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# **Synthetics, Club Drugs, and New Fads in Substance Misuse**

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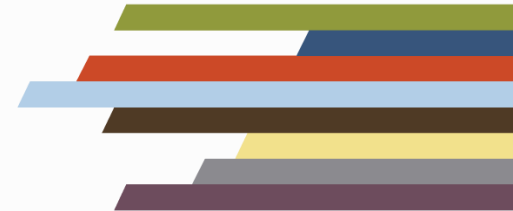


# Disclosures

- The development of these training materials was supported by grant 7H79TI088149-01 (PI: R. Martin) from the Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration, United States Department of Health and Human Services. The views and opinions contained within this document do not necessarily reflect those of the US Department of Health and Human Services and should not be construed as such.



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# ATTC Explainer Video



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# Learning Objectives

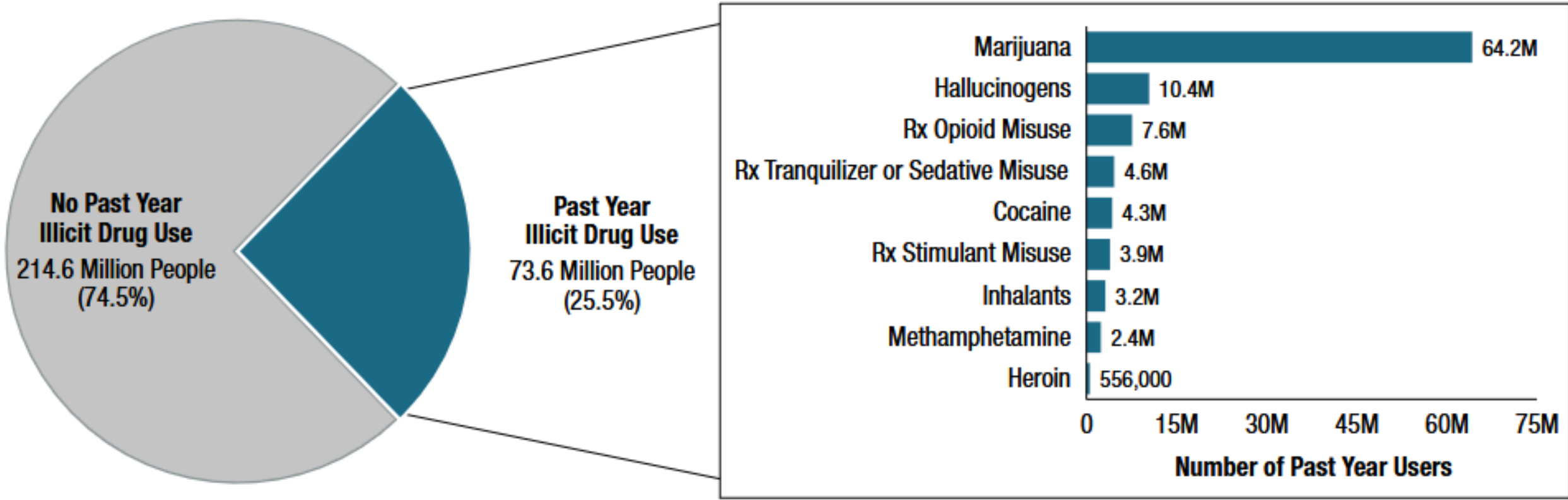
- **Identify the clinical signs, symptoms, and acute effects** of commonly misused substances among adolescents
- **Describe evidence-based strategies for intoxication and overdose management**, including stabilization, pharmacologic support, and overdose prevention
- **Differentiate emerging synthetic and “club” drugs** by pharmacology, street names, routes of administration, and potential complications
- **Practice** rapid assessment, diagnostic reasoning, and acute management of adolescents presenting with substance intoxication through **case-based scenarios**
- **Connect adolescents and families to resources and treatment**, while reducing substance-related stigma, strengthening provider confidence, and reinforcing the role of pediatric and adolescent clinicians in addressing substance use disorders

# Disclaimer

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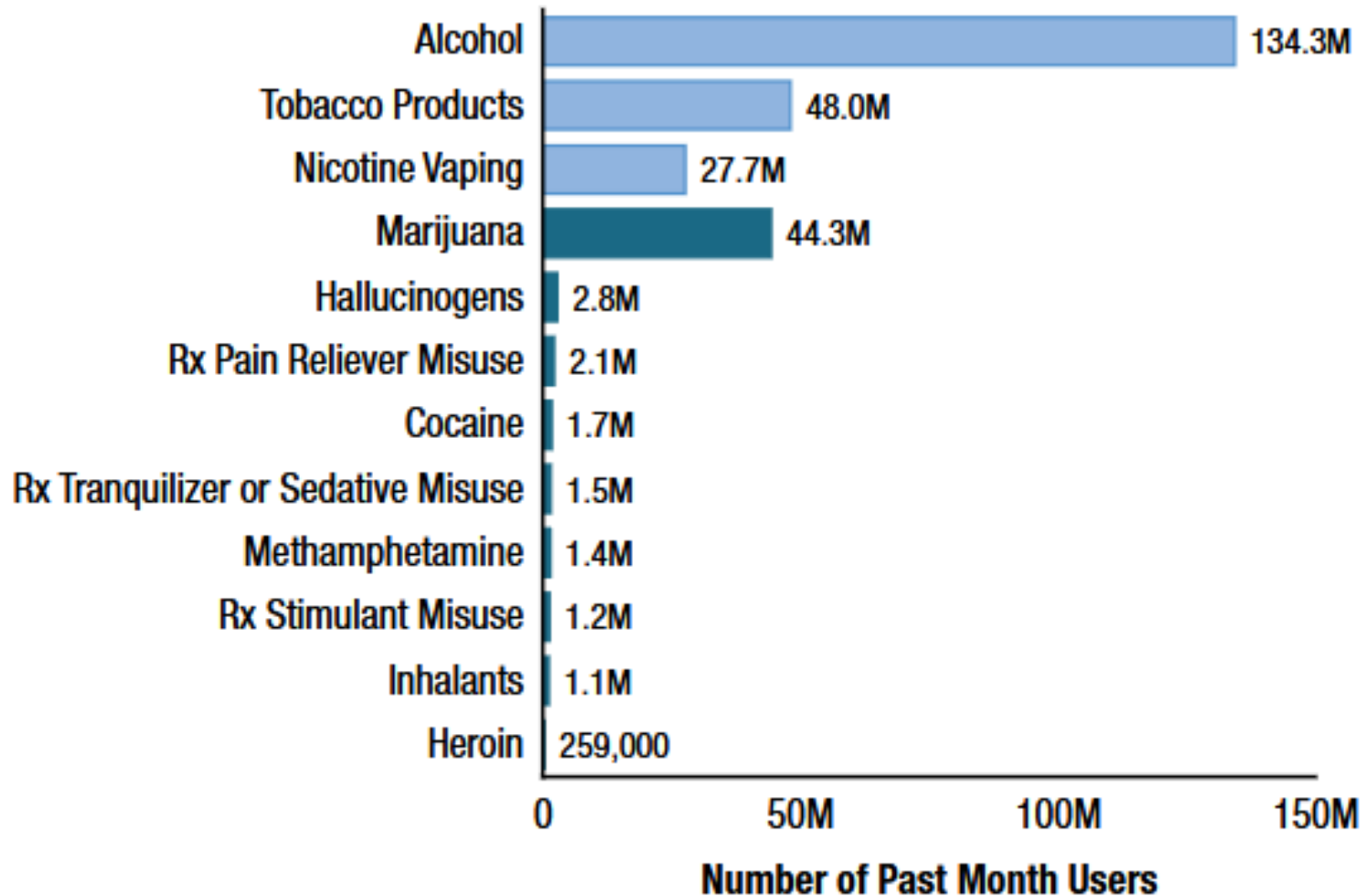
**Figure 13. Past Year Illicit Drug Use: Among People Aged 12 or Older; 2024**



Rx = prescription.

Note: The estimated numbers of past year users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past year.

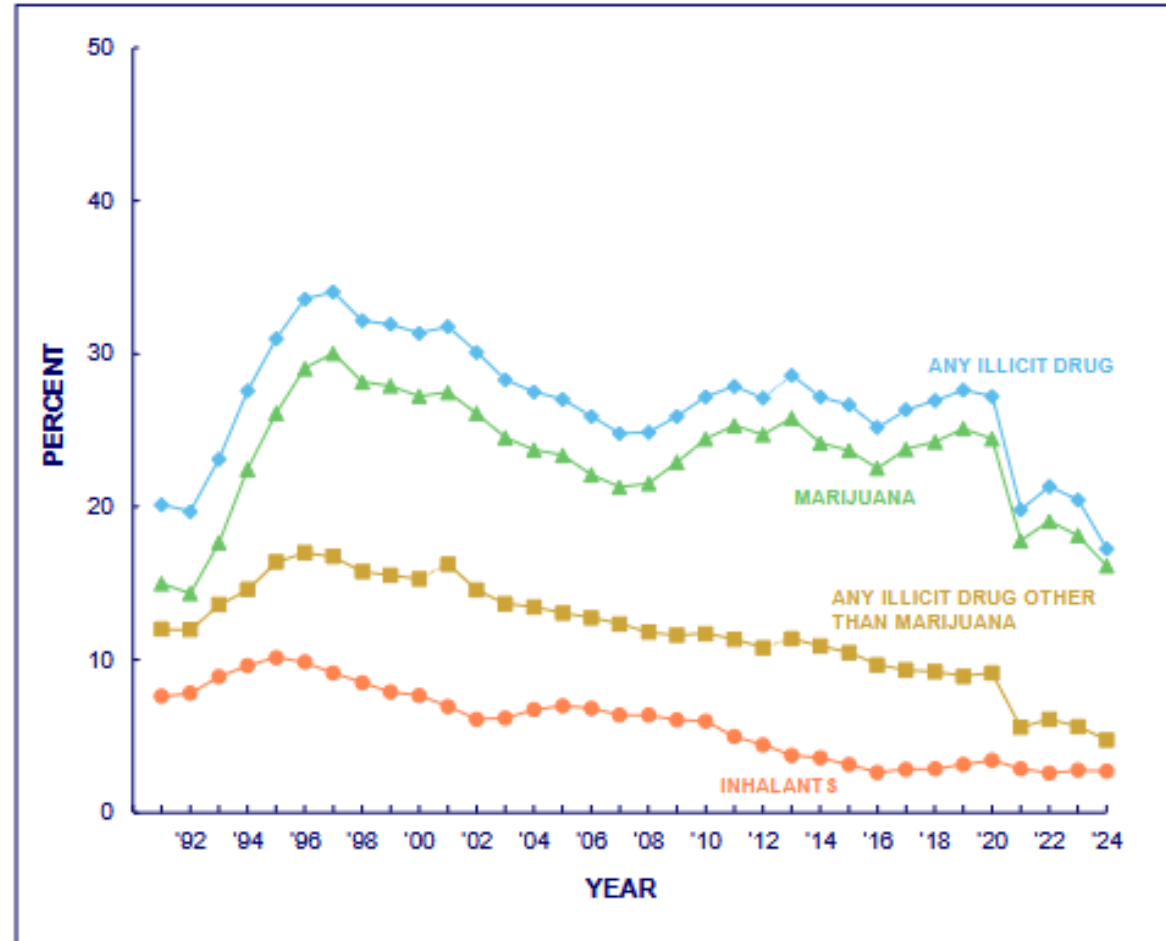
**Figure 1. Past Month Substance Use: Among People Aged 12 or Older; 2024**



Rx = prescription.

Note: The estimated numbers of current users of different substances are not mutually exclusive because people could have used more than one type of substance in the past month.

**FIGURE C-1**  
**ANY ILLICIT DRUG, MARIJUANA, AND INHALANTS**  
 Trends in Annual Prevalence  
 for Grades 8, 10, and 12 Combined



Notes. A dashed line indicates a change in the question text between the years it connects. In 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are slightly affected by these changes. In 2013, a revised set of questions on amphetamine use were introduced. Data for any illicit drug and any illicit drug other than marijuana were affected by this change.

