Drug Facilitated Sexual Assault (DFSA)
Outlines

Definition of the DFSA cases
Challenges for Toxicologists
Recommend Analytical Procedure
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LABORATORY DIRECTOR/CHIEF TOXICOLOGIST, Harris County Institute of Forensic Sciences (Houston, Texas) 1996-2012.

PUBLISHED AND PRESENTED NUMEROUS ARTICLES related to forensic toxicology (ex. cocaine, marijuana, inhalants, opiates, GHB, alcohol, prescription drugs, amphetamines, drug testing in unconventional matrices such as hair).

CO-EDITOR OF BOOKS:
* Drug-Facilitated Sexual Assault, A Forensic Handbook
* The Forensic Laboratory Handbook procedures and Practice, 1 & 2 Edition

LEADERSHIP ROLES include: Fellow of American Academy of Forensic Sciences; Past President of Southwestern Association of Toxicologists; past Board of Director of Society of Forensic Toxicologists American Crime Lab Directors; emeritus member of American Crime Laboratory Directors.

INSPECTOR for the National Laboratory Certification Program, the American Crime Laboratory Directors/Laboratory Accreditation Program, American Board of Forensic Toxicologists, the College of American Pathologists (Forensic Urine Drug Testing and Athletics Drug Testing), and National Forensic Science Technology Center.

Qualified as an EXPERT WITNESS in forensic toxicology and pharmacology in the states of Texas, Virginia, Maryland, Oklahoma, Florida, Kansas, California, Idaho, Pennsylvania, the Federal Court in Massachusetts, and the Military Courts of the United States.
Drug-Facilitated Sexual Assault: A Forensic Handbook

1. The Victim - Abarbanel
2. The Perpetrators and Their Modus Operandi - Welner
3. Ethanol - Garriott and Mozayani
4. Rohypnol and Other Benzodiazepines - Robertson and Raymon
5. Gamma-Hydroxybutyrate (GHB) and Related Products - Ferrara, Frison, Tedeschi and LeBeau
6. Hallucinogens - Raymon and Robertson
7. Opioids - Jufer and Jenkins
8. Miscellaneous Prescription and Over-the-Counter Medications - Jones and Singer
9. Collection of Evidence from DFSA - LeBeau and Mozayani
10. Analysis of Biological Evidence from DFSA Cases - LeBeau and Noziglia
11. Sexual Assault Nurse Examiners - Ledray
12. Investigating DFSA Cases - Archambault, Porrata and Sturman
13. Prosecution of DFSA - Kerlin, Riveira and Paterson
Definition

Drug-facilitated sexual assault (DFSA) is defined as a sexual assault facilitated by the use of an “anesthesia-type” drug, which when administered to a victim renders the victim physically incapacitated or helpless and thus incapable of giving consent.
Definition

• Ingestion of drugs or alcohol may be involuntary or voluntary
• Victims may be unconscious during all or parts of the sexual assault
• Or have anterograde amnesia, the inability to remember ongoing events after a traumatic incident, upon gaining consciousness
Scenarios

• Unknown administration
• Voluntary consumption
• Fraudulent consumption – drug misrepresented
• Forceful administration
SPIKED
DRINK
Perpetrators Perspective

- No resistance
- No use of physical force
- No threats of harm or injury
- No concern – screams, noise, detection
The Excuse

He said,
She said.
Communication

• “No Means No”

• Understanding the Complexities & Misperceptions of Consent
Communication

High school students were asked how to tell if someone is consenting to sex:

• “If she’s just lying there not trying to stop you.”
• “If she’s not fighting you off.”
• “If she’s letting you do whatever.”
• “If you’ve had sex with them before you know it’s probably okay.”
JUST BECAUSE SHE ISN'T SAYING NO...

DOESN'T MEAN SHE'S SAYING YES.
“Rape Drugs”

• Fast-acting

• Incapacitate Victim

• Alcoholic and nonalcoholic drinks
“Rape Drugs”- Advantages for Offenders

• Absence of resistance or outcry due to total incapacity

• Amnesia

• Low reporting rates

• More difficult to capture evidence
Common Elements of DFSA

- Social or business situation that seems non-threatening
- Victim consumes drink
- “Curtain comes down” on the victim’s awareness within a short time
- Loss of consciousness and memory for a period of time
- Moved to another location
- Unsure if sexually assaulted or identify signs they had been
Different scenario with DFSA:

- Some victims do not report the offense right away
- Most drugs used in sexual assault have a shorter duration in body
What Do Rape Victims Feel?

