

Patterns of Club Drug Use in the U.S., 2004

ECSTASY • GHB • KETAMINE • LSD
METHAMPHETAMINE • ROHYPNOL

by

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The Center for Excellence in Drug Epidemiology
The Gulf Coast Addiction Technology Transfer Center
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Club drugs such as MDMA, MDA, GHB, ketamine, LSD, methamphetamine, and Rohypnol were initially characterized as substances used at raves and dance parties. Often there was little recognition that each of these drugs has very different pharmacological, psychological, and physiological properties. As more data have become available, it has become clearer that there are important differences in the characteristics of people who use each of these drugs and the patterns of their use. Prevention and treatment efforts need to take these differences into account. For information on the properties of these drugs, including summaries of the research on their adverse effects and their toxicological properties, see J. C. Maxwell, Response to Club Drug Use. Current Opinion in Psychiatry May 2003, 16, 279–289.

Data Sources

The Community Epidemiology Work Group (CEWG) is sponsored by the National Institute on Drug Abuse (NIDA). It is a group of 21 researchers from across the nation who meet twice a year to report on drug abuse patterns and trends and emerging problems in their local areas. Members use quantitative statistics and qualitative techniques such as focus groups and key informant interviews to monitor drug trends. The information in this paper is taken from the author's notes from the June and December, 2003 CEWG meetings. The full reports of the CEWG can be accessed at www.nida.nih.gov/about/organization/cewg/Reports.html.

The Monitoring the Future Survey (MTF) is conducted by the University of Michigan's Institute for Social Research and is funded by NIDA. It tracks illicit drug use and attitudes towards drugs by eighth, tenth, and twelfth graders as well as college students and young adults. The results of the 2003 survey of secondary school students are included, but the results of the 2003 survey of college students and young adults had not been released at the time this paper was published. The MTF reports can be accessed at www.monitoringthefuture.org.

The National Survey on Drug Use and Health (NSDUH), formerly called the National Household

Survey on Drug Abuse (NHSDA), is conducted by the Office of Applied Studies of the Substance Abuse and Mental Health Services Administration (SAMHSA). It collects information on the prevalence, patterns, and consequences of alcohol, tobacco, and illegal drug use and abuse in the general U.S. civilian non-institutionalized population, ages 12 and older. The survey reports can be found at www.samhsa.gov/oas/nhsda.htm.

The Drug Abuse Warning Network (DAWN) collects data on drug-related visits to a sample of the Nation's emergency departments (EDs). Visits can include drug abuse and misuse, adverse reactions, accidental ingestion, overmedication, malicious poisoning, suicide attempts, underage drinking, and patients seeking detoxification or drug abuse treatment. DAWN is conducted by the Office of Applied Studies of the SAMHSA. The reports are available at <http://dawninfo.samhsa.gov>.

The National Forensic Laboratory Information System (NFLIS), sponsored by the Drug Enforcement Administration (DEA), is a program that systematically collects results from toxicological analyses conducted by state and local forensic laboratories on substances seized in law enforcement operations. The NFLIS reports are online at www.deadiversion.usdoj.gov/nflis.

ECSTASY (MDMA)

MDMA (3-4 methylenedioxy-methamphetamine) (also called Adam, E, X, eccie) is a synthetic, psychoactive drug with both stimulant and hallucinogenic properties similar to methamphetamine and mescaline. It has been a Schedule I drug since 1985. A similar compound, 3, 4-methylenedioxyamphetamine (MDA), is also classified as a Schedule I drug.

The effects and pharmacological actions of 3, 4-methylenedioxyethamphetamine (MDEA, Eve) are reported to be similar, but not identical to MDMA. Other drugs which appear in the ecstasy scene include p-methoxyamphetamine (paramethoxyamphetamine) (PMA), a drug packaged as ecstasy and which is mistakenly assumed to be a by-product in the synthesis of MDMA. PMA shares the stimulant and hallucinogenic effects of MDMA as well as its risk of hyperthermia, and fatalities related to the use of PMA have been reported. Another new derivative of amphetamine, 4-MTA (p-methylthioamphetamine), has been associated with deaths since it was first identified in Europe in 1997. Sold as “ecstasy” or “Flatliners,” the drug is a potent serotonin releaser.

Many surveys and studies such as MTF, NSDUH, and DAWN query about use of “MDMA” when the term “ecstasy” would be more appropriate, since users hope they are consuming MDMA but do not actually know what is in the pill unless a toxicological test has been run. In this paper, the term “ecstasy” will be used except in discussing the NFLIS data, which reflect the results of the chemical analysis.

MDA was reported as early as the June, 1980 meeting of the CEWG and MDMA was first reported at the December, 1985 meeting. At the June and December, 2003 CEWG meetings, it was reported that in Atlanta, ecstasy use was no longer seen as a club drug, but is now being used by low income polydrug users and use has also spread to the African American community. Methamphetamine and ecstasy were being used in combination because the effects of ecstasy alone were “not enough,” and ecstasy was being bought in larger quantities, with some users reported to be developing tolerance to the drug. “Trolling,” which is using ecstasy and LSD together, was also reported. In Baltimore, ecstasy was more prevalent in the central city and the increase was said to be due to the Hip-Hop culture and

rap songs about ecstasy. In Chicago, ecstasy use was reported as down and the price was stable; however, it was spreading to new groups of Anglo suburban youth. In Detroit, ecstasy use was stable, particularly outside Detroit, where it is known as a “Prom” drug. In Miami, ecstasy use was reported as “passé” but that when it was used, it was used in combination with other drugs, including Viagra, primarily in the gay “Party and Play” club scene. This same Party and Play phenomenon was reported in San Francisco, where ecstasy use was reported down.

In Minneapolis-St. Paul, ecstasy use was reported as level, and it was used in combination with ketamine and methamphetamine. Ecstasy and ketamine are often sold together in Philadelphia. In St. Louis, ecstasy was available in clubs and around colleges and there were reports of gay males using Viagra and ecstasy (“Party Packs”). In New York City, ecstasy use was reported up, especially among Hispanics and African Americans. Use was reported as stable in Boston. In San Diego, use of ecstasy was reported as declining, and Mexican methamphetamine was being pressed into pills that look like ecstasy. In Seattle, use was higher among young males having sex with males, and there were reports of depression among users. In Los Angeles, ecstasy use was reported as down. In Texas, the number of treatment admissions with a problem with ecstasy had increased from 63 in 1998 to 521 in 2002, and the proportion of Anglo clients was decreasing, while African American and Hispanic admissions were increasing—a further indication that ecstasy has spread beyond the Anglo club culture.