LSD

PCP

Ecstasy/MDMA

Psilocybin

Ketamine

Salvia divinorum

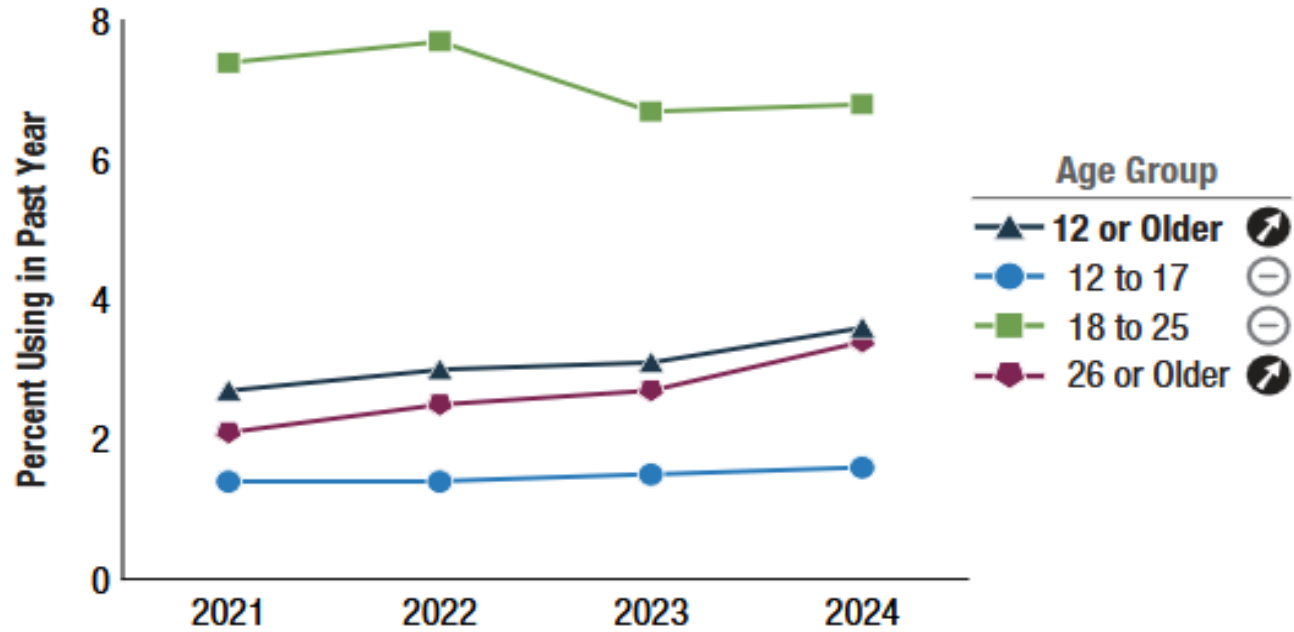
Mescaline

Peyote



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**Figure 19. Past Year Hallucinogen Use: Among People Aged 12 or Older; 2021-2024**



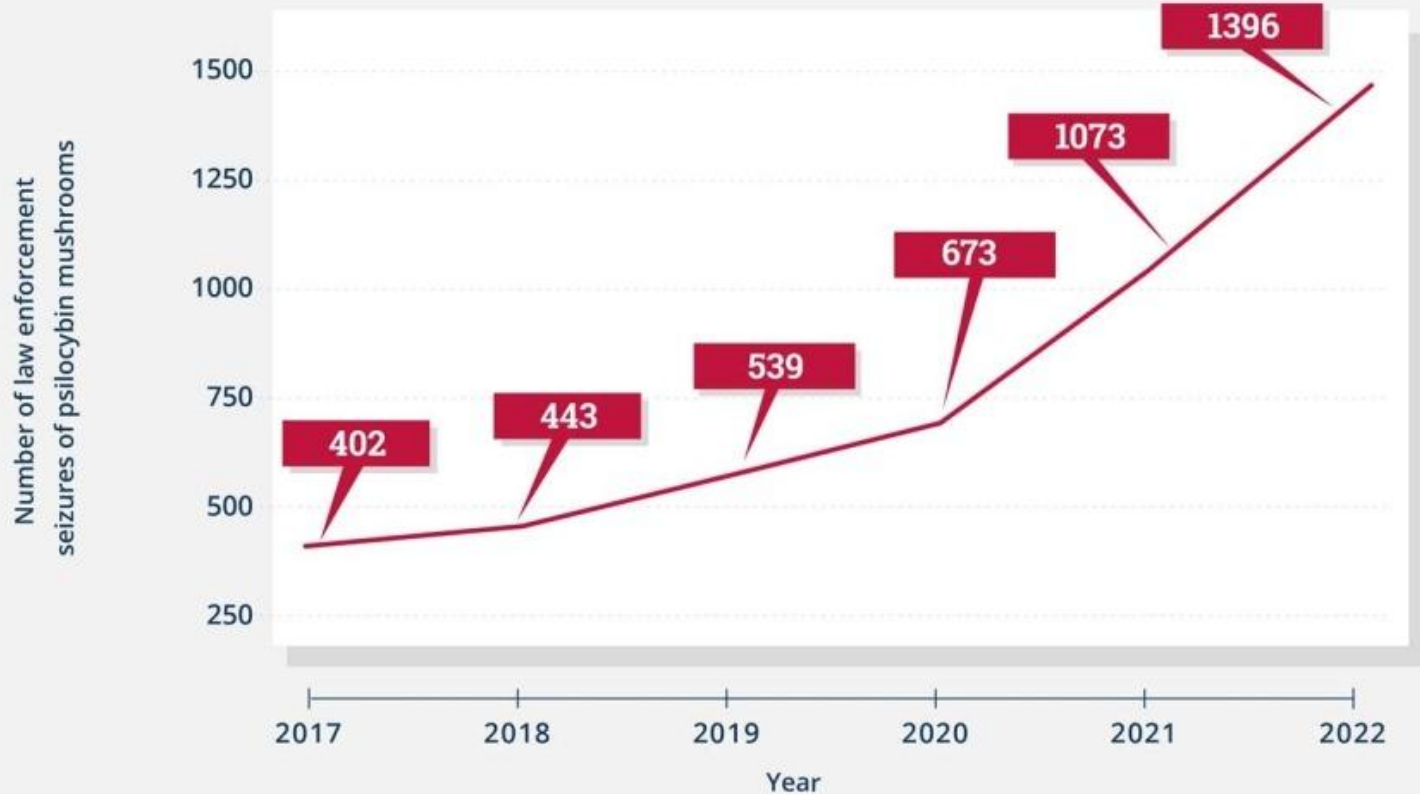
Note: Estimates for 2021 may differ from previously published estimates because the 2021 analysis weights were updated to facilitate between-year comparisons.

**Figure 19 Table. Past Year Hallucinogen Use: Among People Aged 12 or Older; Percentages, 2021-2024**

Age Group	2021	2022	2023	2024	Trend
12 or Older	2.7	3.0	3.1	3.6	Increased
12 to 17	1.4	1.4	1.5	1.6	No Change
18 to 25	7.4	7.7	6.7	6.8	No Change
26 or Older	2.1	2.5	2.7	3.4	Increased

Note: Estimates for 2021 may differ from previously published estimates because the 2021 analysis weights were updated to facilitate between-year comparisons.

## Number of Law Enforcement Seizures of Psilocybin Mushrooms in the United States, 2017-2022



Estimates based on data reported by the Office of National Drug Control Policy's High Intensity Drug Trafficking Areas program

Reference: JJ Palamar, et al. *Drug and Alcohol Dependence*. DOI: 10.1016/j.drugalcdep.2024.111086 (2024)



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National Institute  
on Drug Abuse

nida.nih.gov

# So, when you are considering substance use...

- What's the most important question to answer in the acute setting?



**A 16-year-old boy is brought to the ED by several friends after becoming confused and disoriented while “hanging out.” At the ED, he is back to baseline.**

**Vitals:**

**T99**

**RR20**

**HR104**

**BP128/75**

What did he take?

How do you medically manage him?



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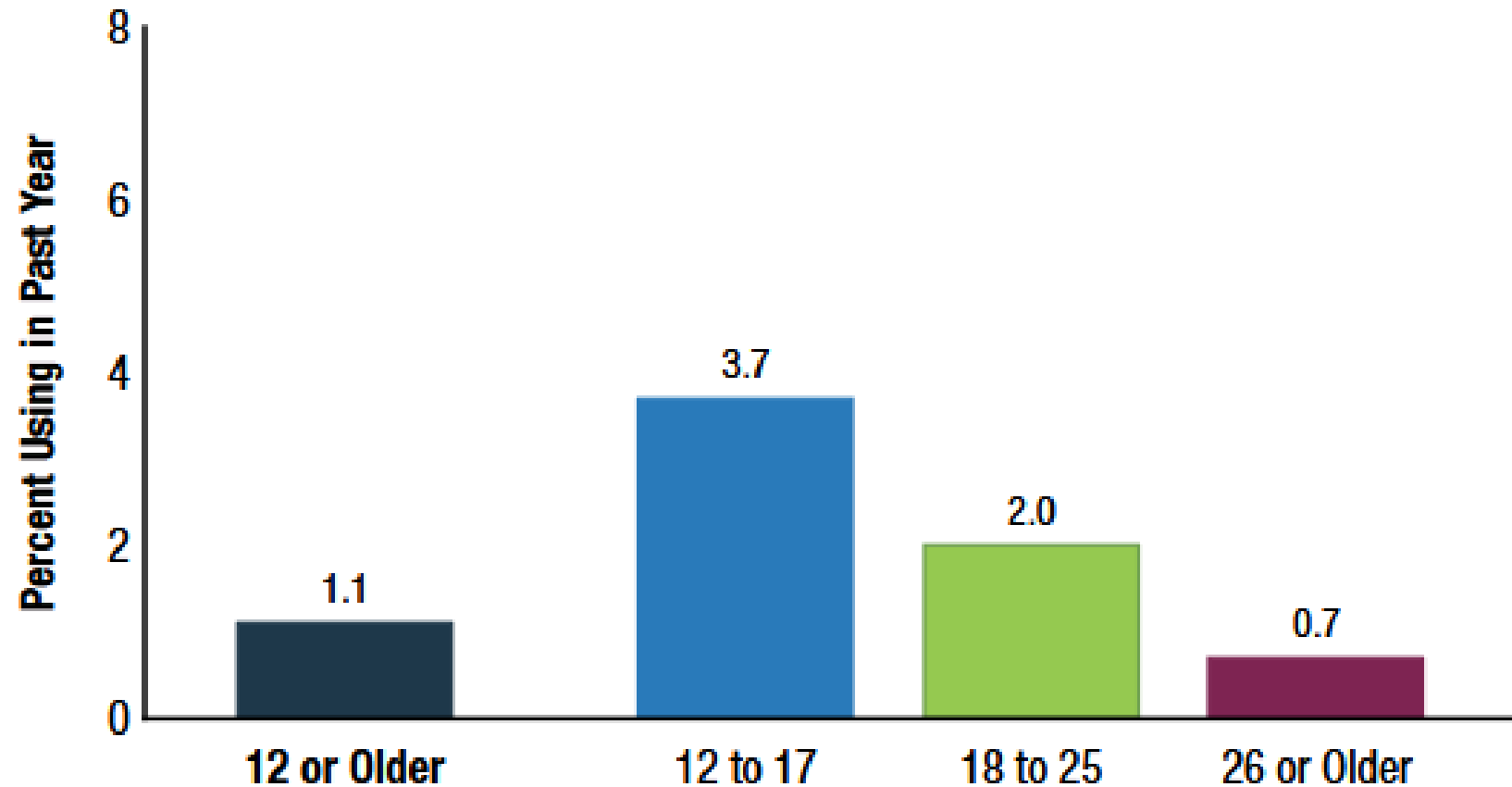


# Inhalants

- Sniffing, huffing, and bagging
- Gluey, Huff, Rush, and Whippets



**Figure 20. Past Year Inhalant Use: Among People Aged 12 or Older; 2024**



# Inhalant Use

---

Deliberate inhalation of vapors from common household chemical or aerosol products to become high, includes nitrous oxide (whippets)

---

Sniffing, huffing, and bagging

---

Cheap, easily accessible, mistakenly considered safe

---

Inhalants are generally highly lipophilic and gain rapid entrance into the central nervous system

---

GABA and dopaminergic effects (relaxing)

---

Effects last less than 2 hours

---



# Physical Effects

- Cardiac arrhythmia
- Confusion or euphoria
- slurred speech
- inability to coordinate movements, euphoria, and dizziness
- Fatigue
- Headache



**Long term effects:** Weight loss, muscle weakness, disorientation, inattentiveness, lack of coordination, irritability, depression, and damage to the nervous system and other organs

- Not detected on screening labs



# Inhalant Overdose Management

---

ABCs

---

Electrolytes, gas, LFTs, EKG, carboxyhemoglobin concentration

---

Benzodiazepines for agitation

---

Oxygen, albuterol

---

Correct electrolyte abnormalities, rehydration

---

Address arrhythmias

---

b-adrenergic antagonists are thought to offer some cardioprotective effects to the sensitized myocardium

---

Propranolol and esmolol have both been used successfully in treatment of ventricular dysrhythmias following inhalant misuse



**17-yo-male went partying with friends, when he arrived home mother noticed that he seemed very activated, sweating profusely, and complaining of feeling very thirsty.**

What did he take?