• Shock/disbelief
• Anger
• Fear
• Guilt
• Shame
• Powerlessness
• Sadness
How Victims Present following a DFSA

• Cannot account for period(s) of time
• No memory or unable to remember details
• Delayed Reports
• Fearful of Reporting
  – unsure about what happened
  – cannot provide details to police
  – reluctant to make accusation
CHALLENGES FOR FORENSIC TOXICOLOGISTS
Challenges with Evidence Collection

- Proper Specimen(s)
- Enough Specimen
- Preservation of Specimen
Gathering Evidence

Hurdles:

• Getting the victims to come forward
• Getting the victims to come forward in a timely manner
• Many hours, days may have passed before they realize they have been assaulted
Preserve Evidence

• Ensure victims do NOT eat, drink, bathe, brush teeth, urinate...
• First urine specimen
• Clothing in paper, not plastic, bags
Detectability Before Ingestion

• Most drugs will dissolve or disperse in beverages or food
• Tablets and some capsules have inert fillers that will not dissolve
  – May not be noticeable depending on beverage, physical and social circumstances, and if victim is intoxicated
• Most medications are bitter
  – May not be noticed if the beverage is strong tasting, victim is not familiar with the “normal” taste of the drink, and degree of intoxication of victim
Challenges Surrounding DFSA Investigations

- Drugs Used
- Reporting the Crime
- Collection of Evidence
- Laboratory Methodologies
Drugs Reportedly Used to Commit DFSA

- Ethanol
- Benzodiazepines
  - Flunitrazepam
  - Clonazepam
  - Lorazepam
  - Alprazolam
  - Triazolam
  - Chlordiazepoxide
  - Diazepam
  - Temazepam
- Zolpidem
- Barbiturates
- GHB, GBL, and 1,4-BD
- Ketamine
- Opiates
- Antihistamines
- Hallucinogens
- Sedative Antidepressants
- Chlordiazepoxide
- Diazepam
- Temazepam
- Scopolamine
- Herbal Sedatives
THE CLOCK IS RUNNING...
Fate of Drugs in Body

- Absorption
- Distribution
- Metabolism
- Excretion
Why Can’t We Find It?

Absorption and Distribution

Metabolism

Excretion

Blood

Urine

Detection Limit

Conc

Time
Toxicology

• Very limited amount of time available for gathering blood/urine for toxicology with most drugs used for this crime
• Not all labs are equipped to test for all of the possible drugs used for this crime
• Most common drug screens don’t test for drugs used for this other than benzodiazepines
• Must ask specifically for other drugs
Were “good laboratory practices” followed for this case?

- Proper Evidence Collection
- Proper Preservation
- Proper Testing
  - Qualified Examiners
  - Acceptable Method of Examination
  - Accredited Laboratory
- Interpretation
Specimen Selection, Collection, Preservation, and Security

- Specimen Collection
- Specimen Containers
- Specimen Preservatives
- Chain of Custody
Challenges with Laboratory Methodologies

- No single analytical test will detect all potential drugs used to facilitate sexual assault
- Use of Immunoassays
- Non-Existent Procedures
- Having Time to Focus
Metabolite Information
Example From Urine

- High codeine, low morphine
  - *Suggests codeine ingestion*
- High morphine, low codeine, 6-AM
  - *Suggests heroin ingestion*
- High morphine, no codeine, no 6-AM
  - *Suggests pharmaceutical morphine ingestion*
- Low morphine, lower/no codeine, no 6-AM
  - *Suggests poppy seed ingestion*
Drugs Associated With Sexual Assault

- Ethanol
- Diazepam (Valium®)
- Flunitrazepam (Rohypnol®)
- Triazolam (Halcion®)
- Clonazepam (Klonopin®)
- Alprazolam (Xanax®)
- Temazepam (Restoril®)
- GHB, GBL, and 1,4-BD
- Methamphetamine
- MDMA
- Ketamine
- Scopolamine
- Cocaine
- Barbiturates
- Marijuana
- Opioids
- Carisoprodol
- Cyclobenzaprine
- Meprobamate
- Diphenhydramine
- Chloral Hydrate

The Society of Forensic Toxicologists, Inc. (SOFT)

• SOFT is an organization composed of practicing forensic toxicologists and those interested in the discipline for the purpose of promoting and developing forensic toxicology.