After a period of rapid increase in use, the national surveys, DAWN, and NFLIS all document that ecstasy use is now decreasing. At the same time, use is spreading from “raves” and dance parties into other venues and neighborhoods. Ecstasy users are among the youngest club drug users, and the proportions who are Anglo or are male have decreased. Users of ecstasy also tend to use alcohol, marijuana, and cocaine, and they often seek help in hospital emergency departments for unexpected reactions or overdose.

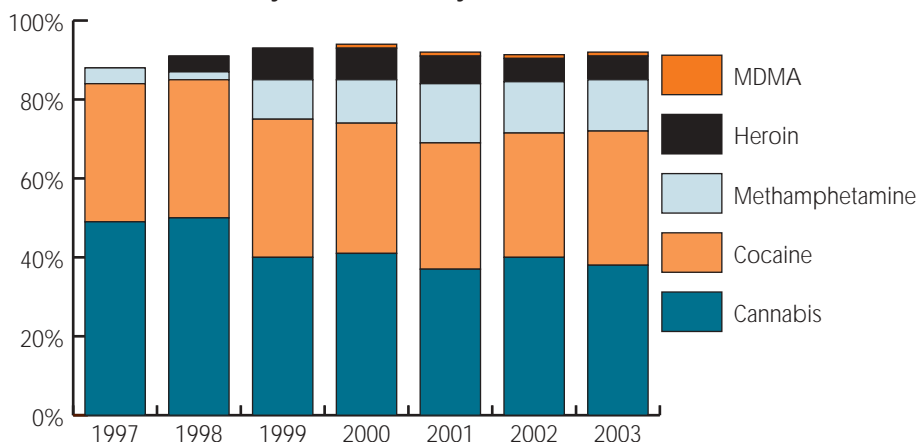
Ecstasy is not a major drug of abuse, based on law enforcement seizures. NFLIS reported that in the first half of 2003, 0.66% of all items identified were MDMA, as compared to 37% that were cannabis/THC and 32% that were cocaine (Exhibit 1). The proportion of items that were MDMA has dropped from a high of 1.17% of all items in 2001 (Exhibit 2). Of the 4,296 “club drug” items that were identified in 2003, 3,310 (77%) were MDMA, 374 (9%) were MDA, 16 (0.4%) were MDEA, and 1 (0.02%) was PMA.

The MTF survey reported that lifetime, past year, and past month use of ecstasy peaked for eighth, tenth, and twelfth graders in 2001 and has declined since. For all three grades, the declines between 2002 and 2003 in both annual prevalence and 30-day prevalence were statistically significant (Exhibit 3). The decline in prevalence of use appears related to perceptions of risk and availability (Exhibit 4). In 2000, only 38% of twelfth graders said there was a great risk of harm associated with trying ecstasy; that increased to 56% in 2003. And the perceived availability of ecstasy as reported by the students decreased from a high of 62% in 2001 to 58% in 2003, while the disapproval of people who tried ecstasy once or twice increased from 81% in 2001 to 85% in 2003.

The MTF survey also reported that for college students, lifetime, past year, and past month use peaked in 2001 and declined in 2002. For young adults ages 19–40, lifetime use increased in 2002, but past year and past month use decreased; none of the changes for college students or young adults were significant.

The NSDUH survey in 2002 reported that 4.3% of the U.S. population ages 12 and over had ever used ecstasy, 1.3% had used in the past year, and 0.3% had used in the past month. Some 2.2% of those ages 12–17 had used ecstasy in the past year, as compared to 5.8% of those 18–25 and 0.5% of those 26 and older. Initiation of ecstasy use began rising in 1993, when there were 168,000 new users. There were 1.9 million new users in 2000, but the number decreased to 1.8 million new users in 2001 (Exhibit 5).

Exhibit 1. Substances Identified by Laboratories Participating in the National Forensic Laboratory Identification System: 1997-Jun. 2003



The number of mentions of ecstasy in emergency rooms monitored by DAWN increased from 253 in 1994 to 5,542 in 2001 and then dropped back to 4,026 in 2002, a non-significant change. Exhibit 6 shows the rates of ecstasy mentions per 100,000 population. Emergency department patients mentioning use of ecstasy were younger than users of all other club drugs except LSD (Exhibit 7). Fifty percent of the patients mentioning ecstasy in 2002 were male, as compared to 62% in 1999. The race/ethnic distribution has changed. In 1999, 74% were Anglo, as compared to 64% in 2002. In 2002, 12% were African American and 9% were Hispanic; race/ethnicity was not reported for 15% of patients.

Exhibit 8 shows that 72% used ecstasy in combination with other drugs, which included alcohol (40%), marijuana (39%), or cocaine (20%). The motive for using ecstasy was psychic effects (56%) or dependence (21%) (Exhibit 9), and the reasons given for seeking emergency room services were unexpected reaction (39%) or overdose (30%) (Exhibit 10).

GHB, GBL, and 1,4-BD

Gamma hydroxybutyrate (sodium hydroxybutyrate, sodium oxybutyrate, GHB), a naturally occurring fatty acid found in mammals, is a central nervous system depressant which has intoxicating effects, and at sufficiently high doses, anesthetic properties. In 1990, after reports of adverse events, the Food and Drug Administration (FDA) ordered the removal of GHB from the market. GHB produces anterograde amnesia and may cause victims to lose consciousness and be unable to resist or recall sexual assault. Because of its use to

GHB use is decreasing, based on data from forensic labs and hospital emergency rooms. GHB users are older, Anglo, and male. They are the most likely of all club drug users to use other drugs at the same time, especially alcohol. GHB was taken for its psychic effects, and the primary reason for entering the hospital emergency department was an overdose.

commit assault and its use as a club drug, it is now a Schedule I drug.

GHB is known on the street by terms such as Fantasy, liquid ecstasy, liquid X, Grievous Bodily Harm, scoop, cherry meth, soap, salty water, organic quaalude, G, Growth Hormone Booster, Somatomax PM, Gamma OH, and Georgia Home Boy. It is available as a powder or a liquid.