How do you manage him?



# Ecstasy (3,4-Methylenedioxyamphetamine)= MDMA

- 3,4-methylenedioxyamphetamine (MDA) or para-methoxyamphetamine (PMA)
- Tabs, Burgers, Clarity, Disco Biscuits, Doves, Eccies, E, X, Love Drug, 007, Adam, Beans, Ecstasy, eve, Go, Hug Drug, Lover's Speed, MDMA, Peace, STP, And XTC



# Ecstasy Use

- Manufactured variant of amphetamine
- Extremely powerful stimulus for serotonin release (10x amphetamines)
- Produces euphoria, enhances pleasure, and heightens sexuality



# Physical Effects of Ecstasy

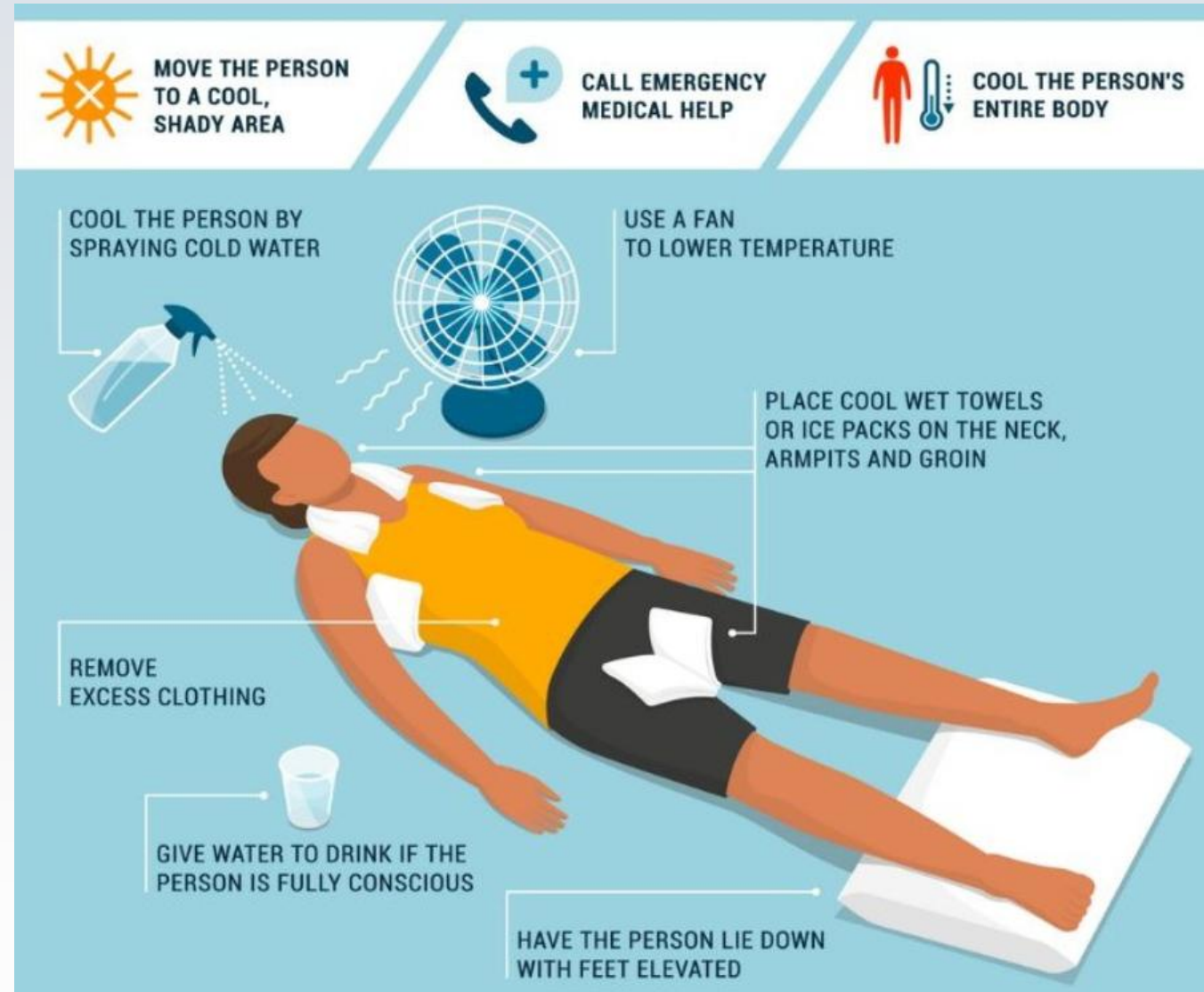
- Ataxia, restlessness, confusion, poor concentration, thirst, reduced social inhibitions and memory problems
- Increased motor activity, alertness, heart rate, and blood pressure.
- Muscle tension, tremors, involuntary teeth clenching, muscle cramps, nausea, faintness, chills, sweating, and blurred vision
- Dehydration
- Heat illness, heat stroke

**Long term effects:** serotonin damage, cognitive defects, impaired memory and learning



# Overdose Management of Ecstasy

- ABCS
- Fluid resuscitation
- Electrolyte replacement and balance
- Dialysis for rhabdomyolysis (break down of muscles)
- Treatment similar to amphetamines



**An 18-year-old male is brought to the ED after a party. His pupils are dilated, eyes bloodshot, and he is having visual hallucinations. He is also anxious, agitated and has feelings of depression.**

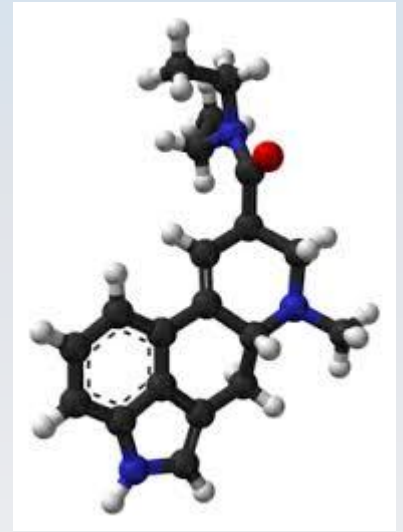
What did he take?

How do you manage him?



# LSD (lysergic acid diethylamide)

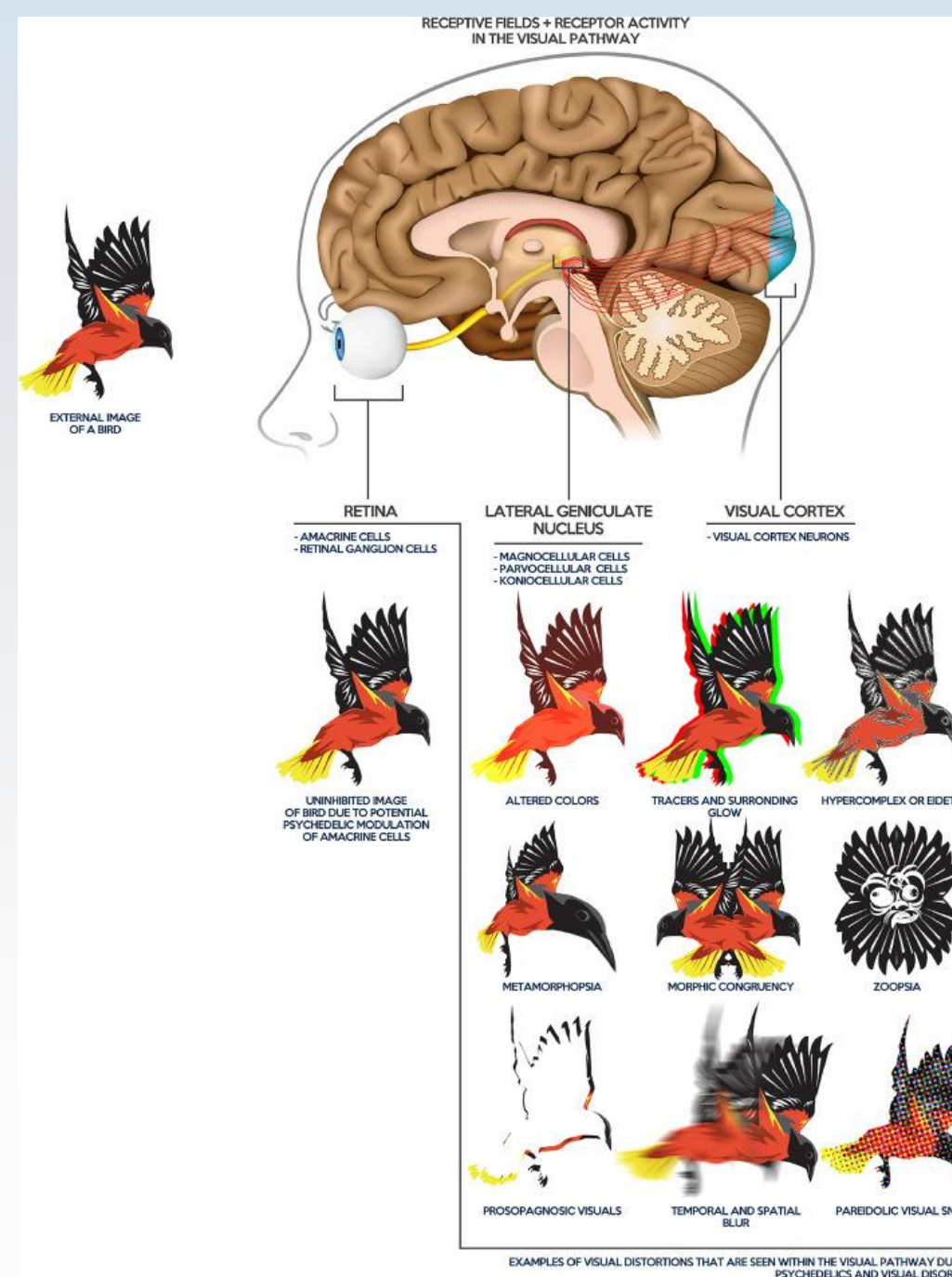
- Tabs, Microdots, Windowpane, Acid, Dots, Mellow Yellow
- Synthetic, illicitly produced
- Most potent hallucinogenic known
- Dried saturated blotter paper, infused sugar cubes, tablets, liquid
- 30 minutes onset, trip lasts 8 to 12 hours
- Serotonin mediation, producing hallucinations and sympathomimetic effects



# Physical Effects of LSD

- Dilated pupils
- Higher body temperature
- Increased heart rate and blood pressure
- Sweating, loss of appetite
- Sleeplessness
- Dry mouth
- Tremor
- Paranoia

**Long term effects:** Longer, more intense “trip” episodes, psychosis, and possible death (usually from accidents)



# Overdose Management of LSD

- ABCs
- Correct temperature, electrolytes, arrhythmias
- Calming techniques, ensuring safety
- Rarely is sedation necessary, but use benzodiazepines or Haldol



**A very agitated 16-year-old female is brought by police to the ED. She is violent, has slurred speech, unsteady gait and nystagmus (abnormal eye movements).**

What did she take?

How do you manage her?



# PCP (Phencyclidine)/Ketamine

PCP: PeacePill, angel dust, crystal, crystal joints, TAC, sheets, hog, elephant tranquilizer

- PCP is an anesthetic that is no longer used in humans due to psychosis and dysphoria. It is still used as a veterinary tranquilizer.

Ketamine: Cat Tranquilizer, Cat Valium, Jet K, Kit Kat, Purple, Special K, Special La Coke , Super Acid, Super K, Vitamin K

- Ketamine is a derivative of PCP, with 5-10% potency of PCP and much shorter duration (15-20 minutes). It is a popular rave drug.
- Ketamine is used for anesthesia, conscious sedation, and treatment of bronchospasm. It is a dissociative.



