



ToxTalks:

A Bulletin for Healthcare Professionals Who Manage Poisoned Patients

Blue Ridge Poison Center

| University of Virginia Health

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Drug-Facilitated Sexual Assault

Drug-facilitated sexual assault (DFSA) poses a considerable threat to society. It involves the exploitation of chemical agents such as alcohol and drugs to perpetuate a sexual assault. Alcohol intoxication has shown a strong correlation with increased risk of sexual assault. In addition to alcohol, several drugs are commonly associated with DFSA, including benzodiazepines, non-benzodiazepine hypnotics (e.g., zolpidem, eszopiclone, zaleplon), gamma-hydroxybutyrate, ketamine, and other sedative hypnotics. These substances share similar characteristics, inducing sedation, hypnosis, and anterograde amnesia, which can alter a victim's behavior and make them more vulnerable to assault. The amnesic properties may lead to delayed medical attention, complicating the ability to test within the window of detection due to the potential rapid metabolism and/or elimination.

The historical use of alcohol and substances to incapacitate victims dates back centuries, with infamous cases like Mickey Finn, who added chloral hydrate to drinks to incapacitate and rob customers. More recent agents, such as flunitrazepam (Rohypnol), a benzodiazepine, have also been implicated in DFSA. Distinguishing benzodiazepine toxicity from alcohol intoxication clinically is difficult, and while some hospitals have immunoassays to detect benzodiazepines, many readily available benzodiazepines may result in false-negative results. Urine or blood specimens can be analyzed using gas-chromatography-mass spectrometry (GC-MS) or high-performance liquid chromatography (HPLC-MS) for more accurate detection. Other substances, such as gamma-hydroxybutyric acid and ketamine, are also used in DFSA but pose challenges in testing due to rapid metabolism and elimination.

Opiates, such as morphine and codeine, have been used to induce central nervous system depression in DFSA cases. Other opioids used include semi-synthetic compounds (e.g., hydrocodone, hydromorphone, and oxycodone) and synthetic compounds (e.g., fentanyl, methadone). While commercial immunoassays for opiates are available in hospitals, these often do not test positive in the case of

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opioid use if semisynthetic or synthetic substances are used. To confirm the presence of opiates, semi-synthetic, or synthetic opioid compounds in urine specimens, specific GC-MS analysis protocols are utilized.

Beyond prescription and illicit substances, many over-the-counter substances have the potential to be used in DFSA. Dextromethorphan, an over-the-counter antitussive agent, is abused for its hallucinogenic and dissociative properties. Antihistamines, such as diphenhydramine, can rapidly cross the blood-brain barrier, causing sedation, hallucinations, and confusion. Testing for such substances is not typically performed in health care settings, but common immunoassays may yield false-positive results, such as positive phencyclidine (PCP) tests due to dextromethorphan or diphenhydramine use. Confirmation through GC-MS is necessary in such cases.

When DFSA is suspected, urine and blood samples should be sent to the state department of forensics for toxicology testing. Proper documentation and chain-of-custody procedures are crucial when handling samples for such toxicology testing. Samples must be collected under strict protocols and in collaboration with law enforcement, including clear and unique identification and labeling of the subject being tested, identification of all individuals handling the specimen (with legible signatures), and a historical record of events with dates clearly stated. Specimens must be secured using sealed, tamper-evident processes.

Addressing DFSA requires a multidisciplinary approach involving law enforcement, medical teams, and forensic laboratories to ensure the best possible outcomes for victims and prosecution against perpetrators.

The University of Virginia Health's Blue Ridge Poison Center is always available for guidance with managing these exposures. Please contact us at 1-800-222-1222 or use our dedicated healthcare provider hotline 1-800-451-1428. *Free.*

Poison safety tips, free materials, & more:

