REVIEW

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It's a rave new world: Rave culture and illicit drug use in the young

ABSTRACT

Illicit drug use by young people has changed in the last decade, with the increasing use of "designer" or "club" drugs such as ecstasy. Keeping abreast of current trends in illicit drug use prepares the primary care clinician to recognize the clinical effects of drug use, to manage drug emergencies, and to detect addictive behavior. Today's widely used drugs, their street names, their effects, and how to manage overdoses are reviewed.

KEY POINTS

Popular "designer" drugs include ecstasy, gamma-hydroxybutyrate (GHB), Rohypnol, ketamine, herbal ecstasy (ma huang, ephedra), and methamphetamine.

Designer drugs are easily obtainable and affordable at raves—all-night dance parties with marathon dancing to electronic "techno" dance music.

Other substances associated with rave culture include "smart drinks" sold for rehydration; these may contain ma huang, caffeine, guarana (a caffeine-like stimulant), and ginseng.

When questioning teens and young adults about drug use, a non-confrontational approach helps. The clinician needs to establish confidentiality and to define the limits of that confidentiality.

PATIENT INFORMATION
Date rape drugs: What parents should know, page 551

NEW AND POTENTIALLY dangerous illicit drugs are popular among young people today. Relatively little is known about the short-term and long-term adverse effects of these drugs or how to test for them.

A major trend since the early 1990s has been the use of "designer" or "club" drugs such as "ecstasy" at raves—all-night dance parties with marathon dancing to electronic "techno" music. Use of the designer drugs gamma-hydroxybutyrate (GHB), Rohypnol, and ketamine, also called "date rape" drugs, is widespread enough to have prompted Congress to adopt the Drug-Induced Rape Prevention and Punishment Act of 1996, which increased Federal penalties for use of any controlled substance to aid in sexual assault (see "Date rape drugs: What parents should know," page 551).

Drug abuse leads to short-term and long-term health problems. Keeping abreast of trends in illicit drug use enhances the clinician's ability to recognize and manage overdoses and to pick up clues of addiction in young patients. This article briefly reviews the scope of illicit drug use in young people and the most popular designer drugs.

THE SCOPE OF DRUG ABUSE IN THE YOUNG

Illicit drug use continues to be prevalent among young people. Some of the drugs used are familiar (alcohol, marijuana) and some are newer and perhaps unfamiliar to many of us.[1]

The percentage of 8th graders reporting illicit drug use doubled from 11.3% in 1991 to 21.4% in 1995.[2] Then, after 1 or 2 years of decline in the late 1990s, the use of marijuana, amphetamines, tranquilizers, heroin, and alco-

The rave scene: A closer look

RAVES ARE PARTIES with loud, electronic "techno-rock" music, laser light shows, and all-night dancing. They are held in clandestine locations, including warehouses, nightclubs, and farm fields. They first became popular in Great Britain in the late 1980s.

Alcohol is not sold at many raves, but designer and other drugs are obtainable and affordable. In addition, "power drinks" are usually sold: these are fruit juice mixed with amino acid powders and B vitamins to replenish fluids lost during strenuous marathon dancing.

SPREADING THE WORD

Two to three days before a rave, information about the location is disseminated via the Internet (eg, links accessible from www.dancesafe.org), fliers, or word of mouth. Raves are sometimes advertised under alluring names, such as "Rave New World" or "Save the Rave Forest."[7] Raves attract mainly people 16 to 21 years old, but younger teens and some adults also frequent these parties. A single rave in Ohio attracted young people from a five-state area. Some rave fans go from city to city in search of the next best rave.

OTHER TYPES OF RAVES

"Bush parties" are outdoor parties often with a sports focus; alcohol use at these events tends to exceed drug use.

"Circuit parties" are weekend-long parties or raves with a homosexual orientation, involving 5,000 to 20,000 people. Partygoers travel from event to event, with some of these parties being substantially linked economically to fundraising or cultural events.

In Montreal, this circuit has been estimated to be the second largest money maker for their tourism industry.

ATTEMPTS TO MAKE DRUG USE AT RAVES SAFER

Drug safety check stations. Because the designer drugs sold at raves are not always pure, many raves now feature stations where users can have the purity of their drugs checked, without the risk of being arrested for possession. This is an effort to increase the safety of illicit drug use by letting users know exactly what they are taking. Many local police departments arrest only those individuals caught selling drugs.