One of its precursors, gamma butyrolactone (GBL), is converted to GHB when ingested. GBL is used as an industrial solvent and has been marketed as a dietary supplement and cleaner for computer parts such as ink jet printers or VCRs. Various brand names include Fire Water, Revivart, Revivart G, RenewTrient, GH Revitalizer, Verve, GH Release, Gamma-G, InvigorateX-Depress, Furomax, Insom-X, and Blue Nitro. GBL is a List I chemical in the U.S. and requires documentation and justification of all purchases and sales. If intended for human consumption, GBL and related substances are regarded as controlled-substance analogues.

Another precursor is 1,4 butanediol (1,4-BD), which is a Class I health hazard and is an industrial solvent sold to abusers under names such as (Revital)ize Plus, Serenity, Enliven, GHRE, Somato-Pro, NRG3, Weight Belt Cleaner, Thunder Nectar, Pine Needle Extract, and Pine Needle Oil. It is metabolized in the body to GBL, which is then metabolized to GHB.

Illegal GHB and its precursors, GBL and 1,4-BD, can be obtained over the Internet and sometimes are marketed as solvents or as dietary supplements in health food stores, gyms, raves,

and nightclubs. Chemistry kits, reagents, and recipes are available on the web to convert the precursors into GHB, and GHB itself can be ordered from websites in some other countries.

GHB was first reported at a CEWG meeting in December, 1990. At the June and December, 2003 CEWG meetings, reports of use of GHB varied across the nation. In Atlanta, it was prevalent in the gay scene. In Chicago, levels of use of GHB were low and it tended to be used by young heroin inhalers. In Miami, Minneapolis-St. Paul, Detroit, and San Francisco, use was reported as down. In Los Angeles, typical users were older Anglo males. Use in Texas was centered in the Dallas-Fort Worth metroplex area.

NFLIS reported that in 2002, there were 549 items identified as being GHB or GBL (4% of all club drugs identified). The number of GHB exhibits has been dropping since 2000 (Exhibit 2).

The MTF survey showed that between 2000 and 2003, use for eighth and twelfth graders decreased while use by tenth graders remained level. Past year use in 2002 by college students and by young adults was as low or lower than for secondary school students (Exhibit 3). The NSDUH did not survey for use of GHB.

DAWN emergency room mentions of GHB, GBL or 1,4-BD increased from 56 in 1994 to a high of 4,969 in 2000, and then declined to 3,330 in 2002. Exhibit 6 shows this change based on the number of mentions per 100,000 population. Patients mentioning GHB were older than all other club drug users except methamphetamine patients (Exhibit 7). Some 66% were male, 92% were Anglo, and 1% were Black; race/ethnicity was not reported for 7% (Exhibit 8). This same demographic pattern was seen in 1999.

Exhibit 2. Percent of Club Drug Items Identified by NFLIS Labs: 1997-First Half 2003

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|-----------------|-------|-------|-------|-------|--------|--------|--------|
| MDMA | 0.03% | 0.13% | 0.36% | 0.73% | 1.17% | 1.02% | 0.66% |
| GHB | 0.00% | 0.03% | 0.06% | 0.09% | 0.04% | 0.06% | 0.04% |
| Ketamine | 0.00% | 0.01% | 0.06% | 0.11% | 0.15% | 0.16% | 0.07% |
| LSD | 0.27% | 0.56% | 0.43% | 0.22% | 0.14% | 0.02% | 0.03% |
| Methamphetamine | 3.58% | 2.03% | 7.60% | 9.84% | 10.50% | 11.79% | 11.82% |
| Rohypnol | 0.03% | 0.05% | 0.02% | 0.01% | 0.01% | 0.01% | 0.00% |

Exhibit 3. Past-Year Prevalence of Club Drugs from the Monitoring the Future Surveys: 1991-2003

| Past Year Use of MDMA (Ecstasy) | | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|---------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 8th grade | | | | | | 2.3 | 2.3 | 1.8 | 1.7 | 3.1 | 3.5 | 2.9 | 2.1 * |
| 10th grade | | | | | | 4.6 | 3.9 | 3.3 | 4.4 | 5.4 | 6.2 | 4.9 | 3.0 *** |
| 12th grade | | | | | | 4.6 | 4.0 | 3.6 | 5.6 | 8.2 | 9.2 | 7.4 | 4.5 *** |
| College students | 0.9 | 2.0 | 0.8 | 0.5 | 2.4 | 2.8 | 2.4 | 3.9 | 5.5 | 9.1 | 9.2 | 6.8 | ... |
| Young adults | 0.8 | 1.0 | 0.8 | 0.7 | 1.6 | 1.7 | 2.1 | 2.9 | 3.6 | 7.2 | 7.5 | 6.2 | ... |
| Past Year Use of GHB | | | | | | | | | | | | | |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 8th grade | | | | | | | | | | 1.2 | 1.1 | 0.8 | 0.9 |
| 10th grade | | | | | | | | | | 1.1 | 1.0 | 1.4 | 1.4 |
| 12th grade | | | | | | | | | | 1.9 | 1.6 | 1.5 | 1.4 |
| College students | | | | | | | | | | | | 0.6 | ... |
| Young adults | | | | | | | | | | | | 0.8 | ... |
| Past Year Use of Ketamine | | | | | | | | | | | | | |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 8th grade | | | | | | | | | | 1.6 | 1.3 | 1.3 | 1.1 |
| 10th grade | | | | | | | | | | 2.1 | 2.1 | 2.2 | 1.9 |
| 12th grade | | | | | | | | | | 2.5 | 2.5 | 2.6 | 2.1 |
| College students | | | | | | | | | | | | 1.3 | ... |
| Young adults | | | | | | | | | | | | 1.2 | ... |
| Past Year Use of LSD | | | | | | | | | | | | | |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 8th grade | 1.7 | 2.1 | 2.3 | 2.4 | 3.2 | 3.5 | 3.2 | 2.8 | 2.4 | 2.4 | 2.2 | 1.5 | 1.3 |
| 10th grade | 3.7 | 4.0 | 4.2 | 5.2 | 6.5 | 6.9 | 6.7 | 5.9 | 6.0 | 5.1 | 4.1 | 2.6 | 1.7 ** |
| 12th grade | 5.2 | 5.6 | 6.8 | 6.9 | 8.4 | 8.8 | 8.4 | 7.6 | 8.1 | 6.6 | 6.6 | 3.5 | 1.9 *** |
| College students | 5.1 | 5.7 | 5.1 | 5.2 | 6.9 | 5.2 | 5.0 | 4.4 | 5.4 | 4.3 | 4.0 | 2.1 | ... ** |
| Young adults | 3.8 | 4.3 | 3.8 | 4.0 | 4.6 | 4.5 | 4.4 | 3.5 | 4.0 | 3.7 | 3.4 | 1.8 | ... *** |
| Past Year Use of Methamphetamine | | | | | | | | | | | | | |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 8th grade | | | | | | | | | 3.2 | 2.5 | 2.8 | 2.2 | 2.5 |
| 10th grade | | | | | | | | | 4.6 | 4.0 | 3.7 | 3.9 | 3.3 |
| 12th grade | | | | | | | | | 4.7 | 4.3 | 3.9 | 3.6 | 3.2 |
| College students | | | | | | | | | 3.3 | 1.6 | 2.4 | 1.2 | ... |
| Young adults | | | | | | | | | 2.8 | 2.5 | 2.8 | 2.5 | ... |
| Past Year Use of Ice | | | | | | | | | | | | | |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 12th grade | 1.4 | 1.3 | 1.7 | 1.8 | 2.4 | 2.8 | 2.3 | 3.0 | 1.9 | 2.2 | 2.5 | 3.0 | 2.0 ** |
| College students | 0.1 | 0.2 | 0.7 | 0.8 | 1.1 | 0.3 | 0.8 | 1.0 | 0.5 | 0.5 | 0.6 | 0.8 | ... |
| Young adults | 0.3 | 0.4 | 0.8 | 0.9 | 1.2 | 0.9 | 0.9 | 1.1 | 0.9 | 1.2 | 1.1 | 1.4 | ... |
| Past Year Use of Rohypnol | | | | | | | | | | | | | |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
| 8th grade | | | | | | 1.0 | 0.8 | 0.8 | 0.5 | 0.5 | 0.7 | 0.3 | 0.5 |
| 10th grade | | | | | | 1.1 | 1.3 | 1.2 | 1.0 | 0.8 | 1.0 | 0.7 | 0.6 |
| 12th grade | | | | | | 1.1 | 1.2 | 1.4 | 1.0 | 0.8 | 0.9 | 1.6 | 1.3 |
| College students | | | | | | | | | | | | | ... |
| Young adults | | | | | | | | | | | | | ... |

