Stimulants

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Opioid Response Network
STR-TA

Presenter Bio

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- Dr. Weaver is a Professor in the Department of Psychiatry and Medical Director of the Center for Neurobehavioral Research on Addictions (CNRA) at the McGovern Medical School at the University of Texas Health Science Center at Houston (UTHealth).
- He received his M.D. degree from Northeast Ohio Medical University, and completed Residency in Internal Medicine and a Clinical Research Fellowship in Addiction Medicine at Virginia Commonwealth University (VCU) Health System, and he is Board-certified in Internal Medicine through the American Board of Internal Medicine and certified in Addiction Medicine through the American Board of Preventive Medicine.
- Dr. Weaver is currently involved in patient care, medical education, and research. Dr. Weaver sees patients in the Innovations Addiction Treatment Clinic at the Texas Medical Center in Houston. He has extensive experience teaching about addiction to medical students, residents, and community professionals at all levels.
- He has been involved in multiple research projects, and currently is collaborating with other researchers in the CNRA on studies involving cocaine, methamphetamine, marijuana, and electronic cigarettes. Dr. Weaver has multiple publications in the field of addiction medicine.

Working with communities to address the opioid crisis.

- The SAMHSA-funded Opioid Response Network (ORN) assists states, organizations and individuals by providing the resources and technical assistance they need locally to address the opioid crisis and stimulant use.
- Technical assistance is available to support the evidence-based prevention, treatment and recovery of opioid use disorders and stimulant use disorders.

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Working with communities to address the opioid crisis.

- *The Opioid Response Network (ORN)* provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis and stimulant use.
- *ORN* accepts requests for education and training.
- Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.

Contact the Opioid Response Network

- To ask questions or submit a request for technical assistance:
  - Visit www.OpioidResponseNetwork.org
  - Email orn@aaap.org
  - Call 401-270-5900

Stimulants

Objectives

- Identify stimulants and designer drugs, including methamphetamine, methylenedioxymethamphetamine (ecstacy), and cathinones (bath salts).
- Recognize clinical clues to use of stimulants and designer drugs.
- Discuss problems resulting from use of stimulants and designer drugs.

Stimulants

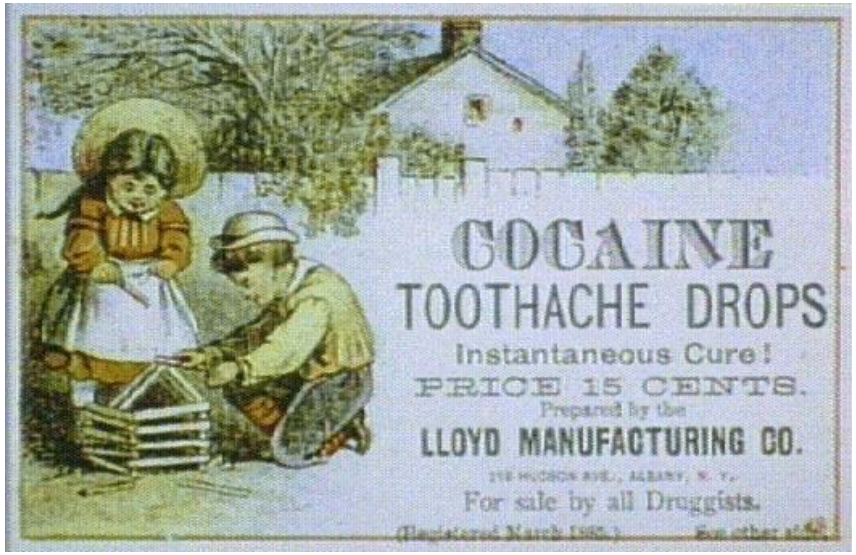
- Amphetamine
- Methamphetamine
- Cocaine
- Ecstasy (methylenedioxy-methamphetamine)
- Sudafed (pseudoephedrine)
- Khat (cathinone)
- Methcathinone

Mechanisms of Action

- Bind to dopamine transporter (reuptake pump) on presynaptic neuron and reverses pump
- Increase release of excitatory neurotransmitters from intracellular vesicles
- Inhibit monoamine oxidase in synaptic cleft
- Cocaine simply blocks dopamine transporter