# PCP and Ketamine Use

- Oral ingestion, sniffing, injection or smoking
- Common adulterants
- Bind with high affinity to sites located in the cortex and limbic structures of the brain
- They block the *N*-methyl-D-aspartate (NMDA) receptors, causing sympathomimetic and psychomotor effects



# Physical Effects of PCP and Ketamine

- Hallucinations
- Agitation
- Depression
- Cognitive difficulties
- Unconsciousness
- Amnesia
- Involuntarily rapid eye movement and dilated pupils
- Salivation
- Tear secretions
- Stiffening of the muscles
- Possible nausea

**Long term effects:** Hallucinogen Persisting Perception Disorder (HPPD), physical and psychological dependence, tolerance, withdrawal effects



# Overdose Management of PCP and Ketamine

- ABCs
- Sedation, addressing agitation is key: physically, then chemically (benzodiazepines)
- Hydration and correction of electrolyte abnormalities, cooling
- Phenothiazines may lower the seizure threshold



**A 19-yo-female was at a party last night with some friends. She only had 2 beers but woke up this morning in the dorm lounge and cannot recall how she got there or what happened after the 2 beers.**

- What did she ingest?
- How do you manage her?



# Gamma-hydroxybutyric acid (GHB)/GBL (gamma butyrolactone) and 1,4-butanediol

“Club drug”, Rape drug, Easy Lay, G, Georgia Home Boy, GHB, Goop, Grievous, Bodily Harm, Liquid Ecstasy, Liquid X, and Scoop

## Street Terms for GHB and Its Analogs

Cherry meth  
Fantasy  
G-riffic  
Jib  
Liquid E  
Liquid X  
Organic quaalude

Salty water  
Scoop  
Sleep  
Sleep-500  
Soap  
Vita-G



# Uses

Recreational use, nutritional supplements, drug-facilitated sexual assault

Experimentally used to treat narcolepsy

GABA modulator (increased in frontal lobe, reduced thalamus) and dopamine modulation

Peak effect by 90-120 minutes



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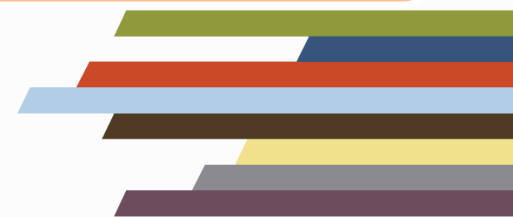
# Who is Using

Individuals aged 18 to 25 account for 58% of all GHB mentions in drug-related emergency department visits

Nearly 2% of high school seniors in the US used the drug at least once in the past year

An estimated 0.05% of adults in the US have used GHB in the past year

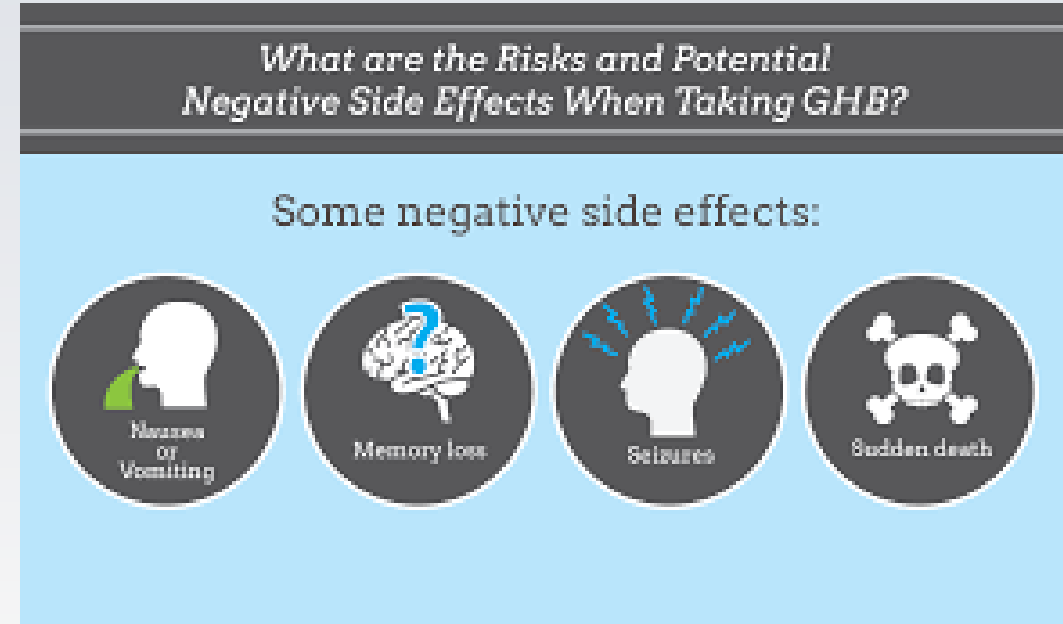
Majority >19yo, white and male



# Physical Effects of GHB

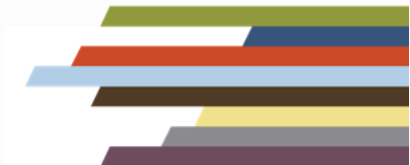
- Central nervous system (CNS) depressant effects
- Euphoria
- Drowsiness
- Decreased anxiety
- Confusion,
- Memory impairment
- Hallucinations
- Agitation
- Often combined with alcohol, very dangerous

**Long term effects:** Physical and psychological dependence, Insomnia, anxiety, tremors, increased heart rate, blood pressure, psychotic thoughts



# Overdose Management of GHB

- ABCs
- Apnea is greater risk
- Although coma is common, it is usually brief, and intubation is often deferred because most patients can protect their airways and awake quickly
- Fluids
- Abrupt cessation in use can result in severe withdrawal: agitation, disorientation, hallucinations, hypertension, tachycardia, hyperthermia, tremor, and seizures, often within hours of their last use
- Currently, there is no antidote available for GHB





A 14 yo female presents to the ED after maybe having a seizure. She was smoking with some friends and became highly agitated and paranoid. She reported seeing things that her friends did not see and then seemed to have abnormal body movements, including eye movements. She is now awake but altered.

What did she ingest?

How do you manage her?

# Synthetic Marijuana

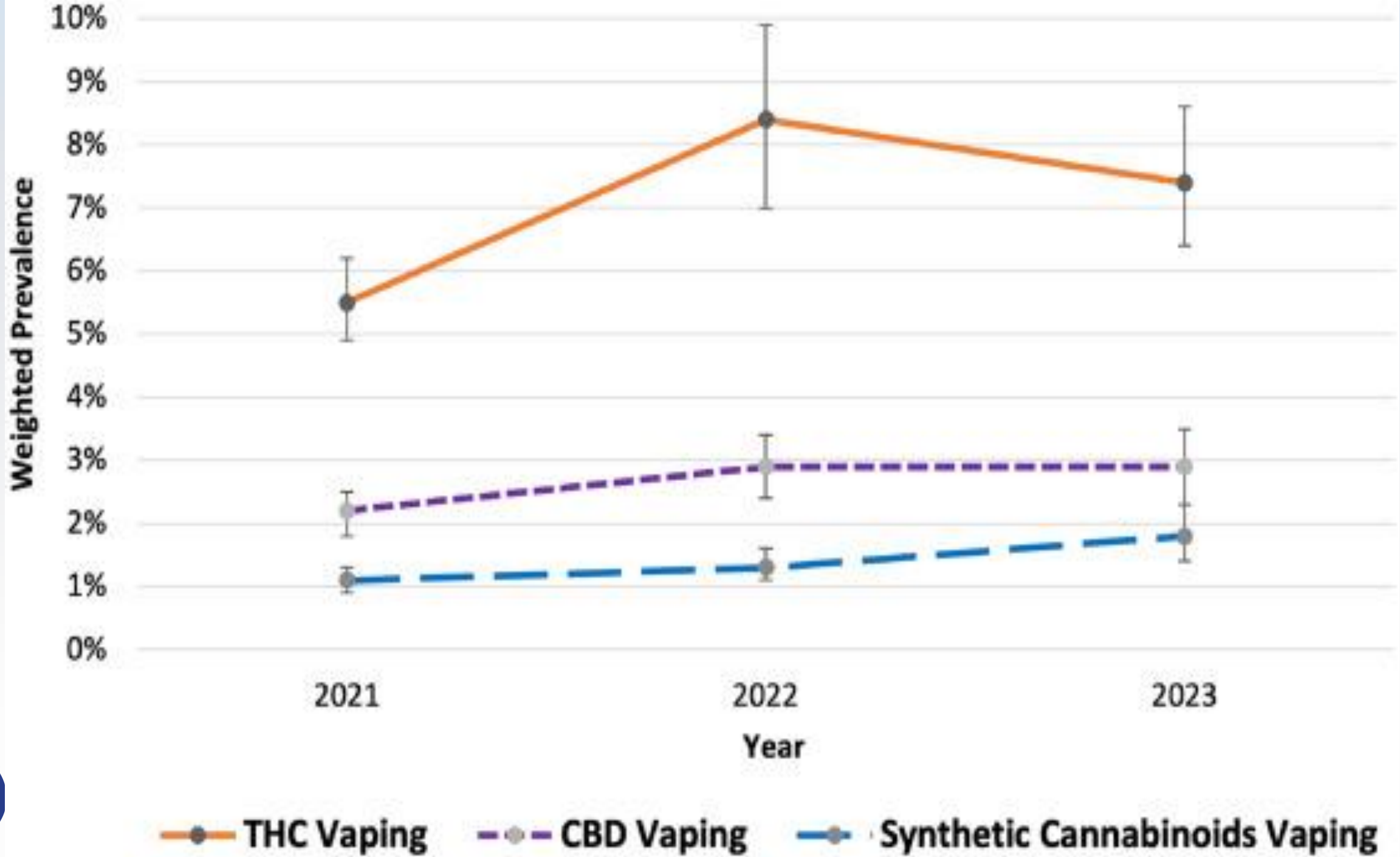
Marijuana (K2, spice)



# Synthetic Drug Use

- “Legal”
- Easily attainable
- “Undetectable”
- Low cost
- High comparable to LSD or cocaine
- Extreme paranoia
- Hallucinations
- Hypertension, tachycardia



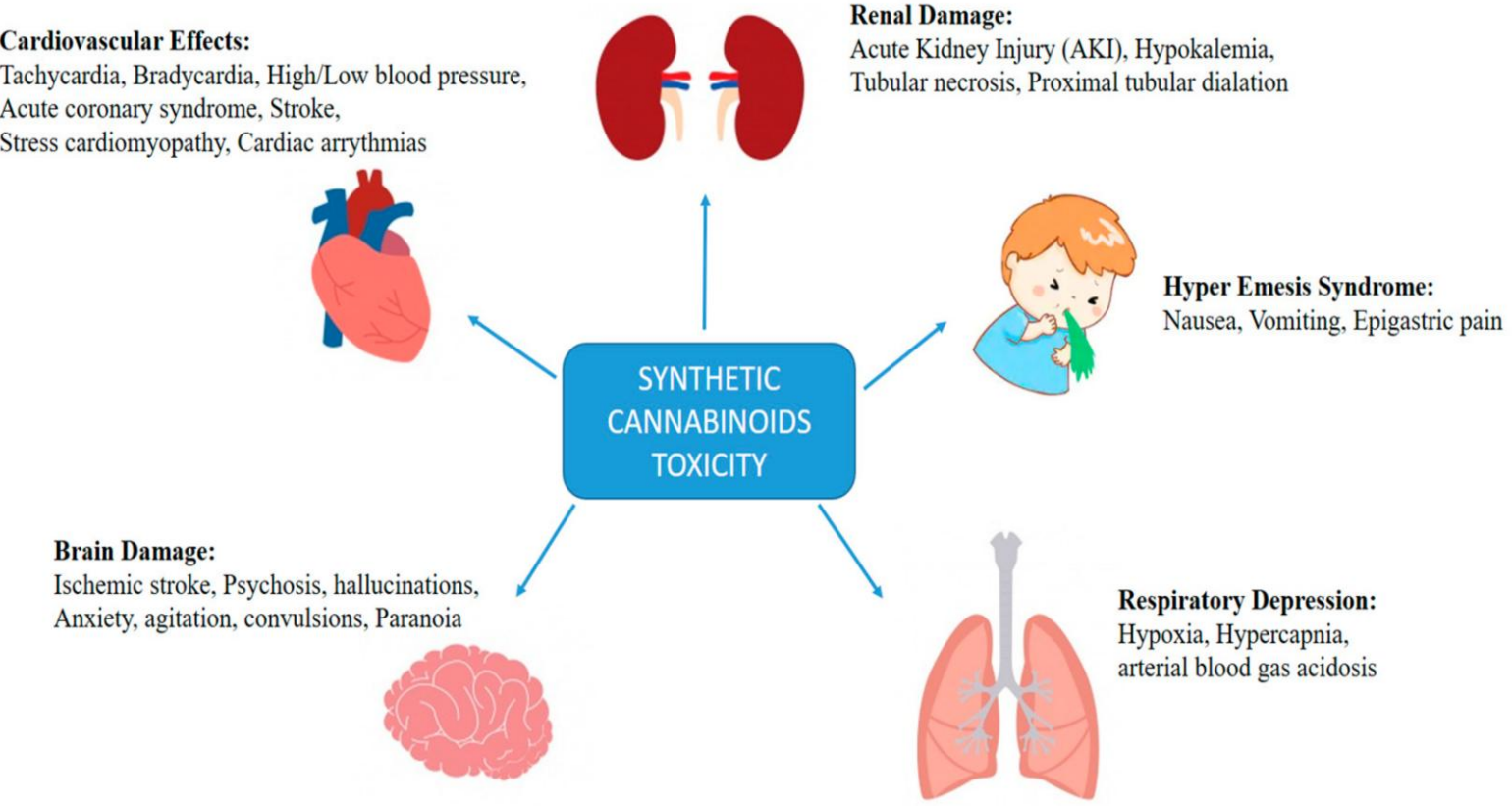


# Synthetic Cannabis

- Laboratory-made cannabinoid receptor agonists
- Spraying or mixing the synthetic cannabinoids on plant material provides a vehicle for the most common route of administration - smoking (using a pipe, a water pipe, or rolling the drug-laced plant material in cigarette papers)
  - Cannabinoid-laced plant materials also sold as potpourri and incense
- Liquid cannabinoids have also been designed to be vaporized through both disposable and reusable electronic cigarettes
- Spice, K2, Blaze, RedX Dawn, Paradise, Demon, Black Magic, Spike, Mr. Nice Guy, Ninja, Zohai, Dream, Genie, Sence, Smoke, Skunk, Serenity, Yucatan, Fire, and Crazy Clown



# Physical Effects of Synthetic Cannabis



- Tachycardia (elevated heart rate), elevated blood pressure
- Respiratory depression
- Unconsciousness, tremors, seizures, numbness, and tingling
- Vomiting, nausea
- Hallucinations, agitation, anxiety, agitation
- Pallor

# Overdose Management of Synthetic Cannabis

- ABCs
- Correct temperature, electrolytes, arrhythmias
- Calming techniques, ensuring safety
- Rarely is sedation necessary, but use benzodiazepines or Haldol

A very agitated 20 yo male presents to the ED. He is confused, combative, aggressive, and very sweaty. He was clubbing with some friends and snorted some sort of powder.

- What did he use?
- How do you manage him?

# Bath salts (cathinones)

- Crystallized chemicals that are snorted, swallowed or smoked
- Mimic cocaine, LSD and methamphetamine
- Bliss, Blue Silk, Cloud Nine, Drone, Energy-1, Ivory Wave, Lunar Wave, Meow Meow, Ocean Burst, Pure Ivory, Purple Wave, Red Dove, Snow Leopard, Stardust, Vanilla Sky, White Dove, White Knight, White Lightning



- Synthetic cathinones are a class of lab-made stimulants chemically related to substances found in the khat plant, commonly known as “bath salts”
- Khat is a shrub grown in East Africa and southern Arabia that some people consume for its stimulant effects
- Methylenedioxypropylamphetamine (or MDPV) and mephedrone



**Lifetime Use:** Approximately 0.3% (roughly 2.3 million) of people aged 12 or older in the U.S. reported ever using bath salts

**Past-Year Use:** The national prevalence of past-12-month bath salt use was 0.0% in 2021 and 0.1% in 2022 and 2023

**Active Use:** Among those who reported using bath salts, roughly four in five (80%) had not used them in the past 12 months, indicating that most usage is not sustained long-term, though it remains highly dangerous



# Physical Effects of Bath Salts

- Rapid heartbeat, hypertension, palpitations
- Hyperthermia, sweating
- Prolonged dilation of the pupil of the eye
- Breakdown of muscle fibers that leads to release of muscle fiber contents into bloodstream
- Teeth grinding
- Headaches, seizures, agitation
- Can results in cardiac arrest, seizures, injury, renal damage

# Management of Bath Salts Overdose

- ABCS
- Fluid resuscitation
- Electrolyte replacement and balance
- Dialysis for rhabdomyolysis (break down of muscles)
- Calming techniques, ensuring safety
- Rarely is sedation necessary, but use benzodiazepines or Haldol



**UNDERSTANDING AGGRESSION**  
Aggression is a physical or verbal behavior designed to harm another individual. It can include physical assault, threats, verbal abuse, emotional abuse, and harassment. Aggression is a complex behavior that can be influenced by a variety of factors, including mental health, personality, and social environment.

**RECOGNIZING EARLY SIGNS**  
Learning to recognize aggressive signs early helps you diffuse a situation before it escalates. Early signs of aggression may include: yelling, a closed or "stared" expression, profanity, hitting or throwing hazardous objects, or posturing.

**EFFECTIVE COMMUNICATION**  
The goal of effective communication is to establish a rapport with the patient in a calm, confident way. This involves clearly communicating your intent, listening, and providing positive feedback. Use simple and consistent language that the patient is likely to understand.

### DE-ESCALATION TECHNIQUES

When aggression happens, but you can help prevent further escalation, remember the following techniques:

- **Escape back up is available** - use your facilities code to alert staff
- **Position yourself** - stay behind and to the side of the patient's head
- **Avoid body language** that may seem aggressive - keep your hands visible
- **Practice "handcuffing"** to regain control of the situation
- **Use patience** - you may need to repeat these steps multiple times

**DISTRACTION AND DIVERSION**  
Redirect the patient away from their anger by recommending a different activity or discussing a neutral topic.

**NON-THREATENING BODY LANGUAGE**  
Use open, respectful body language such as a relaxed posture, open palms, and eye contact. Avoid crossing arms or other aggressive defensive positions. Keep your hands where the patient can see them.

**PERSONAL SPACE AWARENESS**  
Respect the patient's personal space and maintain a safe distance from an agitated patient to prevent aggression from escalating.

**CALLING FOR ASSISTANCE**  
Use your facilities code to call for assistance in a discreet manner. If you are alone, try to call the police by dialing 911. Let the police know that you are calling.

**SELF-CARE FOR DE-ESCALATORS**  
Healthcare workers need to take care of their own emotional well-being once a situation has been de-escalated. A debriefing with colleagues to discuss the event and provide support is often a good next step.

**LEGAL & ETHICAL CONSIDERATIONS**  
De-escalation techniques and physical interventions can have legal and ethical implications. Restraint, seclusion, and other interventions should be used through appropriate use of de-escalation techniques.

**PRACTICE & TRAINING**  
Management of Aggressive Behavior (MAB) certification is offered to ensure staff have the appropriate skills to respond to an aggressive situation. Training is an essential skill for healthcare workers and should be provided for any staff that might engage.

**Resources and References**  
Get more information about Management of Aggressive Behavior certification. <https://www.hhs.gov/healthcare>



A 20-year-old male with a remote past medical history of alcohol and opiate abuse and questionable seizures was brought into the emergency department after being found unresponsive at home by his girlfriend. Patient received 2 rounds of Naloxone without any response. He was intubated by EMS. In the ED, he was noted to have myoclonic jerking and remained unresponsive on the ventilator.

- What did he use?
- How do you manage him?

# Kratom

- Kratom is a tropical tree native to Southeast Asia.
- Oral ingestion: capsule, tablet, extract
- Dried leaves: brewed into tea or chewed
- Inhalation
- Known as thang, kakuam, thom, ketum, and biak
- 2 major psychoactive ingredients: mitragynine & 7-hydroxymitragynine



*Leaf of kratom tree*



*Kratom capsules*



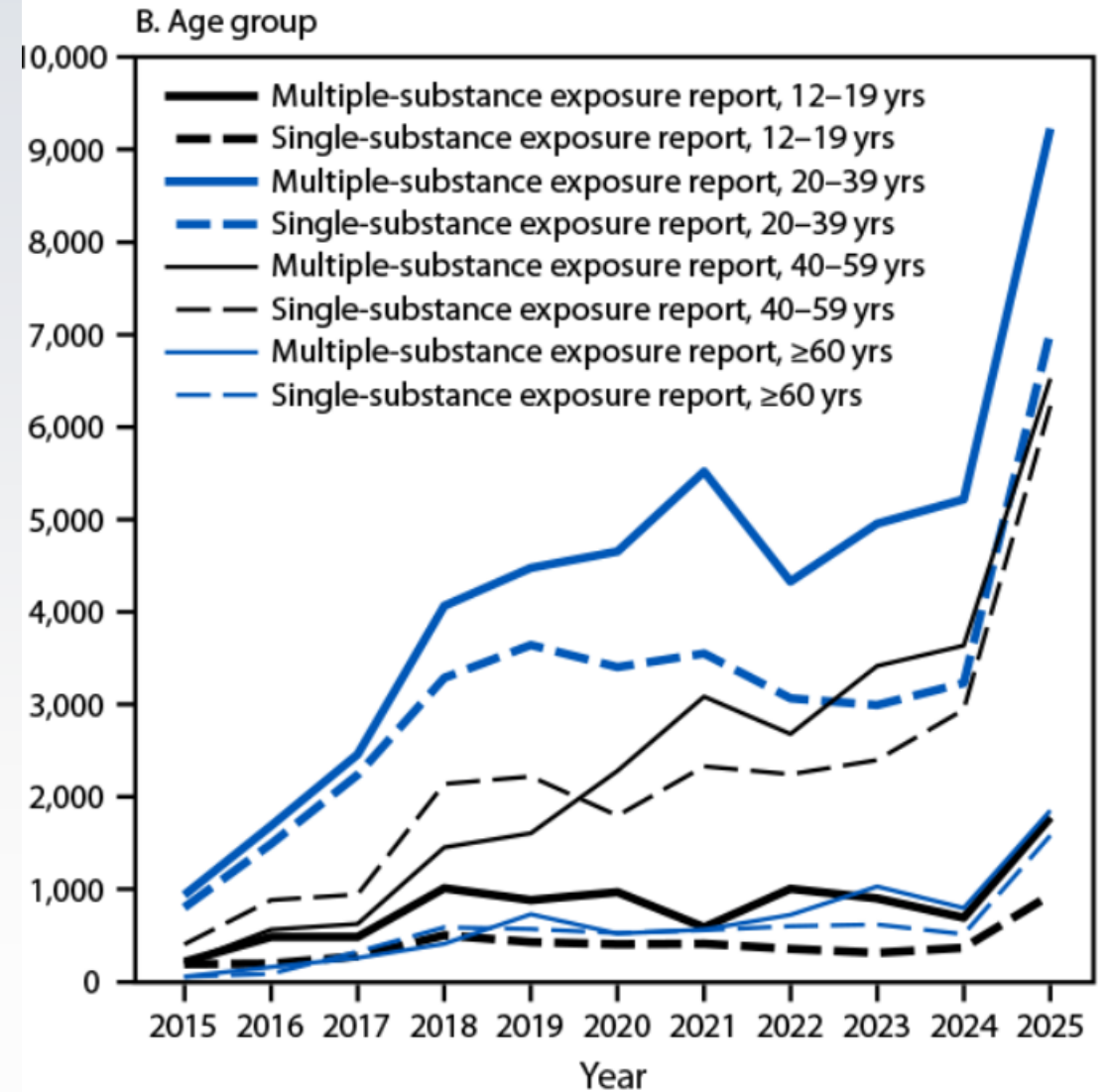
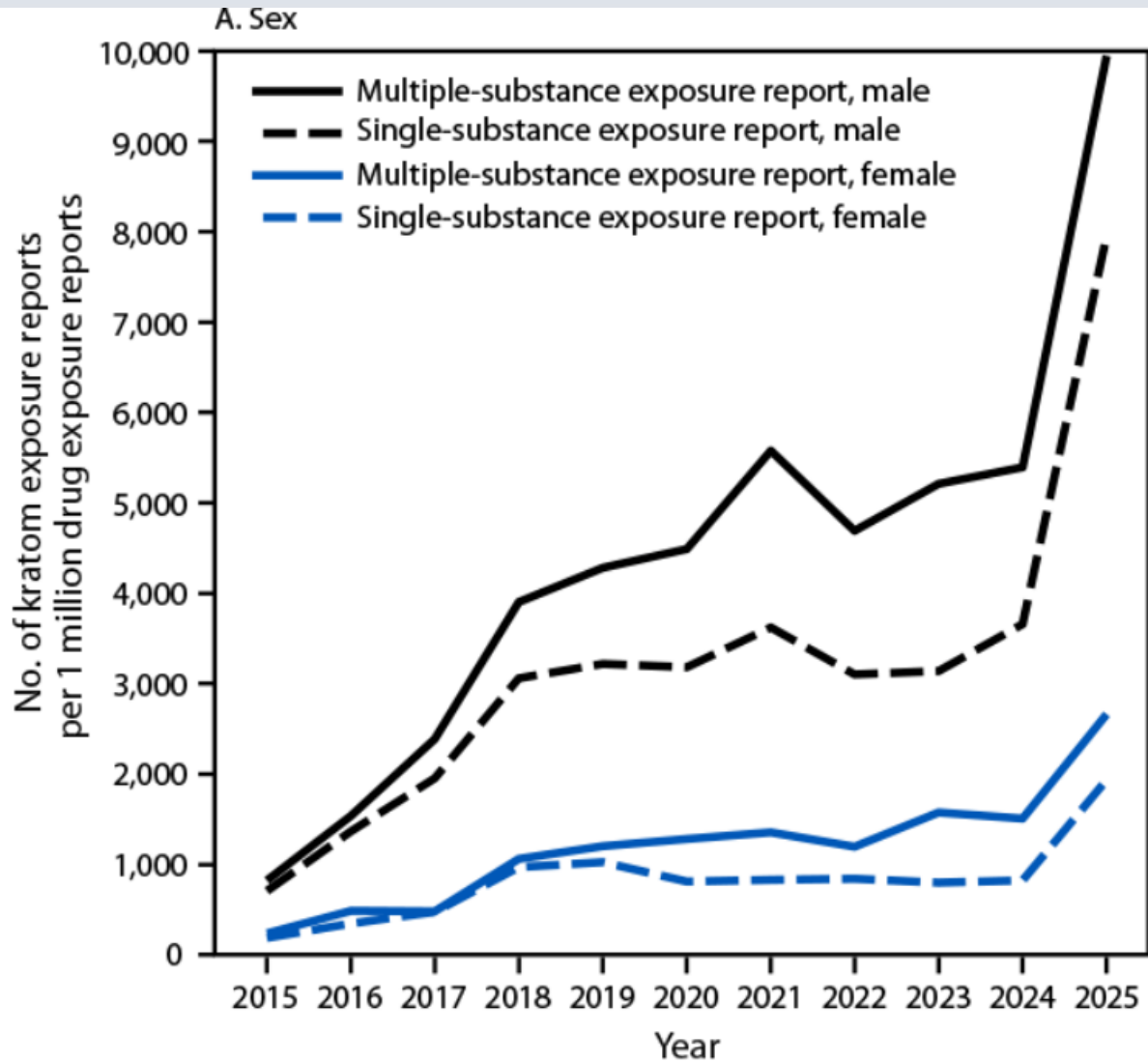
Table 1.

## Correlates of Past-Year Kratom Use Among Individuals Ages &gt;12 Years in the U.S., 2019

Characteristics	Full sample % (95% CI)	No kratom use % (95% CI)	Kratom use % (95% CI)	AOR (95% CI)
Age, years				
12–17	9.1 (8.8, 9.3)	99.7 (99.6, 99.8)	<b>0.3 (0.2, 0.4)***</b>	1.00
18–25	12.3 (12.0, 12.6)	98.7 (98.4, 98.9)	1.4 (1.1, 1.6)	<b>2.40 (1.41, 4.08)**</b>
26–34	14.7 (14.2, 15.1)	98.6 (98.4, 98.9)	1.4 (1.1, 1.7)	<b>3.00 (1.86, 4.84)***</b>
35–49	22.1 (21.7, 22.6)	99.2 (99.0, 99.3)	0.8 (0.7, 1.0)	<b>2.55 (1.56, 4.18)***</b>
≥50	41.9 (41.0, 42.8)	99.7 (99.5, 99.8)	0.3 (0.2, 0.5)	1.39 (0.77, 2.52)



**FIGURE 2. Rates\* of kratom-related single- and multiple-substance exposure reports to poison centers among persons aged  $\geq 12$  years, by sex (A)<sup>†,§</sup> and age group (B)<sup>¶,\*\*\*</sup> — National Poison Data System, United States, 2015–2025**



# Physical Effects of Kratom

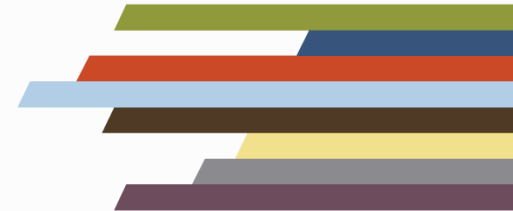
## Low Dose: Stimulant Effect

- Increased alertness
- Physical energy
- Talkativeness



## High Dose: Sedative Effects

- Drowsiness
- Respiratory depression
- Depressed mood
- Confusion, tremors, seizures



# Kratom

## SIDE EFFECTS



### GASTROINTESTINAL

- Nausea
- Continuous vomiting
- Hepatotoxicity



### BEHAVIORAL

- Hallucinations
- Psychosis
- Addiction and withdrawal causing aggression and insomnia



### NERVOUS

- Excessive sweating
- Loss of appetite, anorexia, weight loss
- Dizziness
- Tremors
- Seizures



### URINARY

- Increased urination
- Constipation



### SKIN

- Diaphoresis
- Pruritus
- Hyperpigmentation



### WITH ACUTE TOXICITY...

Possibility of death



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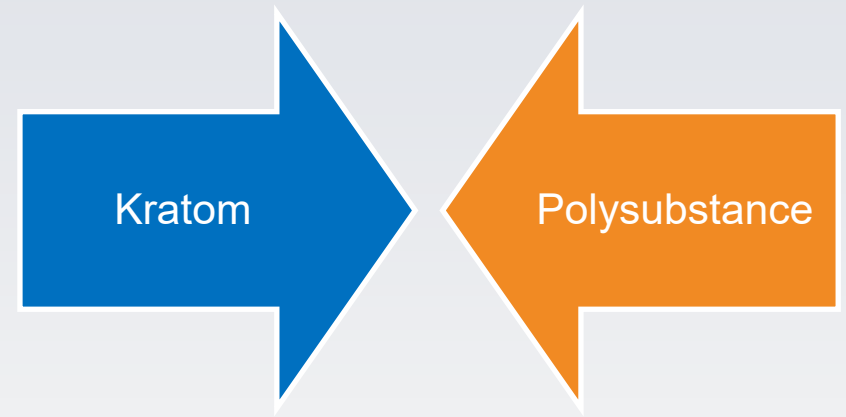
# Long Term Effects

- Anorexia
- Weight Loss
- Insomnia
- Hepatotoxicity
- Seizure
- Hallucinations
- Physiological tolerance & dependence
- ??? Withdrawal effects



# Management of Kratom Overdose

- ABCs
- Naloxone
- Most common co-occurrence: Fentanyl & other opioids, then benzodiazepines and cocaine
- Consider acetaminophen toxicity



About 0.6% of overdose deaths in 2017 tested positive for Kratom

Of those deaths, about 60% of deaths have relationship to Kratom

Commonly contaminated: heavy metals, lead, salmonella



# Status of Kratom

- Kratom is not controlled under the Controlled Substances Act
- Some state regulations or prohibitions against the possession and use of kratom.
- The FDA has not approved Kratom for any medical use.
- DEA has listed kratom as a Drug and Chemical of Concern



## *Kratom* *Not Your Average* *Herbal Supplement*



*In higher doses, Kratom has an opiate like effect because it does, in fact, bond to opiate receptors in the brain.*

Connecticut: Regulation pending

Maine: None

Massachusetts: Legislation pending

New Hampshire: Proposed legislation

Rhode Island: Regulated (RI Kratom Act, 4/1/2026)

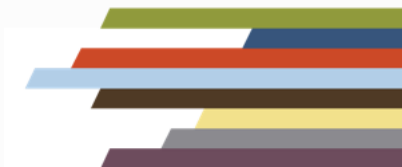
Vermont: Regulated



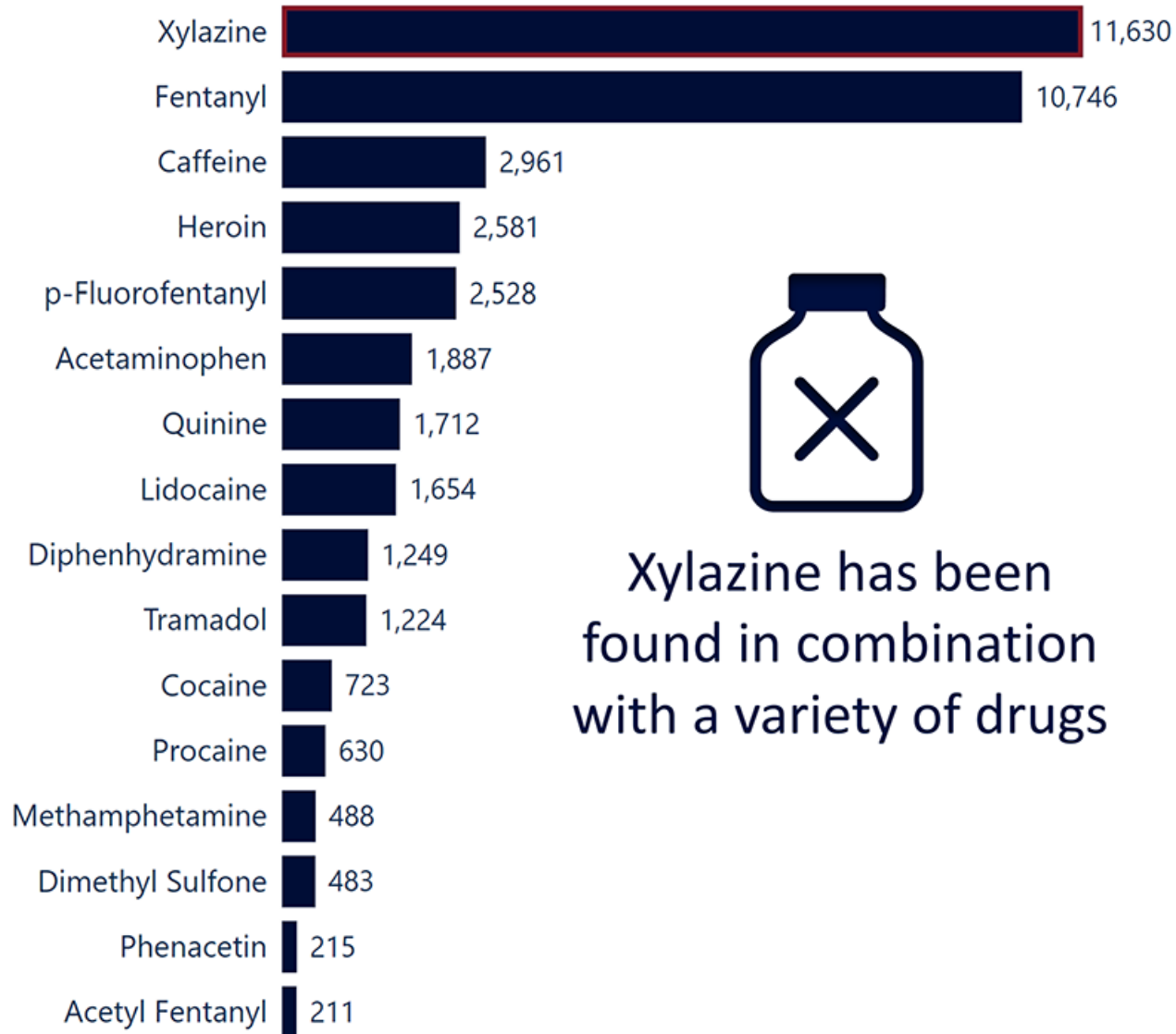
- A 21 yo known intravenous opioid user presents to the ED unconscious, having been dropped off at the ambulance bay. After resuscitation, he is verbal and alert. He is very surprised he overdosed since he thinks he used less fentanyl than his usual amount since he had to purchase from someone besides his usual supplier.
- What did he use?
- How do you manage him?

