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## Information for Behavioral Health Providers in Primary Care

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# Club Drugs (GHB, Ketamine, and Rohypnol)

### What are Club Drugs?

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Club drugs are a pharmacologically heterogeneous group of psychoactive compounds that tend to be abused by teens and young adults at a nightclub, bar, rave, or trance scene. Gamma hydroxybutyrate (GHB), Rohypnol, and ketamine are some of the drugs in this group; so are MDMA (ecstasy) and methamphetamine, which are featured in a separate InfoFacts.

- *GHB* (Xyrem) is a central nervous system (CNS) depressant that was approved by the Food and Drug Administration (FDA) in 2002 for use in the treatment of narcolepsy (a sleep disorder). This approval came with severe restrictions, including its use only for the treatment of narcolepsy, and the requirement for a patient registry monitored by the FDA. GHB is also a metabolite of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA); thus, it is found naturally in the brain, but at concentrations much lower than doses that are abused.
- *Rohypnol* (flunitrazepam) started appearing in the United States in the early 1990s. It is a benzodiazepine (chemically similar to Valium or Xanax), but it is not approved for medical use in this country, and its importation is banned.
- *Ketamine* is a dissociative anesthetic, mostly used in veterinary practice.

### How are Club Drugs Abused?

Raves and trance events are generally night-long dances, often held in warehouses. Many who attend raves and trances do not use club drugs, but those who do may be attracted to their generally low cost and the intoxicating highs that are said to deepen the rave or trance experience.

- Rohypnol is usually taken orally, although there are reports that it can be ground up and snorted.
- GHB and Rohypnol have both been used to facilitate date rape (also known as “drug rape,” “acquaintance rape,” or “drug-assisted” assault). They can be colorless, tasteless, and odorless, and can be added to beverages and ingested unbeknownst to the victim. When mixed with alcohol, Rohypnol can incapacitate victims and prevent them from resisting sexual assault.
- GHB also has anabolic effects (it stimulates protein synthesis) and has been sought by bodybuilders to aid in fat reduction and muscle building.

## Club Drugs (continued)

- Ketamine is usually snorted or injected intramuscularly.

### How do Club Drugs Affect the Brain?

- GHB acts on at least two sites in the brain: the GABAB receptor and a specific GHB binding site. At high doses, GHB's sedative effects may result in sleep, coma, or death. Rohypnol, like other benzodiazepines, acts at the GABAA receptor. It can produce anterograde amnesia, in which individuals may not remember events they experienced while under the influence of the drug.
- Ketamine is a dissociative anesthetic, so called because it distorts perceptions of sight and sound and produces feelings of detachment from the environment and self. Ketamine acts on a type of glutamate receptor (NMDA receptor) to produce its effects, similar to those of the drug PCP.<sup>1</sup> Low-dose intoxication results in impaired attention, learning ability, and memory. At higher doses, ketamine can cause dreamlike states and hallucinations; and at higher doses still, ketamine can cause delirium and amnesia.

### Addictive Potential

- Repeated use of GHB may lead to withdrawal effects, including insomnia, anxiety, tremors, and sweating. Severe withdrawal reactions have been reported among patients presenting from an overdose of GHB or related compounds, especially if other drugs or alcohol are involved.
- Like other benzodiazepines, chronic use of Rohypnol can produce tolerance and dependence.
- There have been reports of people bingeing on ketamine, a behavior that is similar to that seen in some cocaine- or amphetamine-dependent individuals. Ketamine users can develop signs of tolerance and cravings for the drug.<sup>3</sup>

### What Other Adverse Effects do Club Drugs Have on Health?

Uncertainties about the sources, chemicals, and possible contaminants used to manufacture many club drugs make it extremely difficult to determine toxicity and associated medical consequences.

- Coma and seizures can occur following use of GHB. Combined use with other drugs such as alcohol can result in nausea and breathing difficulties. GHB and two of its precursors, gamma butyrolactone (GBL) and butanediol (BD), have been involved in poisonings, overdoses, date rapes, and deaths.
- Rohypnol may be lethal when mixed with alcohol and/or other CNS depressants.
- Ketamine, in high doses, can cause impaired motor function, high blood pressure, and potentially fatal respiratory problems.

## Club Drugs (continued)

### What Treatment Options Exist?

There is very little information in scientific literature about treatment for persons who abuse or are dependent upon club drugs.

- There are no GHB detection tests for use in emergency rooms, and as many clinicians are unfamiliar with the drug, many GHB incidents likely go undetected. According to case reports, however, patients who abuse GHB appear to present both a mixed picture of severe problems upon admission and good response to treatment, which often involves residential services.
- Treatment for Rohypnol follows accepted protocols for any benzodiazepine, which may consist of a 3- to 5-day inpatient detoxification program with 24-hour intensive medical monitoring and management of withdrawal symptoms, since withdrawal from benzodiazepines can be life-threatening.
- Patients with a Ketamine overdose are managed through supportive care for acute symptoms, with special attention to cardiac and respiratory functions.

### How Wide Spread is Club Drug Abuse?

According to results of the 2010 Monitoring the Future (MTF) survey, 0.6 percent of students in the 8th grade reported past-year use of GHB, as did 0.6 percent and 1.4 percent of students in grades 10 and 12, respectively. This is consistent with use reported in 2010.

Past-year use of ketamine did not change significantly from 2009 to 2010—use was reported by 1.0 percent of 8th-graders, 1.1 percent of 10th-graders, and 1.6 percent of 12th-graders in 2010.

Rohypnol use in 2010 was reported by 0.5 percent of 8<sup>th</sup>-graders, 0.6 percent of 10<sup>th</sup>-graders, and 1.5 percent of 12<sup>th</sup>-graders since the drug was added to the survey in 1996. Annual prevalence of use stands now at around 0.5 percent in all three grades surveyed.

The above information was adapted from *NIDA InfoFacts* available at: <http://www.drugabuse.gov/infofacts/clubdrugs.html>