Therapeutic uses

- Attention deficit disorder
  - Methylphenidate (Ritalin), amphetamine salts (Adderall)
  - Enhance focus
  - Alternatives
    - Atomoxetine (Strattera), bupropion, guanfacine (Intuniv)
- Narcolepsy
- Weight loss
- Refractory depression
- Decongestant (Sudafed)
- Local anesthetic (cocaine)



Prescription Stimulants

- Benzedrine (amphetamine)
- Dexedrine (dextroamphetamine)
- Adderall (amphetamine + dextroamphetamine)
- Ritalin (methylphenidate)
- Preludin (phenmetrazine)
- Desoxyn (methamphetamine)
- Vyvanse (lisdexamfetamine)

Other uses of Stimulants

- "Smart pills"
  - Late-night studying
  - College students
- "Truckers"
  - Long-distance driving
  - Truck drivers

Methamphetamine

- Potent, long-acting stimulant
- Route of administration
  - Oral
  - Intranasal
  - Smoke
  - Inject
- Synthesized in clandestine labs directly for illicit use
- 14.5 million adults in U.S. have used methamphetamine
  - 5.4% of population
- Nearly 1 million current users in U.S.

Street Names of Stimulants

- Speed, Crank, Meth
- Crystal meth, Ice
- Ecstasy (MDMA), Adam
- Eve
- The love drug
- STP (serenity, tranquility, & peace)
- Uppers
- Bennies, Dexies
- Black Beauty
- White Crosses
- Vitamin R, rits
- Pep pills
- Cat

Usage & Dosages

- Users may start with oral route
  - Low risk, but less ‘rush’ (euphoria)
- Intranasal insufflation (snorting, sniffing)
- Most dangerous
  - Smoking
  - Injection (especially intravenous)
- Users average 1-7 binges per week
  - Each lasts 4-24 hours
  - May re-administer every 10-30 minutes
  - ‘run,’ ‘spree’

Psychotic Manifestations of Stimulants

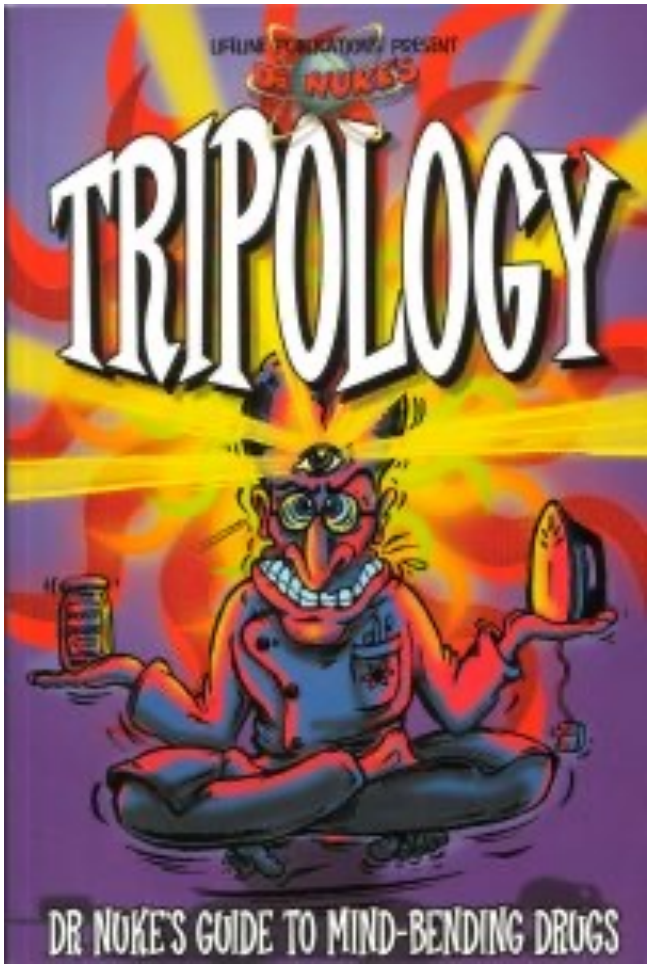
- Hallucinations
  - “snow lights” (visual)
  - “crank bugs” (tactile)
- Paranoid delusions
- Psychosis
- Worsen panic attacks
- Worsen schizophrenia