Safe spaces. In Montreal, physicians often go to raves to create "safe spaces" for medical triage and urgent referral to local emergency rooms. This practice is one of damage control rather than primary prevention and has been controversial among adolescent medicine professionals. On one hand, this practice has prevented deaths from overdose and has provided a source of education; but on the other hand, it does little to decrease actual drug use.

hol among 8th, 10th, and 12th graders stopped declining and leveled off from 1998 to 1999, according to the National Institute on Drug Abuse's 1999 Monitoring the Future study.[3]

Alcohol

Alcohol is the most widely used drug among young people, with four out of every five students having consumed alcohol by the end of high school, and 52% by the 8th grade.[3] Almost two thirds of 12th graders and one fourth of 8th graders reported having been drunk at least once.[3] Binge drinking rates have leveled off in the past few years, just as designer drugs started gaining in popularity.

Alcohol-drug combinations. A popular trend is to combine alcohol with over-the-counter drugs. One example is a "roboshot"—1 to 2 ounces of Robitussin DM chugged with a 12-ounce beer. This allegedly produces a "buzz" equivalent to a six-pack of beer, without any hangover.

Marijuana

Marijuana is the second most widely used drug among young people: 17% of 8th graders, 32% of 10th graders, and 38% of 12th graders reported having used it at least once, and 1.4% of 8th graders, 3.8% of 10th graders, and 6.0% of 12th graders reported daily use.[3]

Inhalants

For the past 5 years, the use of inhalants by students surveyed in the Monitoring the

Future Study has steadily declined, with 10% of 8th graders, 7% of 10th graders, and 6% of 12th graders reporting use at least once during 1999. The data for the year 2000 show inhalant use continues to be more prevalent in younger teens.[4]

Inhalants are readily accessible. A wide range of common household products are used, including glue, solvents, butane, gasoline, and aerosols.

Anabolic steroids

Among young people, use of anabolic steroids is more common in boys than in girls. Steroid use increased in 1999, with 2.5% of 8th graders and 2.8% of 10th graders using steroids.[3] These rates almost doubled compared with 1998 rates of 1.6% and 1.9%, respectively, and fewer 12th graders considered steroids as risky as they did the previous year. The 2000 Monitoring the Future study[4] showed that between 1999 and 2000 the use of anabolic steroids increased among 10th graders.

Designer drugs

A number of drugs are used by teens and young adults who frequent raves, bars, and nightclubs, where they are relatively easy to obtain and affordable. Popular designer drugs currently include:

- Ecstasy, the common name for 3-4 methylenedioxymethamphetamine (MDMA), also called "Adam" and "XTC"
- The date rape drugs GHB, flunitrazepam (known mainly by its brand name, Rohypnol), and ketamine
- Herbal ecstasy, another name for ma huang or ephedra
- Methamphetamine.

The makeup of these designer drugs, as well as their desired effects, their short-term and long-term adverse effects, and how to manage overdose are discussed later in this article.

Ecstasy. In a random survey of illicit drug use in undergraduates attending Tulane University in 1990, use of ecstasy was reported by 24% of those surveyed.[5] In 1996, 5% of US 16-year-olds reported ecstasy use.[6] According to the 1999 Monitoring the Future Study,[3] 4.4% of 10th graders and 5.6% of 12th graders reported using ecstasy in the past year. The 2000 Monitoring the Future Study showed that the use of ecstasy by all three groups increased.[4]

GHB is a date rape drug either intentionally used or surreptitiously administered to incapacitate a victim, preventing her or him from resisting sexual assault. As with other date rape drugs, its use is not confined to date rape situations.

No data on the prevalence of its use are available as of this writing. Nevertheless, the problem of GHB, Rohypnol, and ketamine use received sufficient national attention to prompt Congress to pass a law increasing penalties for using drugs in sexual assault.

Rohypnol is an anti-seizure drug available in Europe but not in the United States. Rohypnol use showed a small decline in 1999, with 0.5% of 8th graders and 1.0% of 10th and 12th graders reporting use.[3] Rohypnol may be lethal when combined with alcohol.[3,7]

Ketamine is a rapid-acting general anesthetic used as an alternative to cocaine and usually snorted. No data on the prevalence of ketamine use are available as of this writing.

