



UNCONVENTIONAL MISUSE OF MEDICATIONS

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OBJECTIVES

- Identify non-scheduled medications that have the potential to be misused
- Describe patterns of misuse for select medications
- Recognize signs of misuse or toxicity of various classes of medications

DISCLOSURES

- I have no conflicts of interest to disclose
- We will be discussing “off-label” uses of prescription medications

POLL TIME!

- Which of the following medications can be misused?
 1. Dextromethorphan
 2. Gabapentin
 3. Furosemide
 4. Pseudoephedrine
 5. Mirtazapine
 6. Benztropine
 7. Metoprolol

DEFINITIONS

- **Scheduled medications:** medications determined by the Controlled Substances Act to have various levels of misuse or physical/psychological dependency potential and acceptable medical use
 - Controlled through a “closed” system and enforced through Drug Enforcement Agency (DEA)

Class I	Class II	Class III	Class IV	Class V
Highest potential for abuse and dependence	High potential for abuse and dependence	Moderate potential for abuse or dependence	Low potential for abuse and dependence	Lower potential for abuse and dependence
NO accepted medical use	Medical value outweighs risk		Acceptable medical value	
Cannabis, LSD, heroin, ecstasy	Hydrocodone, oxycodone, cocaine, D-amphetamine, methamphetamine	Codeine (Tylenol #3), ketamine, anabolic steroids, testosterone	Benzodiazepines, Soma, Ambien, tramadol	Robitussin AC, Lomotil, Lyrica

DSM-5 CRITERIA: SUBSTANCE USE DISORDER

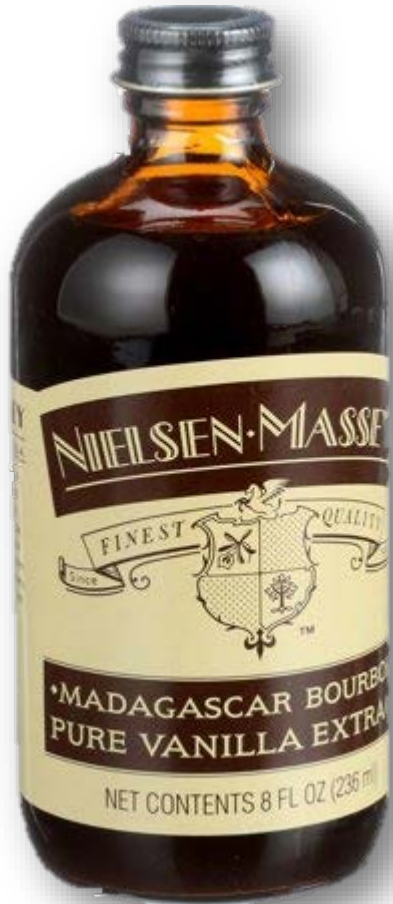
1. Failure to fulfill obligations
2. Hazardous use
3. Social/interpersonal problems related to use
4. Neglected major roles to use
5. Withdrawal
6. Tolerance
7. Using more or for longer than intended
8. Persistent desire/ unsuccessful efforts to cut down
9. Much time spent using
10. Physical/psychological problems related to use
11. Craving

Mild: 2-3 symptoms

Moderate: 4-5 symptoms

Severe: \geq 6 symptoms

WHY DO PEOPLE MISUSE MEDICATIONS?



School warns of students putting vanilla extract in coffee, getting drunk

By: WFLA 8 On Your Side Staff [✉](#)