Effects of Chronic Use

- Startle easily
- Movement problems similar to Parkinson's disease
- Build-up of cholesterol in arteries
  - stroke
  - heart attack
- Heart failure
  - Direct damage to heart muscle

Designer Drugs

- Variety of compounds that change with time to avoid detection and legal authorities
- Use by young adults
- Attractive packaging
  - Entice younger users
  - Colorful names

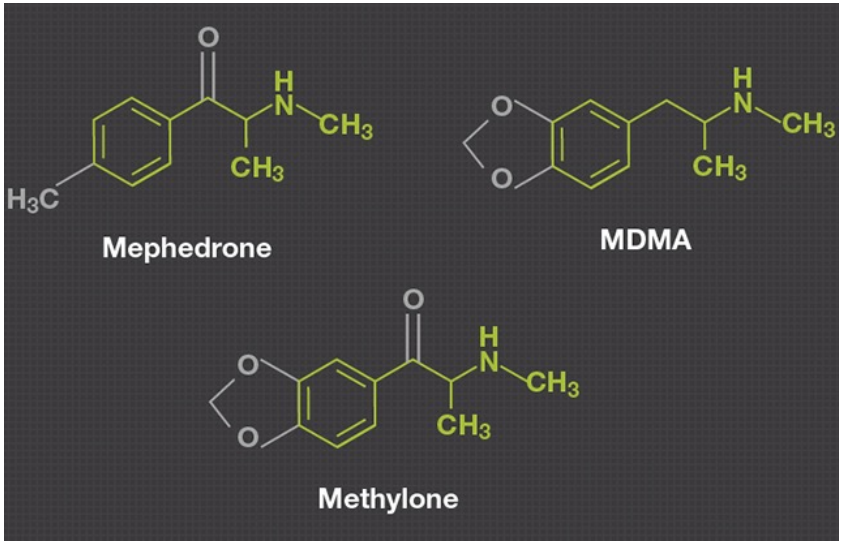


“Bath Salts”

- Designer stimulants
  - Newer versions of older stimulant drugs
- Colorful names
  - Ivory Wave, Vanilla Sky
- Labeled “not for human consumption”
  - Not actually sprinkled into bathtub water
  - Snorted or smoked
  - Intended for recreational use

Pharmacology of Bath Salts

- Synthetic derivatives of cathinone (khat)
  - Methylenedioxy-pyrovalerone (MDPV)
  - Mephedrone, methylone
- ✧ Potent stimulants and hallucinogens
  - Similar to MDMA (Ecstasy)
- ✧ ↑ excitatory neurotransmitters
  - Dopamine, norepinephrine
  - Serotonin



Flakka

- Newest “bath salt” cathinone derivative
  - Alpha-PVP
- Also known as ‘gravel’
- Spanish for “charming woman”
- Inexpensive
- Similar serious cardiac and psychotic effects
- Found in Florida, Texas, and major U.S. cities

Acute Clinical Effects

- Very similar to other stimulants
  - ↑ energy, euphoria
  - ↑ alertness, concentration
  - ↓appetite
- Duration of effects
  - Start in 10-20 min
  - Peak at 45-90 min
  - Lasts 2-3 hours

Physiologic Effects

- Deaths have been reported with mephedrone and MDPV

- Sweating
- Muscle tension
  - Spasms
  - Jaw clenching
- Heart rhythm problems
- High blood pressure
- Low sodium
  - Similar to MDMA (Ecstasy)
  - Sweating
- Kidney failure