Levels of significance of difference between the two most recent classes: * = .05, ** = .01, *** = .001.
 ... indicates data are not available

Eighty-four percent mentioned using other drugs with GHB, including alcohol (64%), cocaine (15%), or marijuana (14%). GHB users were far more likely than other club drug users to report drinking alcohol at the same time (Exhibit 9). GHB and alcohol have a synergistic effect that can produce serious side effects, including unconsciousness. Of the known motives for using GHB, 80% reported psychic effects, and the reason for emergency room contact was overdose (61%) or unexpected reaction (36%) (Exhibit 10).

Ketamine

Ketamine, a derivative of phencyclidine hydrochloride, is an anesthetic that has been approved for human and animal use, both in trauma and emergency surgery as well as in veterinary medicine. Ketamine on the street is also known as Special K, Vitamin K, K, kit-kat, keets, super acid, super k, and jet.

Ketamine users try to achieve or “fall into” a “K-Hole,” which is described as physical immobilization and social detachment lasting up to an hour. It is characterized by a distorted sense of space, such as a small room appearing the size of a football field, and an indistinct awareness of time, such as a few minutes seeming like an hour. The K-Hole ends rather abruptly but can be quickly reentered following another dose of ketamine.

Ketamine is a Schedule III controlled substance and is available in powder, tablet, and injectable forms. It is difficult to manufacture, and most abusers acquire it through diversion of the prescription product or theft from veterinary supplies. Recreational users usually administer ketamine intranasally, although it is also injected.

Abuse of ketamine was first reported at a CEWG meeting in December, 1991. At the June and December, 2003 CEWG meetings, ketamine use was reported as higher and demand was greater than availability in Detroit; use was down in Boston, Los Angeles, Newark, and San Francisco. In Texas, there were eight calls in 1998 to poison control centers about misuse or abuse of ketamine, and there

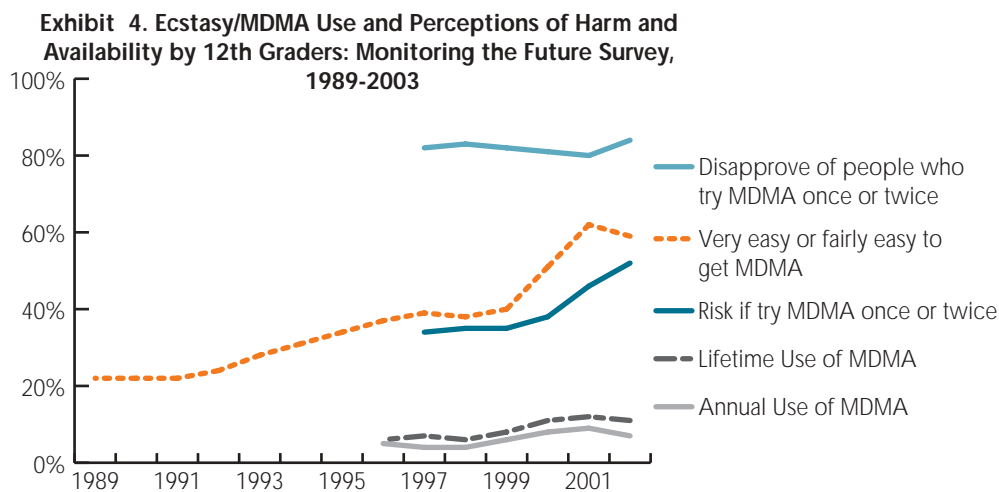
Levels of ketamine use have historically been low, and current data trends are mixed. Ketamine users were older than LSD and ecstasy users and they tended to be male. They used multiple drugs and in addition to marijuana, alcohol, and ecstasy, they were likely to use “harder” drugs such as heroin and cocaine. Ketamine was taken for its psychic effects, and users entered hospital emergency departments because of overdose or unexpected reactions.

were 12 calls in the first half of 2003. Nine clients with problems with ketamine entered public treatment programs in Texas in the first half of 2003.