FORENSIC TOXICOLOGY
LABORATORY GUIDELINES
DFSA Committee

http://www.soft-tox.org/
Some important assay parameters

- Specificity/Selectivity
- Limit of detection (LOD)
- Limit of quantitation (LOQ)
- Linearity
- Accuracy
- Precision
- Matrix Effect, Recovery, Process Efficiency

SOFT Guidelines

FDA Guidelines
Laboratory Methodology
Improving Sensitivity of Established SOPs

- Increase specimen volume to improve chances of analyte detection
- Hydrolyze urine specimens for benzodiazepine metabolites
- Utilize Derivatizations
- GC/MS(SIM) analysis
- GC/MS(Cl) analysis
- LC/MS analysis
- New technology is highly recommended
“Routine” DFSA Drugs

• Investigation drives the toxicological analysis
• When the investigation does not provide likely candidates, a full screen for “routine” DFSA drugs should be undertaken
• This list will vary from one laboratory to the next
Sample List of “Routine” DFSA Drugs

- Ethanol
- GHB, GBL, 1,4-BD
- Benzodiazepines
- Amphetamines
- Cocaine
- Marijuana
- Opiates
- Barbiturates
- Sedative Antidepressants
- Sedative Antihistamines
- Zolpidem

Alprazolam
Chlordiazepoxide
Clonazepam
Diazepam
Flunitrazepam
Lorazepam
Temazepam
Triazolam

LODs must be low

12/1/2014
Sample List of “Non-Routine” DFSA Drugs

- Chloral hydrate
- Ethchlorvynol
- Valproic acid
- Dextromethorphan
- p-Methoxyamphetamine
- Scopolamine
- Ketamine
- Tiletamine

- Carisoprodol
- Cyclobenzaprime
- Meprobamate
- Clonidine
- Zolazepam
Interpreting Results

• Blood:
  – Positive Result = Good indicator of recent (hours) exposure
  – Negative Result = No exposure or collected too late

• Urine:
  – Positive Result = Good indicator of exposure within last few days
  – Negative Result = No exposure or collected too late
A DFSA Case

• A 23-year old girl had a party at home. She lost consciousness after talking with a friend. The next day, she recovered nude in a bed with him.

• She went to the police 6 days after the alleged assault.
# Toxicological Analysis

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Collection Time (days after offense)</th>
<th>Immunoassay GC/MS</th>
<th>LC/MS/MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood</td>
<td>6</td>
<td>Negative</td>
<td>Zolpidem 16 ng/L</td>
</tr>
<tr>
<td>Urine</td>
<td>6</td>
<td>Negative</td>
<td>Zolpidem 32 ng/L</td>
</tr>
<tr>
<td>Hair</td>
<td>49</td>
<td>NA</td>
<td>Zolpidem 0.75 pg/mg</td>
</tr>
</tbody>
</table>
Collection of Evidence

Blood
- Pharmacological interpretation
- Shorter detection time
- Collect within 24 hrs of suspected ingestion of agent
- Collect ~ 10-20mL
- Preserve with sodium fluoride & potassium oxalate (gray-top tube)
- Refrigerate

Urine
- Limited interpretation
- Longer detection times
- Collect within 96 hrs of suspected ingestion of agent
- Collect ~ 100 mL
- Store in refrigerated conditions

Other
- e.g. Hair, Saliva, Sweat
- Not all labs accepts these items

Summary

• DFSA cases are increasing
• Many different drugs are being used -- not just the ones reported in the media
• Proper selection and preservation of evidence is critical for interpreting results
• Forensic toxicologists play a key role in the investigation of victim allegations.
• Having acceptable assays is essential.
• The successful investigation depends upon a “team approach” involving the law enforcement, medical professionals, scientists, and prosecutors
Conclusions

• DFSA cases are being reported more frequently
• Many different drugs are being used - not just the ones reported in the media
• Many of the challenges of DFSA can be overcome
  – Education is key
  – Thorough investigation is a must
    • Using sensitive and specific methods
  – Teamwork is vital
Thank you for your time.....

Any Questions?