Psychiatric Effects

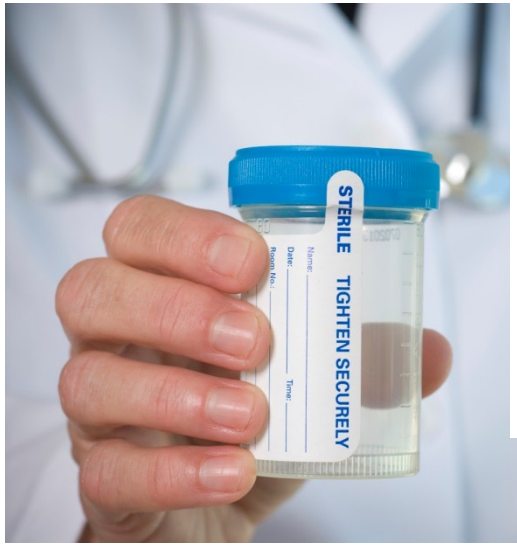
- Agitation is a hallmark of toxicity
- Psychosis
  - Paranoia, delusions
  - Hallucinations
    - Primarily visual
- Tolerance
- Withdrawal
  - Depression
  - Irritability
  - Difficulty concentrating
  - Cravings

“Bath Salts” Use

- 127 different compounds
- “Flakka”/ “gravel”
  - Alpha-PVP
  - Just as potent as methamphetamine
  - 2nd most prevalent bath salt seized in U.S.
- 50-68% testing (+) denied knowingly using
- 80 deaths in Florida 2014-2015
- 100 deaths in Europe
- 1% of high school seniors used in 2018
- Risk factors
  - Homeless
  - Not residing with parents
  - Low SES
  - Use of other drugs

Diagnostic Challenges of Designer Drugs

- Not detected on current drug screens
- Products change fairly quickly
  - Evade legal restrictions
  - Avoid positive drug test
- Many different ‘brand’ names
- Contents and concentration vary widely



Is this Client using a Stimulant?

- Ask about drug use
  - Know common street names
- Urine drug testing
  - Polysubstance use is the norm
  - Negative test doesn't rule out designer drug use
- Packages, paraphernalia
  - Send substance to lab

Treatment of Intoxication

- Verbal reassurance
- Sedate for agitation, anxiety
- Antipsychotic medication if necessary
- Most nonpsychiatric symptoms resolve in 1-3 days
- Cardiac monitoring
  - Heart rhythm problems
  - High blood pressure
- IV fluids

Psychiatric Manifestations

- Psychiatric consultation
- May require prolonged inpatient treatment of psychosis
- Psychiatric symptoms that persist >1 week
  - May be co-occurring primary psychiatric disorder

Pharmacologic Treatments for Stimulant Addiction

- Desipramine
- Imipramine
- Monoamine oxidase inhibitors
- Fluoxetine
- Trazodone
- Haloperidol
- Flupenthixol
- Lithium
- Methylphenidate
- Levodopa
- Bromocriptine
- Amantidine
- Carbamazepine
- Valproate
- Topiramate
- Mazindol
- Naloxone
- Buprenorphine
- Methadone

<u>Many tried, none effective</u>

Possible New Combination?

- Accelerated Development of Additive Pharmacotherapy Treatment (ADAPT) for Methamphetamine Use Disorder
- Sponsored by National Institute on Drug Abuse Clinical Trials Network (NIDA CTN)
- High-dose bupropion
  - Depression medication
- High-frequency naltrexone injections
  - Opioids, alcohol
- 400 subjects with daily methamphetamine use
- Multiple sites throughout U.S.
- Just published positive findings

Treatment of Stimulant Addiction

- Mutual-help groups
  - 12-Step (Narcotics Anonymous)
  - SMART Recovery
- Behavioral counseling
  - Individual
  - Facilitated groups
- Contingency Management
- Family therapy
- Intensive outpatient
- Residential

Summary

- Many different types of stimulants and ways to use, but all have similar effects on user
- Stimulants ‘rev up’ the body and mind
- Designer drugs are more potent synthetic versions of existing drugs (amphetamines, hallucinogens)
  - Don’t show up on usual urine drug tests
- Intoxication may require hospitalization
- Different types of addiction treatment are available, which are successful and cost-effective

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Questions?

ORN Evaluation Survey

To better improve our services at the Opioid Response Network, we respectfully request you take this brief survey about our performance.

Thank you so much for your cooperation!

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