NFLIS reported that while ketamine was a very small proportion of all drugs analyzed, the proportion of seizures increased through 2002 (Exhibit 2). In 1999, there were 224 ketamine items (0.05%), as compared to 1471 in 2002 (0.16%). Ketamine comprised 9% of all the club drugs analyzed in the first half of 2003.

The MTF survey reported past year use of ketamine peaked in 2000 for secondary students. The decreases between 2002 and 2003 were not statistically significant. Use of ketamine by college students and young adults was as low or lower than prevalence rates for secondary students (Exhibit 3). The NSDUH survey did not ask about ketamine.

The number of mentions of ketamine in the DAWN emergency room system increased from 19 in 1994 to



679 in 2001, but dropped to 260 in 2002. Exhibit 6 shows the rate per 100,000 population. Ketamine users were older than LSD or ecstasy users but younger than users of GHB or methamphetamine (Exhibit 7). In 2002, 77% of the patients were male; 67% were Anglo, 8% Hispanic, and race/ethnicity was not reported for 26% (Exhibit 8).

Eighty percent of patients mentioning ketamine in 2002 also mentioned concurrent use of other drugs: alcohol (29%), heroin (24%), marijuana (19%), cocaine (13%), or ecstasy (12%). Ketamine users were more likely than any other club drug users to report concurrent use of heroin (Exhibit 9). The primary motive for using ketamine was psychic effects (68%), and the known reasons for seeking help in the emergency departments included overdose (47%) and unexpected reaction (28%) (Exhibit 10).

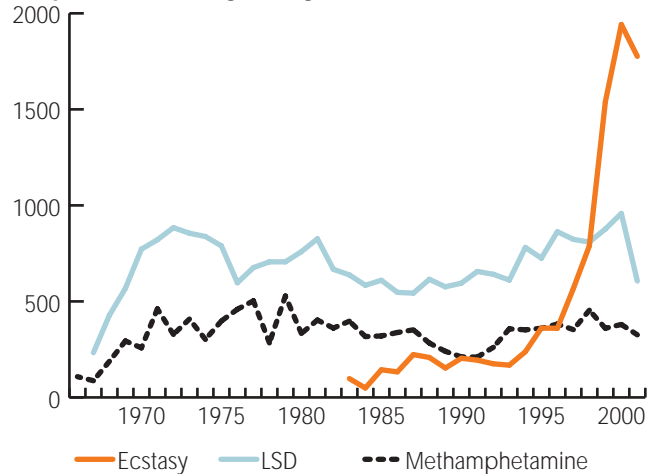
LSD

LSD (lysergic acid diethylamide) is one of the major drugs in the hallucinogen class. It was discovered in 1938 and is one of the most potent mood-changing chemicals. It is manufactured from lysergic acid, which is found in ergot, a fungus that grows on rye and other grains. It is odorless, colorless, and is sold in tablet, capsule, and liquid forms as well as on pieces of blotter paper that have absorbed the drug.

Typically, an LSD user feels the effects of the drug 30 to 90 minutes after taking it. The physical effects include dilated pupils, higher body temperature, in-

The number of new users of LSD rose to the highest level ever in 2000, before dropping in 2001, according to the NSDUH survey. The decrease is also seen in the MTF survey, the NFLIS data, and DAWN mentions. LSD users are the youngest of all the club drug users, and they are Anglo and the most likely to be male. They tend to use alcohol and marijuana with their club drug, and they also use cocaine, heroin, and ecstasy. LSD was taken for its psychic effects or because of dependence, and LSD users entered hospital emergency departments because of unexpected reactions.

Exhibit 5. Numbers (in Thousands) of Persons Who First Used a Specific Club Drug During the Years 1966-2001: 2002 NSDUH



creased heart rate and blood pressure, sweating, loss of appetite, sleeplessness, dry mouth, and tremors.

At the June and December, 2003 CEWG meetings, LSD indicators were reported as declining sharply in most CEWG areas. The drug has been mentioned less and less in ethnographic reports in Atlanta, while in Texas, the number of calls to Poison Control Centers concerning abuse or misuse of LSD dropped from 82 in 2000 to nine in 2002.

NFLIS showed that while LSD is a very small proportion of all drugs analyzed, the proportion of seizures peaked in 1998 at 0.56% and then dropped to 0.03% in 2003 (Exhibit 2).

The MTF survey reported that rates of past year use of LSD by secondary students peaked in 1996 and has dropped since then; the decrease between 2002 and 2003 for tenth and twelfth graders was statistically significant. Use by college students and young adults peaked in 1995 and the decreases between 2001 and 2002 for these groups were significant (Exhibit 3).

The NSDUH survey in 2002 reported that 10.4% of the U.S. population ages 12 and over had ever used LSD, 0.4% had used in the past year, and 0.0% had used in the past month. Some 1.3% of those ages 12–17 had used LSD in the past year, as compared to 1.8% of those 18–25 and 0.1% of those 26 and older. LSD incidence had been remarkably steady over the years, but rose to 958,000 new users in 2000 and then dropped to 606,000 new users in 2001 (Exhibit 5).

The number of mentions of LSD in the DAWN emergency room system decreased from 5,158 in 1994 to 891 in 2002. Exhibit 6 shows the rate per 100,000 population. LSD users were the youngest of the patients mentioning club drugs in emergency departments (Exhibit 7). In 2002, they were the most likely of all club drug users to be male and 75% were Anglo; race/ethnicity was not reported for 7% (Exhibit 8). In 1999, the proportion of males was lower (75%), they were more likely to be Anglo (80%), and they were even younger (38% were ages 12–17 and 40% were ages 18–25).

Seventy-seven percent of patients mentioning LSD in 2002 also mentioned concurrent use of other drugs: alcohol (45%), marijuana (43%), cocaine (20%), heroin (15%) or ecstasy (14%). LSD patients were the only other club drug users to report that more than 5% had used heroin concurrently with their club drug (Exhibit 9). The motives for using LSD included psychic effects (47%) and dependence (40%), and the known reasons for seeking help in the emergency departments included unexpected reaction (52%), overdose (22%), and seeking detoxification (18%) (Exhibit 10).