Posted: Feb 28, 2019 11:24 AM EST

- Access
- “Safer”
- Less stigma
- Lack of UDS detection

OVERVIEW OF MISUSED MEDICATION CLASSES

- Stimulants
- Sedatives
- Hallucinogenic
- Muscle Relaxants



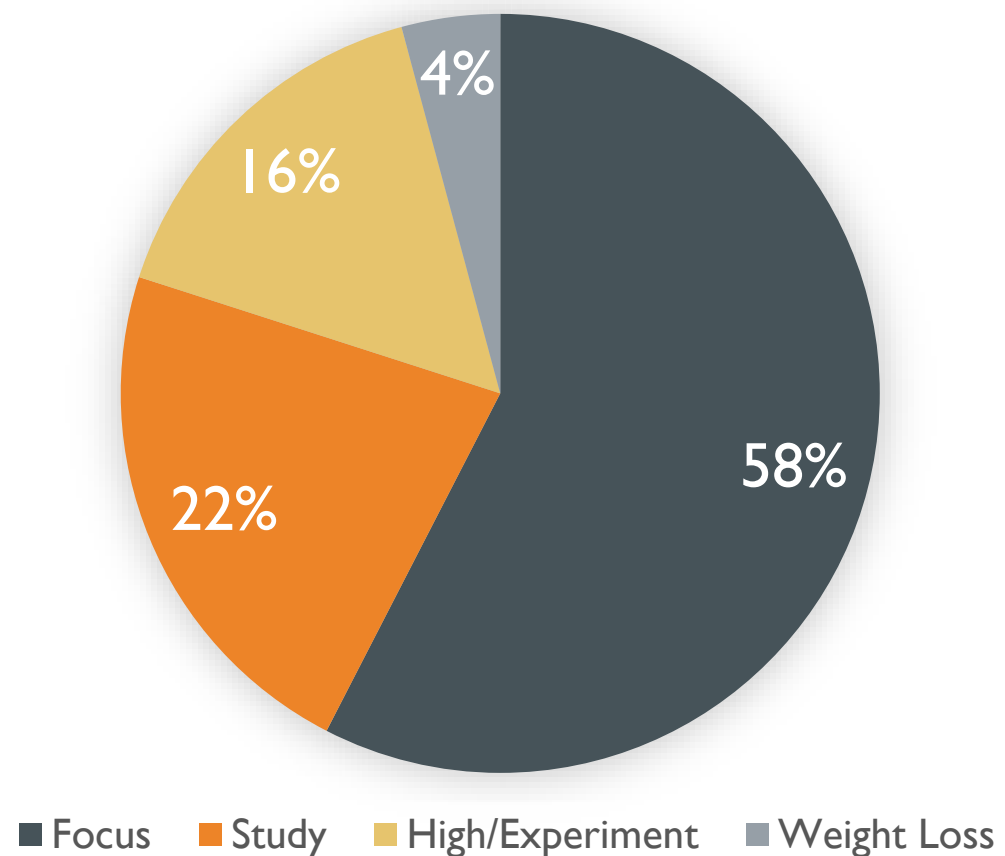


STIMULANTS

STIMULANT DESIRED EFFECT

- Focus
- Experimentation
- Weight loss
- Euphoria

Motivations for Adults with Prescription Stimulant Misuse



STIMULANT TOXICOLOGY

■ Psychological

- Hypervigilance
- Paranoia
- Anxiety, tension
- Impaired judgment
- Delusions

■ Physical

- Tachycardia (or bradycardia)
- Elevated blood pressure (or lowered)
- Tremors
- Pupillary dilation
- Hyperthermia
- **SEIZURES**

STIMULANT EXAMPLES: BUPROPION

Bupropion SR (WELBUTRIN)

- **What:** blocks neuronal uptake of DA & NE
- **How:** oral, nasal, injection; ~600mg/day
 - >1200mg likely to cause seizures
- **Why:** significant euphoria and stimulation ~1 hour

STIMULANT EXAMPLES: VENLAFAXINE

“Baby Ecstasy”

- **What:** blocks reuptake of 5-HT & NE; at higher doses also DA
- **How:** orally up to 1500mg
- **Why:** dissociative effect; amphetamine/ecstasy-like
- Withdrawal syndrome may be very severe
 - *“nausea, depression, suicidal thoughts, disorientation, stomach cramps, panic attacks, sexual dysfunction, headache, and occasional psychotic symptoms”*

STIMULANT EXAMPLES: PROPYLHEXEDRINE

Propylhexedrine (BENZEDREX)

- **What:** OTC nasal decongestant spray
- **How:** extracted and swallowed/injected
- **Why:** Energy and euphoria
 - bad “crash” shortly after
- Depending on success of extraction, heart attack and lung injury possible
- Potential (+) methamphetamines/amphetamines on UDS



STIMULANT EXAMPLES

Albuterol

- **What:** bronchodilator inhaler
- **How:** excessive inhalation; orally ~16mg BID
- **Why:** mild stimulation, euphoria, intoxication, and *metabolism?*

Ephedrine (BRONKAID)

- **What:** OTC decongestant + guaifenesin
- **How:** orally in high doses
- **Why:** energy and euphoria, weight loss

SEDATIVES



SEDATIVE DESIRED EFFECT

- Sedation
- Anxiolytic
- Mild euphoria
- Attempting to fight through sedation, becomes psychoactive
- **Hallucinations**

SEDATIVE TOXICOLOGY

- Tachycardia
- Syncope
- Respiratory depression
- Slurred speech
- Confusion/agitation
- Hallucinations
- Coma

SEDATIVE EXAMPLES: QUETIAPINE

Baby Heroin, Quell, Suzie-Q, Snoozeberries

- **What:** D2 blocker, 5-HT antagonist, H-1 antagonist
- **How:** Insufflation, Intravenous co-administration with Cocaine (Q-Ball)
 - Ingest high doses and “push through” the sedation
- **Why:** sedation, anxiolytic, hypnosis
 - “buzz” or euphoria, especially with opioids

SEDATIVE EXAMPLES: GABAPENTIN

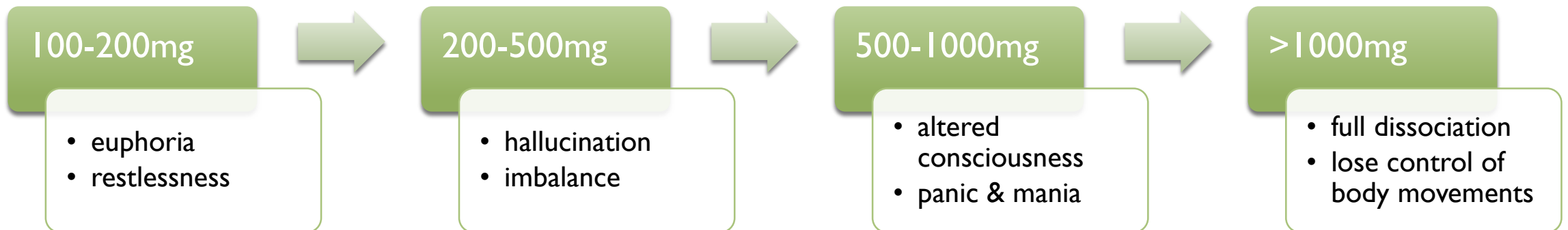
“Gabbies”