GHB, Rohypnol, and ketamine are the date rape drugs

ECSTASY

Ecstasy (MDMA, XTC, X, E, Adam) is a synthetic, psychoactive, hallucinogenic drug, first synthesized in Germany by Merck in 1914 to facilitate communication during psychotherapy.[8] It is an amphetamine analogue and a selective serotonergic neurotoxin. Experimentation in humans has been traced back only to the early 1970s.[9] Its use was criminalized in the United States in 1985,[9] by which time it had jumped from the psychiatrist's couch to the dance floor.

Much of what is sold as ecstasy is not pure MDMA, but may be any combination of 3,4-methylenedioxyamphetamine (MDA, the love pill, the love drug, or speed for lovers), N-ethyl-methylendioxyamphetamine (MDE, Eve), lysergic acid diethylamide (LSD), amphetamine, caffeine, heroin, or lactose. MDE produces effects similar to those of MDMA but turns the subject inwards.

TABLE 1

Commonly abused drugs associated with serious heat injury or rhabdomyolysis

Amphetamines
Cocaine
MDMA (ecstasy)
Methamphetamine (crystal meth, ice)
Phencyclidine (PCP)

How ecstasy is taken

MDMA comes in the form of a white, crystalline powder which can be buffered and pressed into pills.[10] The usual dose taken by young people is 1 to 2 mg/kg body weight (125 to 180 mg). A 100-mg tablet usually costs around $20. It may be ingested orally, placed under the tongue, added to juice or a carbonated beverage, or snorted intranasally.

"Candyflipping" is the intentional combination of ecstasy with LSD.

"Stacking" means taking three or more tablets at once, or mixing MDMA with LSD, alcohol, or marijuana in order to modulate the high. Those who stack may take different drugs at different times throughout an evening to modify their high: eg, they start with ecstasy, add amphetamine or cocaine while coming down, and add cannabis, alcohol, GHB, or ketamine as the evening continues. Stacking increases the risk of overdose, as the stimulant effects of MDMA may mask the sedative effects of alcohol or opiates. Moreover, alcohol use can induce diuresis, further augmenting the risk of dehydration from the marathon dancing typical at raves.

A 100-mg tablet of ecstasy costs $20

How ecstasy works

MDMA has a half-life of 6 hours, and the time to onset of action varies greatly from person to person. It works by releasing serotonin and dopamine into the brain. This surge of serotonin creates the feeling of love or ecstasy, extending to all people with whom the user comes into contact. The release of dopamine keeps the user from feeling any pain. Thus, a user may dance for hours on a broken ankle without realizing it.

The release of neurotransmitters also decreases body temperature perception, and users of MDMA can overheat without feeling any discomfort (TABLE 1).

The ecstasy 'rush'

Ingestion of ecstasy is followed by an almost instantaneous "rush," occurring in approximately 30 to 45 seconds if taken on an empty stomach. This rush lasts 15 to 30 minutes and is followed by a gradual descent back to normal consciousness. Just after the rush, the user experiences a sudden clarity and intensification of perceptions, seeing objects as "brighter and crisper" and feeling an inner sensation of happiness, with people seeming lovable exactly as they are. At this point users usually take a booster dose of MDMA to prolong these feelings. Unfortunately, booster doses increase tolerance to the desired effects and an increase in the adverse effects of coming down.

"Bubble bursting" refers to a buildup of anxiety, fear, stomach tightness, nausea, or panic instead of the expected rush.

Thirty minutes to 3 hours after the initial "coming on," or perception of enhanced feeling, users experience a "plateau" phase of less-intense feelings. During the plateau, repetitive or trance-like movements become extremely pleasurable, leading to long-lasting ecstatic states of "trance dancing." Rhabdomyolysis can easily occur during this phase of extended activity.

The "coming down" phase occurs 3 to 6 hours after initial ingestion. During this phase, feelings of disappointment and other negative emotions (eg, depression, anxiety) can emerge, with sluggishness and residual effects lasting up to several days. It may take up to 6 to 7 hours to fall asleep after returning to "normal," despite extreme exhaustion.

Adverse effects of ecstasy

Serious rhabdomyolysis can occur with use of MDMA and other drugs (TABLE 1). Other side effects of MDMA are listed in TABLE 2.

In the short term, coming down is associated with a relative depletion of serotonin; the result is called the "Tuesday blues," a sluggish feeling lasting several days after ingestion.

