospitals, including children's hospitals, are not eligible for DAWN.

13 In DAWN, *illicit drugs* include the following: cocaine, heroin, marijuana, stimulants (amphetamines and methamphetamine), MDMD (3,4-methylenedioxymethamphetamine, or Ecstasy), GHB (gamma hydroxybutyrate), Flunitrazepam (Rohypnol), Ketamine, LSD (d-lysergic acid diethylamide), PCP (phencyclidine), miscellaneous hallucinogens, and inhalants.

14 For patients of all ages, alcohol is reported in the DAWN system if it was present in combination with other drugs. For patients under age 21, for whom alcohol use is illegal, alcohol also is reported if it was the only drug present.

15 In DAWN, a drug-related ED visit is classified as a suicide attempt if the ED medical record indicated that the patient tried to kill himself or herself, tried to end his or her life, or attempted suicide. Drug-related ED visits for which the medical record indicated that the patient had suicidal ideation, suicidal gestures, suicidal thoughts, or expressed that he or she wanted to hurt himself or herself but did not attempt suicide are not categorized as suicide attempts.

16 Because DAWN does not collect direct patient identifiers, it is not possible to identify patients who make return visits to the ED in a year. Therefore, DAWN generates annual estimates of drug-related ED visits, not estimates of patients who visit EDs.

Table Notes

\+ Estimated number of ED visits does not total to 106,079 due to missing data. Differences between males and females are significant at $p < .05$.

++ Estimated number of ED visits does not total to 106,079 due to rounding error. Differences between individuals 55 or older were significantly different from all other age groups at $p < .05$; differences between individuals aged 35 to 54 were significantly different from all younger age groups at $p < .05$.

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Suicidal Thoughts, Suicide Attempts, Major Depressive Episode, and Substance Use among Adults

- Among adults aged 18 or older who experienced a past year major depressive episode (MDE), 56.3 percent thought, during their worst or most recent episode, that it would be better if they were dead, 40.3 percent thought about committing suicide, 14.5 percent made a suicide plan, and 10.4 percent made a suicide attempt
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- In 2004, an estimated 106,079 emergency department (ED) visits were the result of drug-related suicide attempts by persons aged 18 or older
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The National Survey on Drug Use and Health (NSDUH) and the Drug Abuse Warning Network (DAWN) are two of the three major surveys conducted by the Substance Abuse and Mental Health Services Administration's Office of Applied Studies (SAMHSA/OAS). For information on these surveys, go to http://www.oas.samhsa.gov.

NSDUH is an annual survey sponsored by SAMHSA. Prior to 2002, this survey was called the National Household Survey on Drug Abuse (NHSDA). The 2004 data are based on information obtained from 45,453 persons aged 18 or older, of whom 22,825 were asked questions about experiences with depression. The 2005 data are based on information obtained from 45,774 persons aged 18 or older. The survey collects data by administering questionnaires to a representative sample of the population through face-to-face interviews at their place of residence. Information on NSDUH used in compiling data for this issue is available in the following publications:

Office of Applied Studies. (in press). *Results from the 2005 National Survey on Drug Use and Health: National findings* (DHHS Publication No. SMA 06-4194, NSDUH Series H-30). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Office of Applied Studies. (2005). *Results from the 2004 National Survey on Drug Use and Health: National findings* (DHHS Publication No. SMA 05-4062, NSDUH Series H-28). Rockville, MD: Substance Abuse and Mental Health Services Administration.

DAWN is a public health surveillance system that monitors drug-related morbidity and mortality. DAWN uses a probability sample of hospitals to produce estimates of drug-related emergency department (ED) visits for the United States and selected metropolitan areas annually. DAWN also produces annual profiles of drug-related deaths reviewed by medical examiners or coroners in selected metropolitan areas and States. Any ED visit or death related to recent drug use is included in DAWN. All types of drugs—licit and illicit—are covered. Alcohol is included for adults when it occurs with another drug. Alcohol is always included for minors. DAWN's method of classifying drugs was derived from the Multum Lexicon, Copyright © 2005, Multum Information Services, Inc. The Multum Licensing Agreement can be found in DAWN annual publications and at http://www.multum.com/license.htm.

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