# Xylazine (Tranq)

- Non-opioid sedative or tranquilizer
- Approved for use by veterinarians with animals
- Common adulterant in illicit substances
- 23% of fentanyl powder and 7% of fentanyl pills seized by the DEA in 2022 contained xylazine
- Not a stand-alone substance typically
- Not detected in routine drug screens

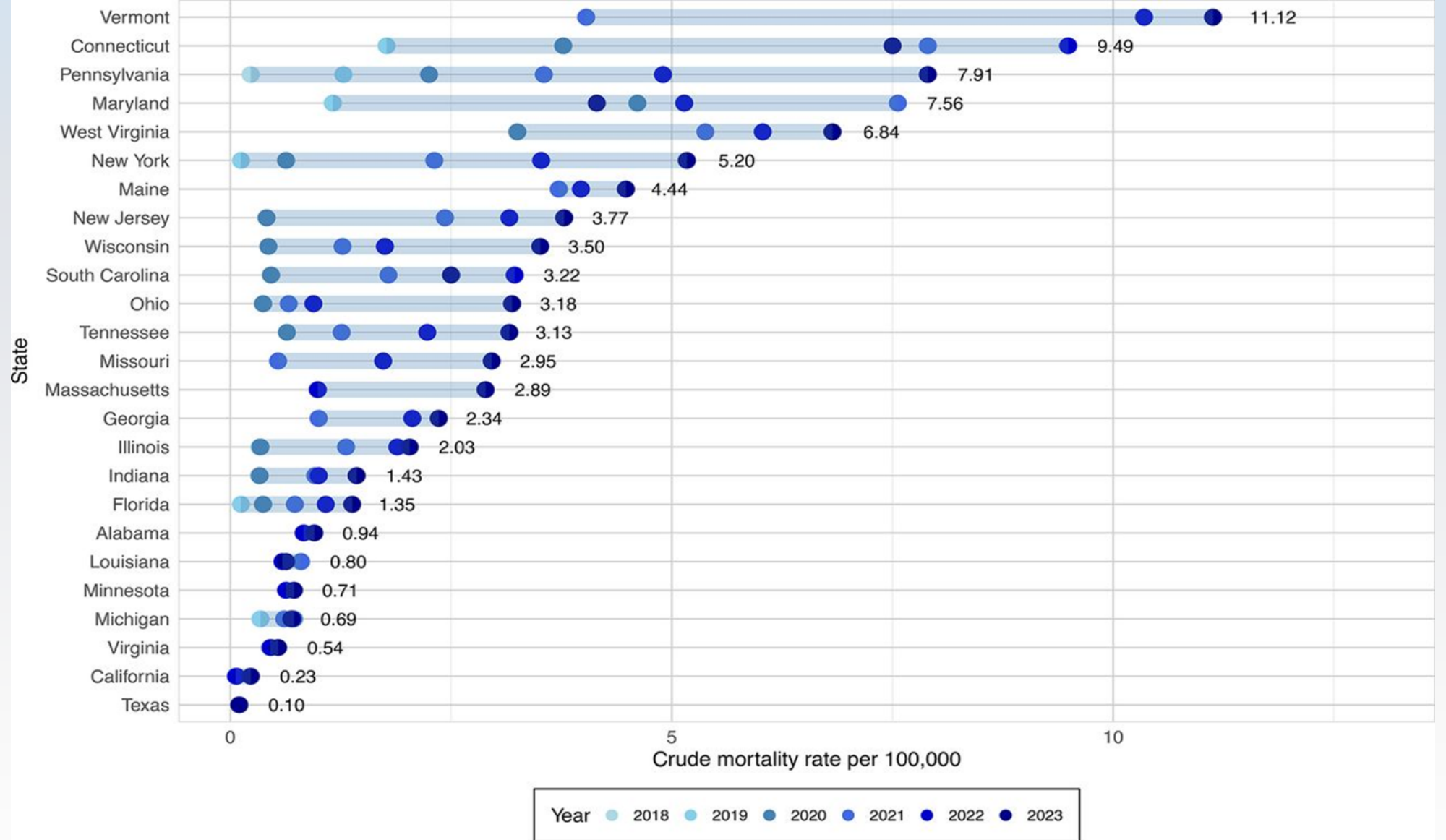


## Top 15 Drugs Found with Xylazine



Xylazine has been found in combination with a variety of drugs





- 4.4% of all adults treated for substance use
- 8-12 % of intravenous opioid users report Xylazine use

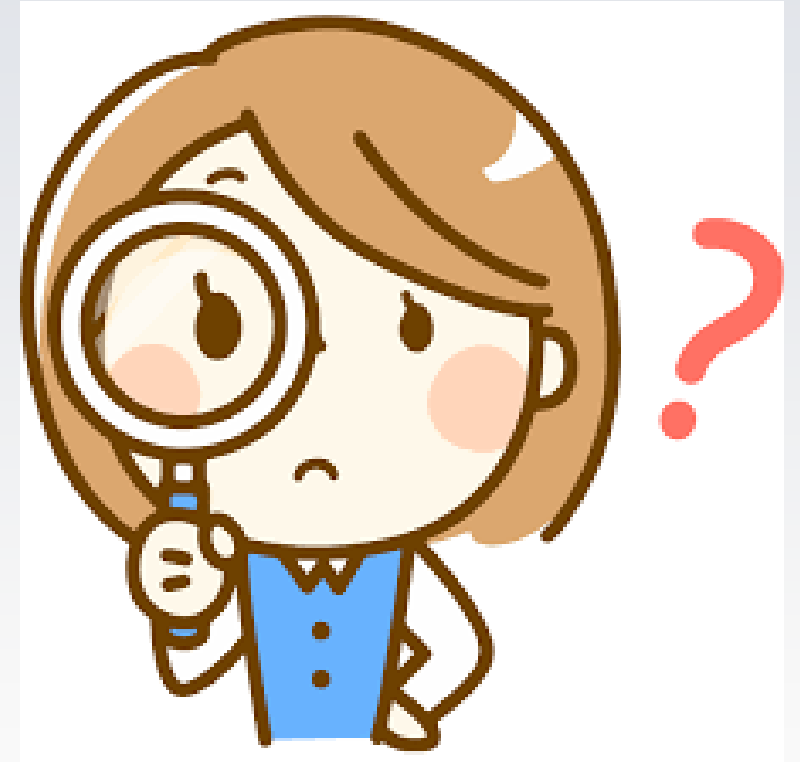
# Physical Effects of Xylazine

- Central nervous system depression: sedation, difficulty breathing, dangerously low blood pressure, slowed heart rate
- Wounds that can become infected
- Severe withdrawal symptoms



# Medical Management of Xylazine Ingestion

- Often refractory to typical opioid management (Naloxone)
- ABCs
- STILL ADMINISTER NALOXONE –POLYSUBSTANCE MOST LIKELY
- Respiratory Care
- Fluid support
- Wound Care
- Try to identify other substances & manage
- Consult poison control



A 24-year-old was brought to the ED by ambulance for altered mental status with concern for substance use/intoxication. Paramedics noted she was alert but disoriented on initial evaluation. Her triage vital signs showed moderate hypertension but were otherwise stable (oral temperature 97.3 degrees Fahrenheit, HR 70, BP 142/102, RR 14, SPO2 98% on room air). She quickly became markedly hypertensive (231/138) and tachycardic (166). Her mental status also worsened; she developed increasing agitation despite multiple doses of sedatives.. Despite maximal dosing of sedatives, the patient remained agitated with severe vital sign abnormalities. Patient was intubated for airway protection and was subsequently admitted to the medical intensive care unit (MICU). Approximately one hour following intubation she remained awake, pulling at tubes and lines.

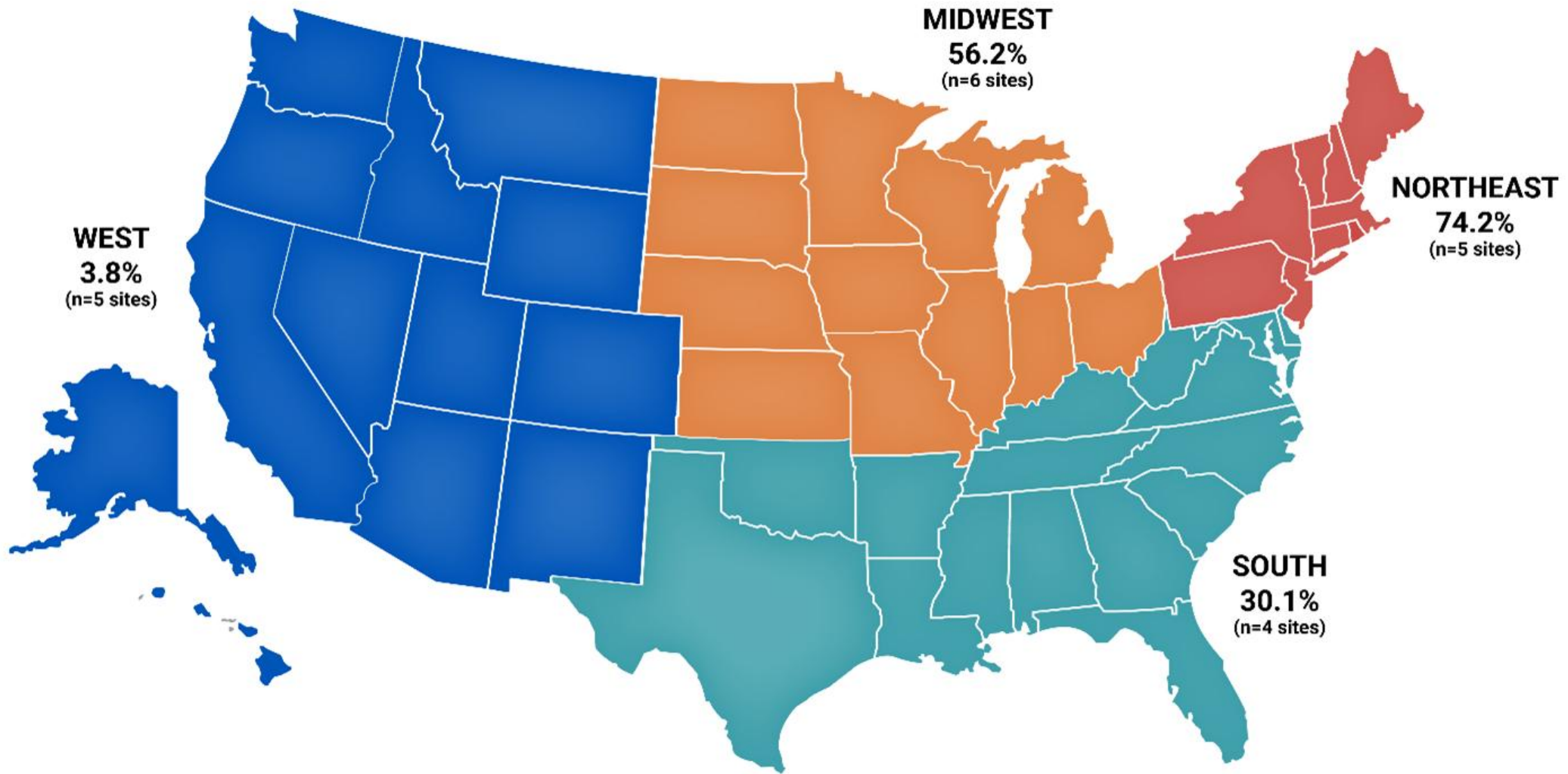
- What did she use?
- How do you manage her?