The long-term effects of MDMA use are being studied. Experts suspect that it may

short-circuit the serotonin pathway with repeated use over the long term, potentially causing a shortage of serotonin and subsequent depression. At the present time, however, this concept is purely speculative.

Management of overdose

MDMA is metabolized in the liver to MDA, which is then excreted in the urine; thus, typical urine drug tests may only detect MDA. Urine toxicology testing picks up certain other drugs that may have been simultaneously ingested, including cannabis, hallucinogens, phencyclidine (PCP), or stimulants. Assessing the serum blood alcohol level can be useful. A monoclonal immunoassay for amphetamine or methamphetamine detects MDMA if the drug was taken in large doses.[8] Thin-layer chromatography can also detect MDMA metabolites in the urine. Whenever amphetamines are found on immunoassay screening tests, the results can be confirmed by gas chromatography or mass spectrometry.

Management of acute heat injury in MDMA users includes rapid rehydration and core cooling. Management of rhabdomyolysis involves rehydration, correction of electrolyte imbalances, urine alkalinization, and use of furosemide as needed. Short-acting benzodiazepines can be administered intravenously or intramuscularly for patients with extreme agitation, panic reactions, or seizures. Neurologic assessment and vital signs should be checked frequently. Dantrolene may be useful in counteracting MDMA-associated muscle spasms; beta-blockers, calcium channel blockers, or procainamide may be required to treat cardiac arrhythmias. If a patient seems likely to injure himself or others, a quiet, dark setting with judicious use of benzodiazepines is imperative.

TABLE 2

Adverse effects of MDMA (ecstasy) use

- Addiction (to concurrently used substances, eg, amphetamines, heroin, cocaine)
- Arrhythmias
- Coagulopathy (disseminated intravascular)
- Confusion
- Coma
- Death
- Dehydration
- Electrolyte imbalances
- Fatigue
- Heat injury (fatal, sometimes referred to as "Saturday night fever")
- Hepatic toxicity
- Jaw-clenching
- Muscle spasms
- Pregnancy (unwanted)
- Rape
- Renal failure (acute)
- Tachycardia
- Teratogenicity

GAMMA-HYDROXYBUTYRATE (GHB)

GHB—also known as liquid ecstasy, easy lay, grievous bodily harm, cherry meth, soap, growth hormone booster, gook, liquid X, liquid G, and liquid E—is a precursor of the neurotransmitter gamma aminobutyric acid (GABA) that acts on the dopaminergic system. GHB is usually sold as a salty, clear liquid in small bottles and is taken by the capful. It is also available in capsule form. GHB is undetectable when mixed with beverages.

Developed as an adjunct to anesthesia, GHB was believed in the 1970s to have clinical value in the treatment of narcolepsy. In the 1980s, it was used by weight lifters to increase the metabolic rate. In the 1990s, "blue nitro," a GHB precursor, was used as a weight-loss preparation, while Serenity, another GHB precursor, was used by body builders. GHB's purported medicinal value was eventually overshadowed by its unpredictability: a given dose could completely anesthetize one patient and have no effect on another.

GHB's effects vary greatly from person to person

How GHB works

GHB's central nervous system effects include mediation of sleep cycles, temperature regulation, cerebral glucose metabolism and blood flow, memory, and emotional control.[11] The onset of action is within 15 to 60 minutes, and effects last from 1 to 3 hours. The half-life is 27 minutes, with elimination by expired breath as carbon dioxide.

Desired effects of GHB

Young people take GHB to experience euphoria, disinhibition, and sexual enhancing effects without an appreciable hangover.[12]

Adverse effects of GHB

The concentration may vary, so the response is idiosyncratic. Patients may experience either mydriasis or miosis, another indication of the inconsistent response from person to person. In severe cases, the classic triad of symptoms includes coma, bradycardia, and myoclonus. Hallucinations can also occur.

As the patient starts to recover, "emergence phenomena" can occur, characterized by myoclonic jerking motions, transient confusion, and combativeness, followed by rapid recovery of consciousness.[11,12]

Other effects include delusions, depression, altered mental status, apnea, hypotension, nausea, vomiting, vertigo, respiratory distress, transient metabolic acidosis, loss of airway reflexes, ataxia, nystagmus, aggressive behavior, somnolence, anterograde amnesia, and coma.