Methamphetamine

Methamphetamine has different forms and different names. “Speed” is often powdered and ranges in color from white to yellow, orange, brown, or pink. It is usually of relatively low purity. “Pills” can be pharmaceutical grade amphetamines such as Adderall, Ritalin, or Phenteramine, or the pills can be methamphetamine powder that has been pressed into tablets that are sold as amphetamines or ecstasy. “Ice,” also known as “shard,” “shabu,” “tweak,” “crystal,” or “crystal meth,” is methamphetamine that has been “washed” in a solvent such as denatured alcohol to remove impurities. Evaporation of the solvent yields crystals that resemble glass shards or ice shavings. It is usually smoked and has longer-lasting physical effects and purity levels above 80%, although low quality methamphetamine may also be marketed as Ice.

During the June and December, 2003 meetings, CEWG members reported that in Hawaii, use of Ice was increasing. There were more deaths due to methamphetamines than due to alcohol in 2002. The suicide rate involving methamphetamine was high, and treatment admissions were increasing. In San Diego,

Unlike the other club drugs, methamphetamine use is one of the largest drug problems in the U.S. Methamphetamine has spread from the Western states eastward. The surveys document use is holding steady, while use of Ice is increasing. Methamphetamine (including Ice) is used in the urban party scene and also in rural areas. Methamphetamine mentions in DAWN are increasing. These patients are the oldest of the club drug users, and they are the least likely to use multiple drugs. The primary motive for use is dependence on the drug, and an overdose or unexpected reaction is the main reason for an emergency room visit.

methamphetamine use was increasing, with most of the drug coming from Mexico. Ice was also prevalent in San Diego. In Los Angeles, the numbers of methamphetamine treatment admissions and arrestees testing positive for methamphetamine were increasing, purity was stable, and price was increasing. In San Francisco, emergency room mentions and treatment admissions were increasing. Use was widespread, with increased dealing and usage, especially among “Fast Lane” gay and bisexual males. In Seattle, treatment admissions were level and emergency room admissions were down from earlier years. While the number of laboratories seized in Washington State was down, there were still many small “Mom and Pop” operations.

In Phoenix, Ice was a problem and the quality was high, with most of the drug coming from “Superlabs” in California or Mexico. The price was up due to the demand for Ice. In Colorado, methamphetamine was the “big story,” with indicators such as poison control center calls, overdose deaths, and hospital discharges increasing. It was a major problem in the rural areas. The proportions of Hispanic treatment admissions and admissions over age 35 were increasing and crack cocaine users were reported to be switching to methamphetamine. Most new users were smoking, rather than injecting the drug. In Texas, treatment admissions had increased, overdose deaths were up, and seizures were increasing. Methamphetamine and amphetamines were greater problems in the northern half of the state, as

documented by the Texas NFLIS data. Methamphetamine was both imported from Mexico and also cooked in small laboratories in the more rural areas of the state. Ice was a growing problem in the state, with more treatment admissions for smoking than inhaling.

In Minneapolis and St. Paul, methamphetamine use was increasing, especially in the rural areas. In Missouri, methamphetamine was the primary illicit drug of abuse in rural areas, and treatment admissions were increasing. Use was increasing among African American users in Kansas City.

In Michigan, laboratory seizures were increasing, smoking was the primary route of administration, and treatment admissions were increasing for both methamphetamines and prescription amphetamines. In Chicago, use had remained low but was more prevalent in the downstate rural counties. "Tweak," which has a crystal-like appearance, was seen in Chicago clubs and it was more commonly smoked than injected.

In Atlanta, methamphetamine use was up, with more local laboratories seized. Mexican methamphetamine was also available.

Use among African Americans was increasing, as well as use among teenagers. Among rural users, some 60% were female and smoking was the most popular route of administration. Ice and "Shards" were the choices. In Miami, "Tina" was popular in the gay bathhouse scene, and methamphetamine abuse was described an emerging drug epidemic. In New York City, there had been a slight increase in availability of methamphetamine, and some crystal meth was being sold. Recent seizures of laboratories in rural areas in New York indicated the continuing spread of methamphetamine eastward. And in Boston, methamphetamine use was emerging in the club drug scene.

Methamphetamine has been among the top three or four drugs identified by NFLIS each year (Exhibit 1), and the proportion has risen from 3.6% in 1997 to 11.8% in the first half of 2003 (Exhibit 2). NFLIS shows the dominance of methamphetamine in the

Exhibit 6. Emergency Room Mentions of Selected Club Drugs per 100,000 Population for the Coterminous US: 1994-2002

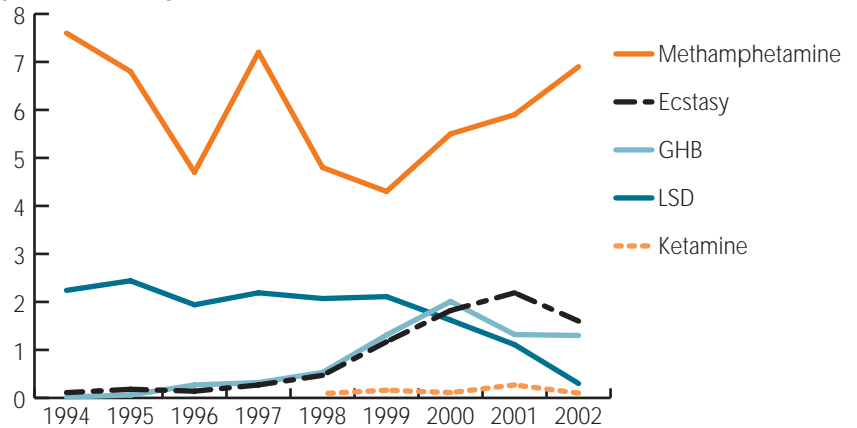
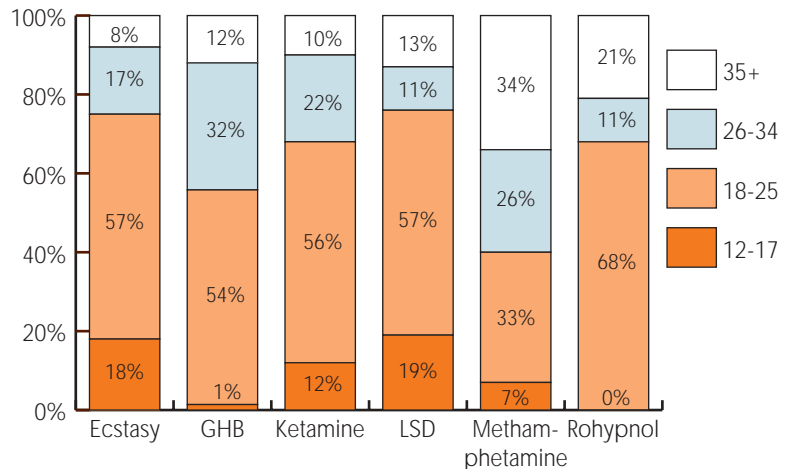