# Medetomidine and Dexmedetomidin

- Medetomidine is used in a similar manner as xylazine in veterinary medicine
- Dexmedetomidine in human practice and veterinary medicine
- Medetomidine is offered in powder form by Chinese suppliers.
- If Medetomidine is found in liquid form, it needs to be dehydrated before mixing with binding or bulking agents to form pills, powders, or bricks.
- Medetomidine, a non-opioid analgesic with potency 200-300 times greater than xylazine, makes opioid overdoses more difficult to reverse with naloxone.
- Medetomidine and dexmedetomidine have been found mixed with other drugs in gel capsules, marijuana, drug packaging residue, drug paraphernalia, fake pills, and in white colored powder mixtures

<b>NFLIS-Drug: 2021-2024* Co-Reported Drugs with Medetomidine and Dexmedetomidine</b>
Acetyl fentanyl
Caffeine
Cocaine
Fentanyl
Fluorofentanyl
Heroin
Isotonitazene
Ketamine
MDMB-5Br-INACA
Methamphetamine
Metonitazene
para-Fluorofentanyl
Phenacetin
Tramadol
Valeryl fentanyl
Xylazine

*\*2023 data is interim reporting with final numbers likely to rise*



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*Percentage of opioid-positive drug product and paraphernalia samples also positive for medetomidine across 20 sentinel sites<sup>a</sup>: US region, July 2025–December 2025*

# Physical Effects of Medetomidine and Dexmedetomidin

## Acute Effects

Heavy sedation

Low blood pressure and slow heart rate

Dizziness

Extreme tiredness

Shortness of breath

Nausea,

Blurred vision

Confusion

## Withdrawal

Fast heart rate (>100 beats per minute)

Dangerously high blood pressure (>180/100)

Uncontrollable nausea and vomiting

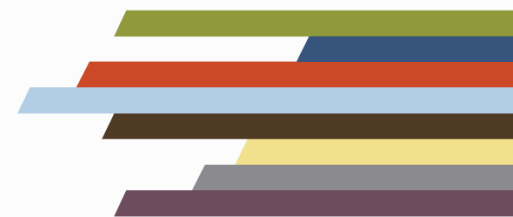
Tremor

Excessive sweating

Changing levels of alertness

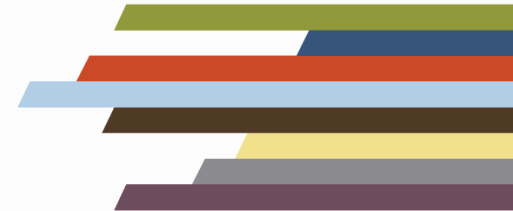
Seizure activity

Agitation



# Medical Management of Medetomidine and Dexmedetomidin Ingestion

- Abcs
- Naloxone– but generally naloxone immune
- Manage cardiovascular state, airway
- Alpha-2 agonist therapy
- Sedation
- Vigilance for seizure activity
- Consider potential medetomidine toxicity or other polydrug intoxication when patients presenting with suspected opioid overdose experience prolonged sedation
- Consider observing patients with suspected prolonged periods of heavy medetomidine use for signs of medetomidine withdrawal for several hours after last use
  - While withdrawal symptoms peak at 18-36 hours after last use, patients who do not show signs of medetomidine toxicity or withdrawal within 6-12 hours are less likely to experience severe withdrawal.
- Medetomidine is not typically included in hospital rapid drug screens



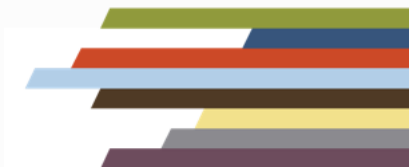
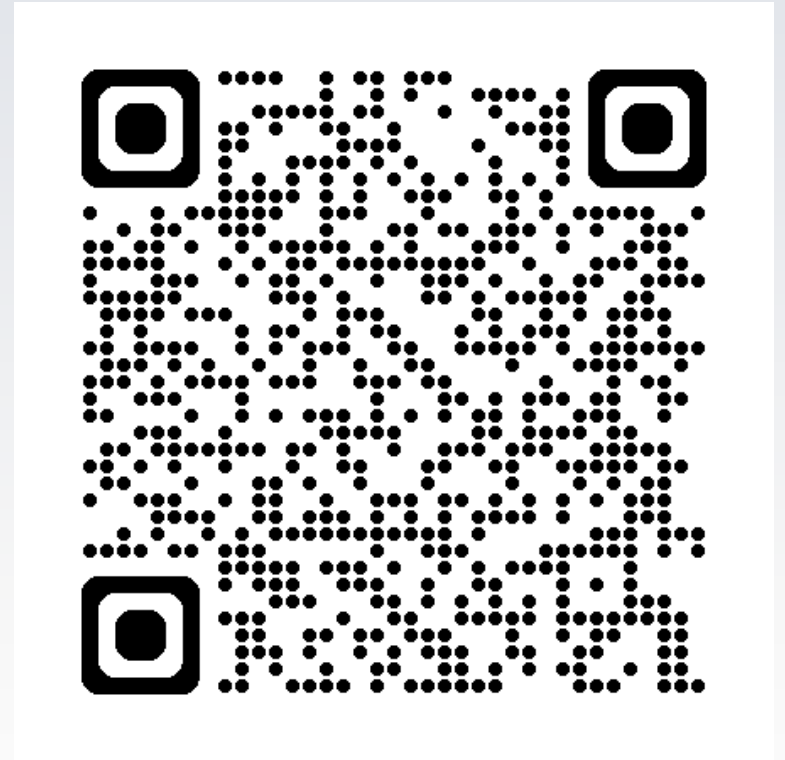
# Take Home Points

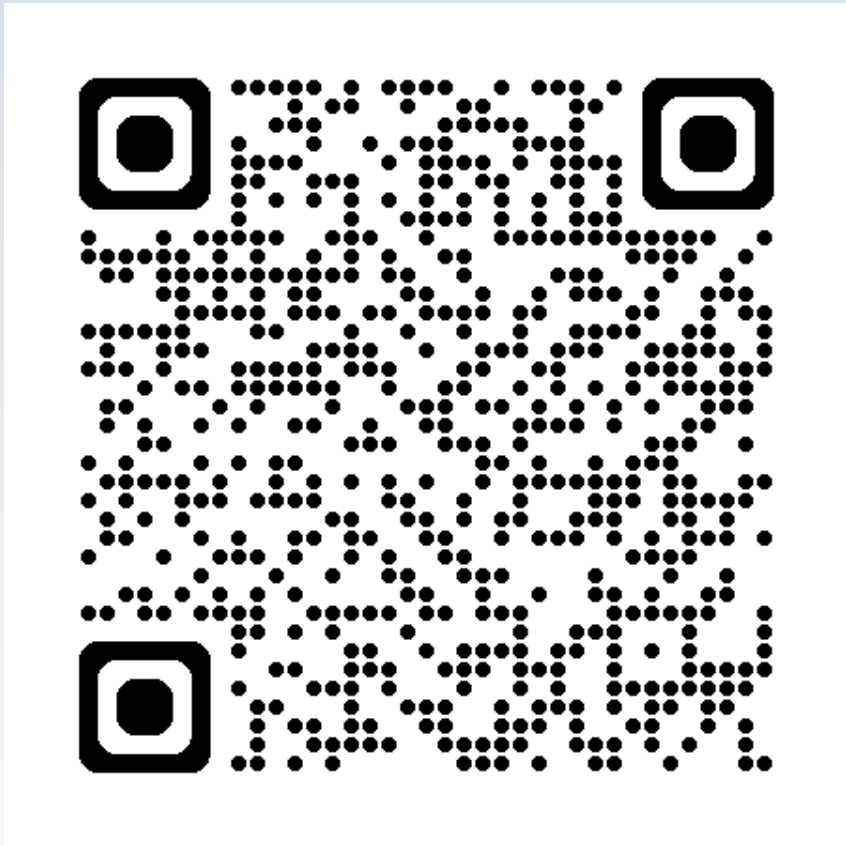
- Substance Use is a pediatric issue
- SCREEN, SCREEN, SCREEN
- Talk with your patients
- Be familiar with common substances
- Refer for help



# SAMHSA's National Helpline at 1-800-662-HELP (4357)

- Free, confidential, 24/7, 365-day-a-year treatment referral and information service (in English and Spanish) for individuals and families facing mental and/or substance use disorders.
- Home - FindTreatment.gov offers additional resources.
- <https://www.samhsa.gov/substance-use/treatment>



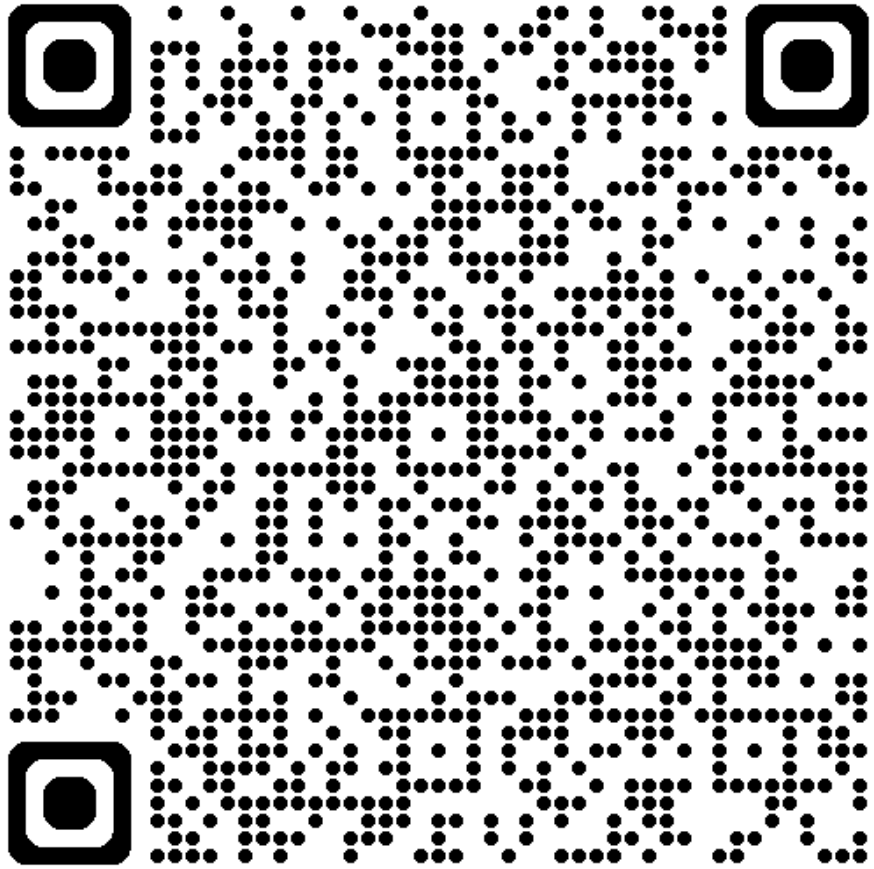


<https://www.poisonhelp.org/about/>



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# American Academy of Pediatrics Substance Use and Prevention



## Resources to Address the Opioid Epidemic

Access a collection of resources from the AAP related to the prevention, intervention and treatment of opioid use disorder in adolescents and young adults.

## Substance Use, Brief Intervention and Referral to Treatment

Resources for incorporating substance use screening, brief intervention and referral to treatment (SBIRT) approaches into the practice setting.

## Training to Treat Opioid Use Disorder

Access online and live options at no cost.

## Nicotine and Tobacco Resources

Research, education, policy and advocacy initiatives related to nicotine and tobacco.

## Mental Health Initiatives

Information and guidance to support healthy mental development of children, adolescents and families.



# Evaluation



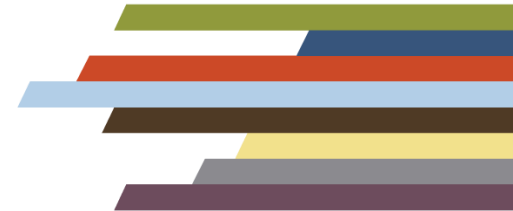
<https://ttc-gpra.org/P?s=623276>



# Stay Connected!

Learn more about us at [New England ATTC - Addiction Technology Transfer Center \(ATTC\) Network](#)

[NewEnglandATTC@umassmed.edu](mailto:NewEnglandATTC@umassmed.edu)



# YOUR VOICE MATTERS

Help New England ATTC continue to support professional educational events and address the needs of our region by completing a brief evaluation



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