Adverse effects are potentiated by alcohol, ketamine, benzodiazepines, major tranquilizers, opiates, anticonvulsants, and over-the-counter cold and sleep medicines. All of the above can exacerbate respiratory depression. Use with methamphetamine increases the risk of seizure.

High doses of ketamine can produce 'K-hole,' a near-death experience

Management of GHB overdose

Management of GHB overdose consists of supportive therapy, including prevention of aspiration. Intravenous fluids and oxygen may be required, and atropine should be used in patients with persistent symptomatic bradycardia. In severe cases, rapid intubation with succinylcholine paralysis may be required for advanced airway protection.[13] If abuse of multiple drugs is suspected, orogastric lavage and administration of activated charcoal with sorbitol is recommended. If the patient is still intoxicated at 6 hours after ingestion, hospital admission is warranted. Otherwise, if alert, responsive, and normal on physical examination 6 hours after ingestion, the patient can be discharged from the emergency room.

KETAMINE

Ketamine (special K, vitamin K, new ecstasy, ketalar, ketaject, psychedelic heroin, and super K) is a shorter-acting, less potent alternative to PCP. It is used by veterinarians as an anesthetic, is available in both liquid and powder forms and has a bitter taste. The liquid form is usually ingested orally or intravenously. In white powder form it is either snorted by itself or smoked with marijuana or tobacco. The powder can be made from the liquid by gently boiling on a stove or in the microwave.

Dose-to-dose variability in effects is common, and the effects are potentiated by alcohol, barbiturates, opiates, GHB, and valium. If taken intramuscularly, effects occur within 2 minutes. If taken orally, effects occur within 15 to 20 minutes, or sooner on an empty stomach. If taken intranasally, the dose is repeated every 5 minutes until the desired effects are achieved.

Desired effects of ketamine

Effects last 2 to 3 hours. Low doses lead to feelings of relaxation, and high doses bring on a sensation of a near-death experience (known as the "K-hole") and loss of sense of time and identity. "K-land" refers to hallucinations and visual distortions. The user feels no pain, a state that can lead to unintentional injuries the user may not be aware of until he or she comes down.

Adverse effects of ketamine

Short-term physical effects include tachycardia, hypertension, impaired motor function, respiratory depression, bronchodilation, papillary dilation, and nausea. Short-term psychologic effects include dissociation, depression, recurrent flashbacks, delirium, and amnesia.

Long-term adverse effects are currently unknown, but brain damage has been observed in animal studies. Persons who use ketamine while taking antibiotics (eg, ofloxacin), anticholinergics, antipsychotics, bupropion (Wellbutrin and Zyban), caffeine, or GHB increase their risk of seizure. Under the drug's short-term effects, the user may remain so immobile as to become hypothermic.

Management of ketamine overdose

Neuroleptic drugs are ineffective in controlling the unpleasant mental and visual side effects of ketamine.[14] The clinician should watch for oversedation, protecting the airways as necessary.

ROHYPNOL

Rohypnol, (the date rape drug, ruffies, roofies, rouches, the forget pill) is licensed in Europe, Asia, and Latin America as an anti-seizure drug. It is a benzodiazepine 10 times more potent than diazepam (Valium). It is sold as individually wrapped tablets that are colorless, odorless, and tasteless when mixed in beverages.

Desired effects of rohypnol

Desired effects include disinhibition, amnesia, and muscle relaxation, but individual effects vary.

Adverse effects of rohypnol

Adverse effects include sedation, respiratory depression, impaired motor coordination, confusion, memory loss, hallucinations, and potential overdose when combined with alcohol. Paradoxically, it may cause aggressiveness in some cases.

Management of rohypnol overdose

Rohypnol is not detectable with routine urine toxicology screening. Airway protection and blood pressure control may be warranted. Midazolam (Versed), used as a sedative before endoscopy, can be used in severe cases to reverse benzodiazepine effects, but longer observation would be indicated.

HERBAL ECSTASY

Herbal ecstasy (ma huang, ephedra) is used as a stimulant or a weight-loss agent and is available at many health food stores and by mail order from sources advertised in drug culture magazines. It is an ingredient in some Chinese herbal medications and in nutritional supplements such as Metabolift and Metabolife 356. A 300-mg dose of ephedra is equivalent to 30 mg of ephedrine. Ephedrine is found in many over-the-counter cold preparations. Neither ephedra nor its extracted form ephedrine are regulated by the US Food and Drug Administration.