- **What:** abused in extremely high doses ~4,000mg
- **How:** combined with opioids to enhance effect
- **Why:** well-being/relaxation, euphoria, and even hallucinations
 - C-V in some states, MN PDMP requires documentation

SEDATIVE EXAMPLES: DEXTROMETHORPHAN

Robo-tripping, Triple C's

- **What:** codeine-like, NDMA antagonist
- **How:** cough syrup or capsule ingestion
- **Why:**



SEDATIVE EXAMPLES: ANTICHOLINERGICS

- Trihexyphenidyl (ARTANE)
 - **What:** inhibits parasympathetic nervous system
 - **How:** crush and smoke with tobacco, oral
 - **Why:** euphoria, anxiolytic, hallucinogenic
- Others
 - Nortriptyline: he “be buzzin”
 - Mirtazapine: “crappy high”
 - Diphenhydramine, benztropine

MUSCLE RELAXANTS

MUSCLE RELAXANT DESIRED EFFECT

- Anxiolytic
- Hallucination
- **“Couch sinking”**
- Mild euphoria
- Self-medicating pain or withdrawal

MUSCLE RELAXANT TOXICOLOGY

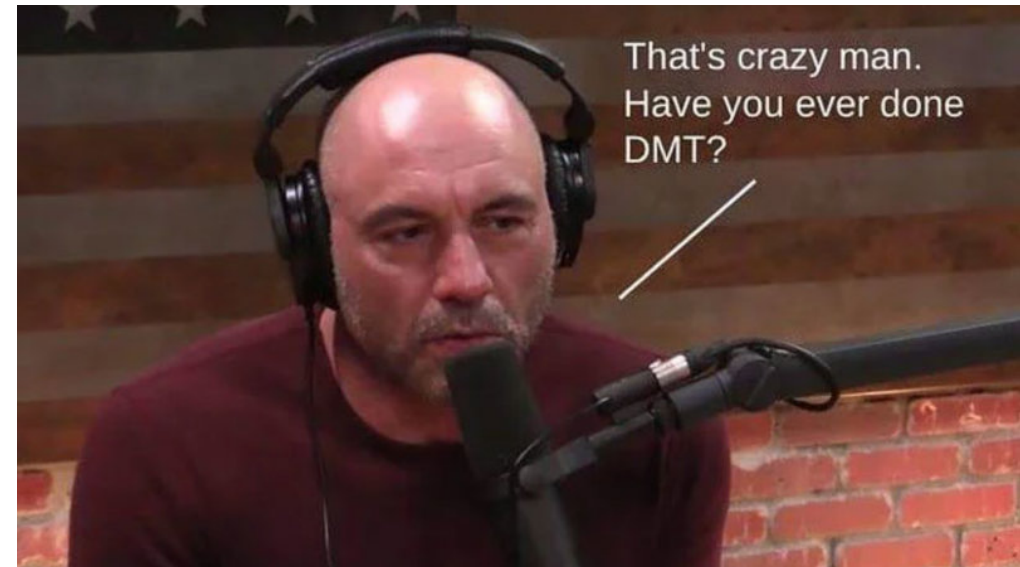
- Hallucinations
- Tremors
- Agitation
- Delirium
- Seizures
- Coma
- Respiratory depression
- Rhabdomyolysis

MUSCLE RELAXANT EXAMPLES

- **What:** reduces muscle tone from CNS (brain stem or spinal cord)
- **How:** nasal; paired with opioids or benzodiazepines
- **Why:** sedation
 - Baclofen – more than 80mg will cause muscle contractions/rigidity
 - Tizanidine – visual hallucinations if you fight the drowsiness
 - Metaxalone, methocarbamol – less sedating, less misuse

OTHER

- Diuretics: “smurfing”
 - weight loss, dizziness
- Vicks: menthol
 - makes user feel “floaty”
- Odansetron
 - “benzo’ed out”
- Tryptophan and Methionine
 - Could potentially create N,N-dimethyltryptamine (DMT) in-vivo



PATIENT CASE EXAMPLE

- Patient called pharmacy and through slurred speech reported seeing “white rabbits” and “fire.”
- Medications:
 - **Tizanidine** 4mg PO Q8H for lower back pain (recent increase from 2mg PO Q8H)
- Welfare check resulted in ER visit from tizanidine overdose.
- Provider question:

“Which muscle relaxant doesn’t have abuse potential?”

MANAGEMENT STRATEGIES

- Avoid medications with known potential for patient's desired effect
- Control days supply
- Limit quantity dispensed
- Utilize medications with little to no overdose risk



WHAT ELSE??

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