Club Drugs

Adolescent Substance Abuse Program
Center for Adolescent Substance Abuse Research
Boston Children’s Hospital

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Definition

- Club drugs are so called because of their link to club, dance and rave culture among young adults.
- Synonyms include “designer drugs” (because often they were slightly chemically modified from illegal drugs to get around the law), party drugs, designer party drugs, synthetic drugs.
- Club drugs are a heterogeneous group of synthetic psychoactive drugs that includes MDMA/ecstasy, ketamine, GHB, and Rohypnol among others.
Classification

Club drugs can be classified as to when they first became popular.

**Generation I** (drugs popular prior to 1990’s): cocaine, LSD. Cocaine is sometimes considered the “club drug”.

**Generation II** (drugs that became popular in 1990’s): ecstasy (MDMA), gamma hydroxybutyrate (GHB), ketamine, Rohypnol, methamphetamine, and dextromethorphan.
History

- Club drugs initially gained popularity in the mid-1990’s.
- They were particularly common among 18-29 year old young adults participating in urban subcultures. Use was common at all night parties for adolescents and young adults known as “raves”
- More recently they have become widely available in high schools and college campuses, and they are now consumed in multiple settings.
Poly-drug Use

Club drug users are highly likely to engage in the practice of polydrug use.

**Definition:** the simultaneous or consecutive use of two or more substances.

**Examples:**
- *Simultaneous use:* Inhaling a mixture of ecstasy and ketamine in powdered form.
- *Consecutive use:* Using cocaine while already under the influence of GHB.
Motivations for Poly-drug Use

- Use one drug to **counteract** the effects of another (e.g. sedative + stimulant)
- Use two drugs to **complement** each of their effects (e.g. LSD + ecstasy)
- Use two or more drugs to **prolong** a drug’s effects and/or **create** new ones. (Ex. Alcohol + cocaine $\rightarrow$ cocaethylene)
The Club Drugs and Health Project

The Club Drugs and Health Project is a study involving 400 urban club drug-using young adults involved in the NYC dance club scenes in 2009.

- **91.7% of participants** had combined drugs.
- **Ecstasy and cocaine** were the most commonly used club drugs and most commonly used in combination with other substances.
- **Ecstasy** was considered the “universal complement” for mixing.

Grov C, Kelly BC and Parsons JT: Polydrug use among club-going young adults recruited through time-space sampling. Substance Use & Misuse, 44: 848-864
Cocaine and LSD

Bimodal peaks in use:

- Widespread use in the 1970’s and 1980’s.
- Declines in the late 1980’s after celebrity deaths attributed to cocaine
- Regained popularity in the mid-1990’s (as an example of “generational forgetting”)

The Monitoring the Future study, the University of Michigan. www.monitoringthefuture.org

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Ecstasy

- Currently the most widely used club drug.
- Chemical name: 3,4-methylenedioxymethamphetamine (MDMA)
- Ecstasy is a phenylethamine. It is structurally related to amphetamine and mescaline.
- Physiologically, Ecstasy is a central nervous system stimulant with weak hallucinogenic properties.
- Effects include: Euphoria, increased energy “emotional warmth”, distortions in time, perception, tactile experiences.

Lifetime Prevalence of Ecstasy Use Among 12th Graders


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Neurobiology of Ecstasy

- Binds to the serotonin transporter.
- Increases and prolongs the serotonin signal.
- Similar effects on norepinephrine.
- Also releases dopamine, but to a much lesser extent.

Adverse Effects of Ecstasy

• Confusion, depression, sleep problems, drug craving, severe anxiety

• **Neurotoxicity:** Neurotoxic effects on the serotonin system in animals. Similar effects suspected in humans.

• **Effects on cognition:** Includes negative effects on verbal memory & executive functions.

• **Deaths** reported secondary to hyperthermia, arrhythmias, heart failure, kidney failure. Note that deaths may occur after a single use.

The Resurgence in Ecstasy Use

• After a period of relative decline, Ecstasy has been renamed “Molly” in a recent resurgence.
• “Molly” (short for “molecule”) refers to a purportedly “pure” form of Ecstasy, though in reality tablets are rarely “pure”
• The recent perception is that “Molly” is less risky than other hard drugs.
• The new demographic of “Molly” users includes older individuals and people without any prior drug history.
Other Club Drugs
GHB, Rohypnol, Ketamine

Annual use by 12th graders


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Gamma Hydroxybutyrate (GHB)

- GHB is a central nervous system depressant
- It exists naturally in the brain in low concentrations; metabolite of inhibitory neurotransmitter gamma-aminobutyric acid (GABA).
- Street names include “G”, “Gina”, “George”, “GBH” (also stands for Grievous Bodily Harm), “Vitamin G” and “liquid ecstasy”.