Desired effects of herbal ecstasy

The effects of herbal ecstasy last 3 to 4 hours when taken orally. Three tablets taken together have an effect similar to amphetamines or a large dose of caffeine.

Adverse effects of herbal ecstasy

Adverse effects include tachycardia, hypertension, stroke, seizure, myocardial infarction, and death. The doses needed to produce these effects are not known. These substances are not regulated by the Food and Drug Administration, and it is hard to know exactly how much of any given substance a product contains.

Management of overdose

An overdose of herbal ecstasy may be associated with restlessness, muscle spasms, tachycardia, dry throat, and cold extremities. Neither ephedra or ephedrine should be used by people with cardiac problems or high blood pressure. Hypertension in persons who have overdosed on herbal ecstasy may respond to the use of benzodiazepines to decrease anxiety. Nitroprusside should be used in hypertensive crisis.

METHAMPHETAMINE

Methamphetamine is a highly addictive stimulant

Methamphetamine (ice, crystal meth, speed, tweak, crank, glass, or tina) is a highly addictive stimulant that causes the release of large amounts of dopamine, enhancing mood and body movement. It is sold either as a white powder that is taken orally, intranasally, intravenously, or rectally, or as a clear, crystal-shaped "rock" that is heated and smoked like crack cocaine. The smoked form is called ice, crystal, and glass.

Desired effects of methamphetamine

Smoking and intravenous use give a rush described as an intense, very pleasurable sensation that lasts a few minutes. Intranasal and oral use do not produce this rush, but rather a "high." Effects occur within 3 to 5 minutes with intranasal use and within 15 to 20 min-

utes with oral use, and can last up to 24 hours.

Adverse effects of methamphetamine

Adverse effects of methamphetamine use include a wide variety of physical and psychological effects: eg, wakefulness, increased physical activity (a hyperalert state, restlessness), decreased appetite, headache, mydriasis, sensation of hair "standing on end," vasoconstriction of extremities, dry mouth, hyperreflexia, tremors, tachycardia, hypertension, palpitations, cardiac arrhythmias, cardiomyopathy, stroke, hyperthermia, seizures, euphoria, irritability, insomnia, anxiety, hallucinations, paranoia, psychosis, and death.

Methamphetamine may cause degeneration of neurons containing the neurotransmitter dopamine, with damage of these neurons known to be the underlying cause of the motor disturbances seen in Parkinson disease.

Management of methamphetamine overdose

Effects of methamphetamine tend to last 5 to 10 hours. The drug is metabolized to amphetamine. Urine toxicology screening may pick up both methamphetamine and amphetamine. Gas chromatography and mass spectrometry can differentiate methamphetamine from amphetamine.

In case of overdose, haloperidol can be used to control agitation, and benzodiazepines can be used to control seizures. Hypertension can be managed with intravenous beta-blockers. Cardiac monitoring and precautions to prevent seizure are usually indicated. Some patients may require airway protection.

Stimulant-containing drinks are used to prevent dehydration

OTHER CLUB DRUGS

GHB precursors

A commonly found GHB precursor is gamma-butyrolactone (GBL), also known as blue nitro, gamma-G, renewtrient, reviverent. GBL is an organic solvent used for cleaning circuit boards, stripping paint, or flavoring soy products. It acts like GHB but has a slower onset and a longer duration. Adverse effects include respiratory depression and cardiac dysrhythmia. It is metabolized in the liver into GHB but can also be made into GHB using home kits. Other precursors to GHB include tetramethylene glycol and 2(3H)-furanone dihydro.

Smart drinks

In addition to alcohol, marijuana, cocaine, and amphetamines, other substances associated with the rave subculture are stimulants called "smart drinks" (see "The rave scene: a closer look, page 542), also called "power drinks,"which are used to prevent dehydration. They are sold at both raves and nutrition stores and come in bottles or cans or as powders or capsules. They may contain ma huang, caffeine, guarana (a stimulant similar to caffeine), ginseng, amino acids, taurine, sugars, tryptophan, and high doses of B and C vitamins.