Exhibit 7. Age Groups of Patients Mentioning Club Drugs in DAWN Emergency Departments in the Coterminous US: 2002



West. In the Western region, 36.6% of the items were methamphetamine, as compared to 7.8% in the Midwest, 6.7% in the South, and 0.2% in the Northeast. In addition, of the drug combinations tested in the first half of 2003, methamphetamine was present in about 18%. Cannabis, amphetamine, and cocaine were the most common substances identified in combination with methamphetamine. Other drugs of abuse found in combination with methamphetamine included ecstasy, heroin, and ketamine. Pseudoephedrine, dimethylsulfone, and red phosphorus were found in other samples, which reflected the impurities resulting from clandestine manufacturing processes.

The MTF survey showed that past year use of methamphetamine peaked in 1999. The MTF also queried twelfth graders, college students, and young adults about their past year use of Ice, and use increased through 2002, but the decrease for twelfth graders

between 2002 and 2003 was statistically significant (Exhibit 3). Among twelfth graders, the percentage who thought it harmful to try crystal meth or Ice once or twice dropped from an all-time high of 54% in 2002 to 51% in 2003, and perceived availability of crystal meth dropped from a high of 28% in 2001 and 2002 to 26% in 2003.

The NSDUH survey in 2002 reported that 5.3% of the U.S. population ages 12 and over had ever used methamphetamine, 0.7% had used in the past year, and 0.3% had used in the past month. Some 0.9% of those ages 12–17 had used methamphetamine in the past year, as compared to 1.7% of those 18–25 and 0.4% of those 26 or older. Incidence of methamphetamine use had remained fairly level since the early 1980s but increased to a high of 454,000 new users in 1998. Since then, there have been no statistically significant changes. There were an estimated 326,000 new methamphetamine users in 2001 (Exhibit 5).

The number of mentions of methamphetamine in the DAWN emergency room system has varied but has been increasing since 1999 and reached its highest level of 17,696 mentions in 2002 (Exhibit 6). Exhibit 7 shows that methamphetamine users were the oldest of the club drug patients. In 2002, 59% of the patients were male; 69% were Anglo, 9% Hispanic, and 5% were African American (Exhibit 8). In comparison, in 1999 the proportion of Anglo users was higher (74%) but there was no difference in the age groups between 1999 or 2002.

Of the club drug users, methamphetamine patients were the least likely to use multiple drugs (53%), as compared to 84% of GHB users. Other drugs used concurrently included alcohol (23%), marijuana (20%), or cocaine (16%) (Exhibit 9). The motives for using methamphetamine included dependence (58%) or psychic effects (22%), and the reasons for seeking emergency room treatment included overdose (28%), unexpected reaction (23%), wanting detoxification (22%), and chronic effects (17%), which demonstrates the demand for treatment by methamphetamine users (Exhibit 10).

Exhibit 8. Characteristics of Patients Mentioning Club Drugs in DAWN Emergency Departments in the Coterminous US: 2002

| | Ecstasy | GHB | Ketamine | LSD | Methamphetamine | Rohypnol |
|------------|---------|-----|----------|-----|-----------------|----------|
| % Male | 50% | 66% | 77% | 87% | 59% | 79% |
| %Anglo | 64% | 92% | 67% | 75% | 69% | --- |
| % Black | 12% | 1% | --- | 9% | 5% | 5% |
| % Hispanic | 9% | --- | 8% | 9% | 9% | 68% |

Dashes (---) indicate that an estimate has been suppressed due to incomplete data.

Rohypnol

Rohypnol (flunitrazepam) is a benzodiazepine originally formulated for preoperative anesthesia or sedation and treatment of insomnia. At low doses, it acts as a muscle relaxant and a sedative-hypnotic. At higher doses, it can cause lack of muscle control and loss of consciousness. Flunitrazepam has had a long history of abuse by heroin and cocaine addicts, and because it was specifically formulated to produce anterograde amnesia, it has been used to commit sexual assault. In addition, it has gained popularity among youths as a “cheap drunk.”

Because flunitrazepam has never been legally marketed in the U.S., almost all references to the drug in the U.S. use the brand name, Rohypnol. Street names include roofies, la rocha, roche, R2, rope, FM2, forget-me pill, rowie, run-trip-and-fall, los dos, and Mexican valium.

Rohypnol was first reported at a CEWG meeting in June, 1993. There were occasional mentions of the drug in calls to the Florida Drug Hotline in the late 1980s. The problem grew after Hurricane Andrew struck south Florida in August 1992, which resulted in an influx of out-of-state construction workers (“roofers from hell”) who found cocaine in Miami, introduced speed, and began trading drugs for drugs (hence the

Rohypnol use has dropped dramatically since it became illegal to import it into the U.S., yet it continues to be a problem among Hispanic populations on the Mexico border and in Miami. Rohypnol users are the most likely of all club drug users to report taking a club drug for psychic effects, and they are the most likely to enter the emergency departments because of unexpected reactions to the drug.

name “roofies”). By November, 1994, it was a problem along the Texas-Mexico border, and subsequently spread northward and was identified in at least 32 states.

In 1996, the U.S. government prohibited the importation of the drug into the country, but it remains available in other countries and continues to be illegally brought into the U.S. Generic varieties of flunitrazepam are available in various countries. In 2001, Roche reformulated the pill to be a grayish-green oval tablet. In an attempt to deter sexual assault, it now contains a dye which will turn blue in liquid. Sexual predators have been reported to serve blue punches and fruit drinks.

At the June and December, 2003 CEWG meetings, Rohypnol was reported down in Miami, “quiet” in St. Louis, and a continuing problem along the Texas border. While Texas poison control centers and Texas NFLIS data show Rohypnol use was dropping, the number of admissions to public treatment for a problem with Rohypnol increased from 247 in 1998 to 368 in 2002.

Only 74 items were identified in NFLIS as being flunitrazepam in 2002, and these comprised only 0.35% of all the benzodiazepines identified. Alprazolam (Xanax) made up 54% of the benzodiazepine items.