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Physiology

- Binds to GABA-B and GHB-specific receptors.
- Usually ingested orally (liquid or powder).
- Characterized by extremely fast onset and short duration of effects.

Effects of GHB

• Approved by the FDA in for use in the treatment of narcolepsy (Xyrem).
• Used by bodybuilders for its anabolic effects.
• Causes euphoria, sedation, memory loss, nausea and vomiting; at higher doses agitation, myoclonus, bradycardia, respiratory depression, coma.
• Users describe euphoria, relaxing nature of the high, sociability, mellowness, increased sexual desire, sensitivity to sound and touch.
• Heavy users frequently combine with other illicit drugs. Most commonly combined with ecstasy or methamphetamine.
“Date Rape”

• GHB has been used to commit sexual assaults. It is tasteless and odorless, and can sedate and incapacitate unsuspecting victims. It is sometimes called the “date rape drug”.

• Eliminated below the level of detection in blood or urine within 6-12 hours.

• Short detection period is troublesome in cases of drug-facilitated assault.

Adverse Effects of GHB

- Vomiting, amnesia, loss of motor control
- “G napping” -- passing out completely, forgetting segments of time or activities, suddenly losing motor control and falling over or sitting
- High possibility of overdose due to the narrow therapeutic range and steep dose-response curve.
- GHB fatalities -- caused by aspiration, positional asphyxia, accident or injury secondary to abrupt loss of consciousness.

Users reflect on the use of GHB

Focus group results published by Barker, Harris and Dyer.

Discussion of G-napping:

“I used to think that it required immediate medical attention once they went into a coma when I first...took it. Whereas now ..it’s been shown to me that as long as you just let them sleep and put them in a position so they don’t choke on their own spit...that they wake up pretty much without incident.”

-(Male, 35 years old, moderate user.)


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Rohypnol

• Rohypnol is a benzodiazepine known as flunitrazepam – benzodiazepine
• As with all benzodiazepines, it is a central nervous system depressant which acts at the GABA-A receptor.
• Rohypnol is not approved for use in the United States and importation banned.
Rohypnol Abuse

• Street names include Mexican valium, roofies, forget-me pill.
• Rohypnol comes in pill form (it is produced as a pharmaceutical in other countries). It is typically taken orally or can be insufflled (snorted).
• It is available in odorless, colorless and tasteless forms, which can be combined with alcohol and other beverages.
• It has been used to commit sexual assaults, similar to GHB
• Chronic use of Rohypnol can produce tolerance, physical dependence and addiction, similar to other benzodiazepines.


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Adverse Effects of Rohypnol

• As with all benzodiazepines, Rohypnol can be lethal when mixed with alcohol and/or other CNS depressants.
• Rohypnol withdrawal should be treated with a 3-5 day inpatient detoxification, which may include 24 hours of intensive medical monitoring and management of withdrawal symptoms.
• Benzodiazepine withdrawal can be life-threatening.

Ketamine

- Ketamine is a *dissociative anesthetic* similar to PCP that distorts perceptions of sight and sound and produces feelings of detachment from the environment and self.
- Ketamine acts on the NDMA receptor, a type of glutamate receptor, to produce its effects.
- It is mostly used in veterinary practice.
- Street names include K, special K, kit kat, jet


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Effects of Ketamine

- Usually snorted or injected intramuscularly.
- Low-dose intoxication produces impaired attention, learning ability and memory.
- Higher doses can cause dreamlike states and hallucinations.
- Progressively higher doses can cause delirium and amnesia.
- Reports of individuals binging on ketamine, similar to binging seen in cocaine- and amphetamine-dependent individuals.
- In high doses, ketamine can cause impaired motor function, high blood pressure, and potentially fatal respiratory problems.

Summary

• Club drugs are a pharmacologically heterogeneous group of synthetic psychoactive drugs
• Club drugs are often used in an environment where poly-drug and alcohol use is common.
• Clinicians should be aware of the gamut of intoxication symptoms and potentially lethal adverse effects of club drug use.