Go-go drinks

Go-go drinks, similar to power drinks, are also sold at raves and contain ginseng, yohimbine, and guarana. They are marketed as "Viagra for women." They are used to boost energy levels, to increase stamina, to quench thirst, and to enhance concentration. Most contain stimulants. Taken in excess they can cause nausea, loss of appetite, insomnia, tachycardia, visual and sensory impairment, and bladder and urinary tract discomfort. People with heart or kidney disease, hypertension, hypotension, asthma, and diabetes mellitus should not use them.

MANAGING DESIGNER DRUG ABUSE: ADDITIONAL CONSIDERATIONS

Urine and serum toxicology screens may not be able to detect club drugs. For example, urine screening does not detect MDMA, though it does detect its metabolite, MDA. Urine screening does not detect LSD, inhalants, alcohol, benzodiazepines such as alprazolam (Xanax) and lorazepam (Ativan), and methylphenidate (Ritalin). Thin-layer chromatography can be requested, specifying suspected drugs based on the history and physical examination.

The patient should be placed in a warm, dark room. When possible, the patient and friends should be questioned as to what drugs were ingested and in what form.

In crisis situations, stabilize the patient

TABLE 3

Ocular effects of commonly abused drugs

Conjunctival injection
Lysergic acid diethylamide (LSD)
Marijuana

Miosis
Alcohol
Barbiturates
Benzodiazepines
Opiates
Phencyclidine (PCP)

Mydriasis
Alcohol or opiate withdrawal
Amphetamines/stimulants
Cocaine
Glutethimide
Jimson weed
LSD

Nystagmus
Alcohol
Barbiturates
Benzodiazepines
Inhalants
PCP

Tearing (excessive lacrimation)
Inhalants
LSD
Opiate withdrawal

TABLE 4

Cardiovascular effects of commonly abused drugs

Arrhythmia
Amphetamines/stimulants
Cocaine
Inhalants
Opiates
Phencyclidine (PCP)

Hypertension
Amphetamines/stimulants
Cocaine
Lysergic acid diethylamide (LSD)
Marijuana
PCP
Withdrawal from alcohol, barbiturates, benzodiazepines

Hypotension
Barbiturates
Marijuana (orthostatic hypotension)
Opiates
Tachycardia
Amphetamines/stimulants
Cocaine
LSD
Marijuana
PCP
Withdrawal from alcohol, barbiturates, benzodiazepines

Questioning should be adolescent-sensitive

while getting as much history as possible from both patient and accompanying peers. Fear and concern for a friend may get them to share more details than they would otherwise reveal at a risk of incriminating themselves. Be nonjudgmental but informative, and avoid lecturing the patient.

If the patient is comatose, the "ABCs" apply: airway, breathing, circulation. TABLE 3 lists the ocular findings associated with use of different drugs, and TABLE 4 lists cardiovascular findings.

HOW TO STAY INFORMED

If the patient is a teenager, questioning needs to be "adolescent-sensitive," establishing confidentiality yet defining the limits of that confidentiality: "I will keep everything we talk about confidential, unless there is something life-threatening or dangerous going on, in which case I will need to talk to your parents or your friends' parents about this".

It is often easier for teens to talk about their friends' use prior to discussing their own use, so when and how one asks the questions will have a big impact on how much information you can learn.

Club drugs continue to be modified and evolve, making them very difficult to monitor. It is useful to know what drugs are being used in your community. Information can be gleaned from teens themselves at both routine and emergency visits, from local substance abuse programs, and from the police. It is also useful to know what resources are available in your community: eg, teen hotlines, substance abuse programs, health edu-

cators, websites.

When parents ask if they should do a room search, the health care provider should ask what the parent(s) plan to do with the information. If the search finds nothing, the parent may assume that the teen is hiding the drugs elsewhere. If it is positive, the parents must confront the teen anyway, creating a bigger problem of violated trust, with the teen often successfully diverting attention away from his or her substance abuse in order to address issues of privacy.

Online resources

Physicians and parents can use many on-line resources, such as the National Clearinghouse for Alcohol and Drug Information, at www.health.org, or the National Institute on Alcohol Abuse and Alcoholism, at www.niaaa.nih.gov, or the Monitoring the Future Study at www.isr.umich.edu/src/mtf. Other parental/community resources include Mothers Against Drunk Driving, at www.madd.org, and Al-Anon/Alateen Home Page, at www.al-anon.alateen.org.

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