The MTF survey reported that past year use of Rohypnol by eighth graders peaked in 1996 and peaked

for tenth graders in 1997. It peaked for twelfth graders in 2002 (Exhibit 3). In 2002, the Texas Secondary School Survey found that students in grades 7–12 who lived on the Texas border reported 6.7% past year use of Rohypnol, as compared to 2.1% past year use by Texas students not living on the border.

The NSDUH survey reported that 0.2% of the population had ever used Rohypnol. Some 0.2% of those ages 12–17 reported lifetime use, as compared to 0.5% of those 18–25 and 0.1% of those 26 and older.

The number of mentions in DAWN emergency departments peaked at 114 in 1996; by 2001, the numbers were too imprecise to be considered reliable, so no rates for Rohypnol are shown in Exhibit 6. However, analysis of other drugs used by Rohypnol clients entering public treatment in Texas in 2003 found that 48% also used marijuana, 25% used cocaine, and 7% used heroin. In 2002, there were 19 mentions of Rohypnol in emergency departments nationwide, and they were older than LSD, ecstasy, and ketamine patients, but younger than GHB and methamphetamine patients (Exhibit 7). Seventy-nine percent were male; gender of the other 21% was not reported. Some 68% were Hispanic; race/ethnicity was not reported for 21% (Exhibit 8).

When the motives for using the substances were reported, Rohypnol patients were the most likely to report they used the drug for psychic effects, and

Exhibit 9. Presence of Other Drugs in DAWN ED Visits Involving Club Drugs for the Coterminous US: 2002

| | Ecstasy (MDMA) | | GHB | | Ketamine | | LSD | | Methamphetamine | |
|-----------------------------------|----------------|-----|-------|-----|----------|-----|-----|-----|-----------------|-----|
| | # | % | # | % | # | % | # | % | # | % |
| Drug Concomitance | | | | | | | | | | |
| Single-drug visits | 1,121 | 28% | 531 | 16% | 52 | 20% | 204 | 23% | 8,404 | 47% |
| Multi-drug visits | 2,905 | 72% | 2,799 | 84% | 208 | 80% | 687 | 77% | 9,292 | 53% |
| Total Club Drug Visits | 4,026 | | 3,330 | | 260 | | 891 | | 17,696 | |
| Selected Drug Combinations | | | | | | | | | | |
| GHB | 198 | 5% | --- | --- | 9 | 3% | 5 | 1% | 240 | 1% |
| Ketamine | 31 | 1% | 9 | 0% | --- | --- | 9 | 1% | 18 | 0% |
| LSD | 122 | 3% | 5 | 0% | 9 | 3% | --- | --- | 42 | 0% |
| MDMA (Ecstasy) | --- | --- | 198 | 6% | 31 | 12% | 122 | 14% | 173 | 1% |
| Methamphetamine | 173 | 4% | 240 | 7% | 18 | 7% | 42 | 5% | --- | --- |
| Alcohol-in-combination | 1,594 | 40% | 2,131 | 64% | 76 | 29% | 402 | 45% | 4,001 | 23% |
| Amphetamines | 75 | 2% | 184 | 6% | 10 | 4% | 18 | 2% | 358 | 2% |
| Cocaine | 815 | 20% | 501 | 15% | 34 | 13% | 175 | 20% | 2,816 | 16% |
| Heroin | 184 | 5% | 7 | 0% | 63 | 24% | 130 | 15% | 599 | 3% |
| Marijuana | 1,555 | 39% | 458 | 14% | 50 | 19% | 382 | 43% | 3,460 | 20% |

they were the most likely to have come to the emergency department because of an unexpected reaction (Exhibit 10).

Exhibit 10. DAWN Emergency Department Mentions by Episode Characteristics: 2002

| Drug Use Motive | Ecstasy | GHB | Ketamine | LSD | Methamphetamine | Rohypnol |
|------------------------------|---------|-----|----------|-----|-----------------|----------|
| Psychic Effects | 56% | 80% | 68% | 47% | 22% | 74% |
| Dependence | 21% | 0% | 0% | 40% | 58% | 9% |
| Suicide | 8% | 0% | 16% | 6% | 9% | 17% |
| Other/Unknown | 15% | 19% | 16% | 7% | 12% | 0% |
| Reason for ED Contact | | | | | | |
| Unexpected reaction | 39% | 36% | 28% | 52% | 23% | 57% |
| Overdose | 30% | 61% | 47% | 22% | 28% | 28% |
| Chronic effects | 5% | 1% | 11% | 0% | 17% | 7% |
| Seeking detoxification | 13% | 0% | 9% | 18% | 22% | 3% |
| Other | 12% | 1% | 5% | 8% | 11% | 10% |

Conclusions

Although club drugs have attracted significant national attention, other than methamphetamine, they comprise a very small portion of the drug abuse problem in the U.S. based on DAWN, NFLIS, and the MTF and NSDUH surveys.

Use of methamphetamine continues to increase, while use of LSD, Rohypnol, ketamine, GHB, and ecstasy appears to be decreasing. While the recent decrease in ecstasy in MTF was significant, decreases in the use of ketamine and GHB are less pronounced and prevention efforts should continue to focus on perceptions of risk, peer disapproval, and availability to ensure that all these decreases are not temporary.

Users of each of the club drugs tend to be very different in terms of sociodemographic characteristics, patterns of multiple drug use, and reasons for use (psychic effects v. dependence). Prevention and treatment efforts should be tailored to these specific differences.

The levels of concomitant use of cocaine by users of ecstasy, GHB, ketamine, LSD, methamphetamine, and Rohypnol, and the levels of use of heroin by ketamine and LSD users are of concern in terms of dependence and treatment need.

The different reasons reported for use of each of these drugs indicate a need to tailor treatment readiness techniques as appropriate.

Overdose was the first or second reason given as to why individuals sought care in the emergency department, which shows the need for specialized protocols to treat each of these different drugs in the acute care setting.

The mentions of suicide as a motive for using club drugs may reflect the psychological effects of some of

these drugs. They also reflect the mental health problems of some users and the need to provide treatment for co-occurring substance abuse and mental health conditions.

The number of persons coming to emergency departments who are dependent on a club drug or who are seeking detoxification is indicative of the need for substance abuse treatment services for club drug users. Medical and behavioral treatment protocols need to be tailored to the pharmacological effects of each drug as well as be culturally relevant to the different clients.

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