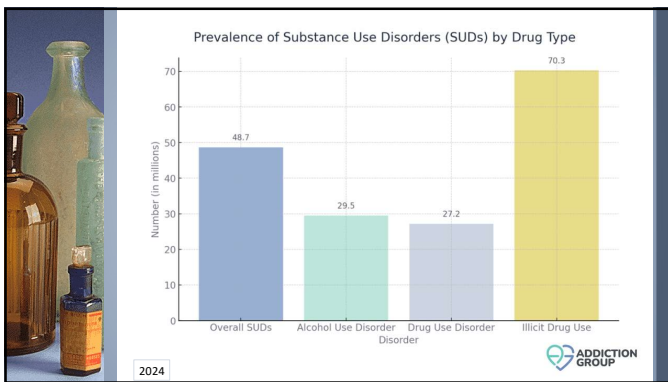


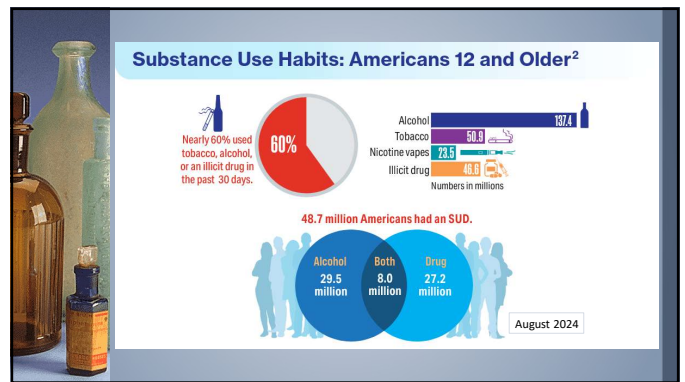
1



2



3



4

Drug Abuse Demographics

- > Males > Females
- > Non-metropolitan, rural counties 3% less use than larger, metropolitan counties
- > Drug use 15% higher in those 18-25 yo than those > 26 yo
- > Use before age 15 yo are 6.5 x more likely to develop a SUD than those who wait until after 21 yo
- > About 37% of youth use before entering 12th grade

5

Most Abused Substances

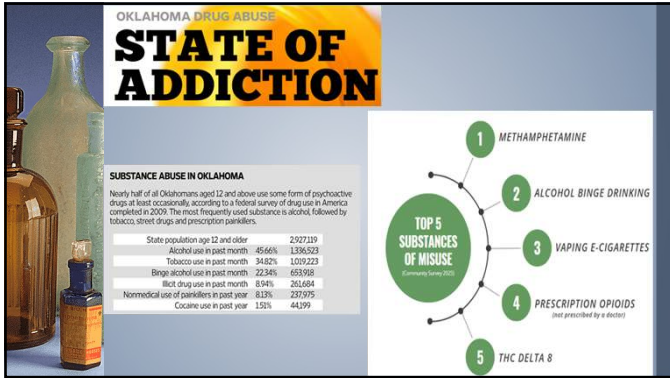
22 Million
The number of Americans 12 years or older who met clinical criteria for alcohol & marijuana abuse in 2019.

Why alcohol & marijuana?

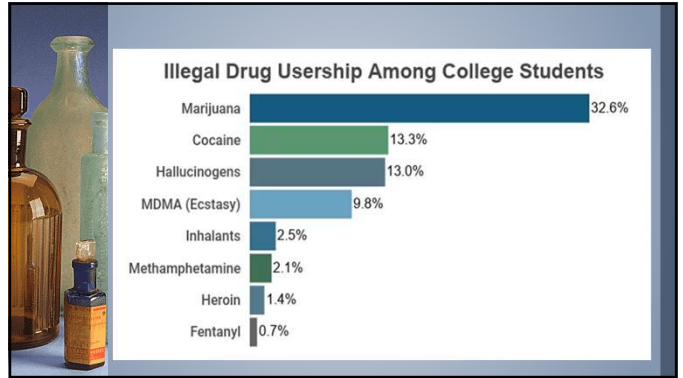
- Easier to access, despite age limits
- Cheaper than more expensive habits

Type of Drug	People ages 12+ (millions)
Alcohol	16 mil
Marijuana	12 mil
Pain relievers	9.7 mil
Hallucinogens	6.0 mil
Depressants	5.9 mil
Cocaine	5.5 mil
Rx Stimulants	4.9 mil
Inhalants	2.1 mil
Meth	2.0 mil
Heroin	.74 mil

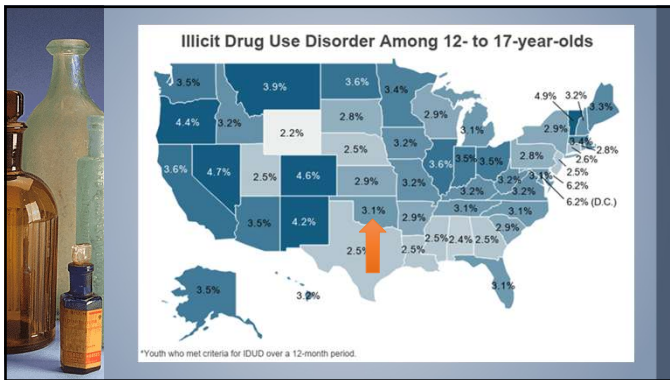
6



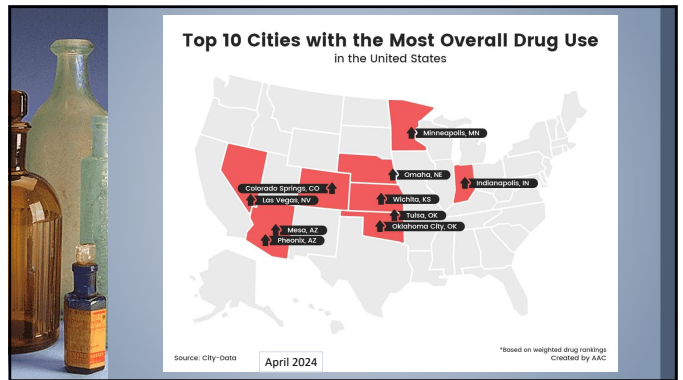
7



8



9



10



11

Objectives

- > Identify examples of old and new psychoactive substances
- > Explain how to test for and identify the use of psychoactive substances
- > Describe the anesthetic implications of psychoactive substances

12

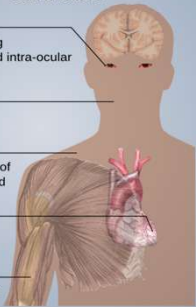
Old Psychoactive Substances

>Marijuana



13

Bodily effects of Cannabis




- Eyes:**
 - Reddening
 - Decreased intra-ocular pressure
- Mouth:**
 - Dryness
- Skin:**
 - Sensation of heat or cold
- Heart:**
 - Increased heart rate
- Muscles:**
 - Relaxation

14

Marijuana

- > Testing
 - Cannabis: 7-30 days in urine and up to 2 weeks in blood.
- > Anesthetic implications
- > Acute
 - Decreased anesthetic
 - Airway issues
 - CV
- > Chronic
 - Increased anesthetic
 - Pulmonary issues
 - CV



15

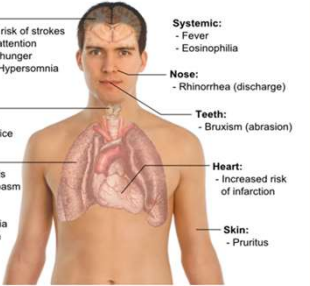
Old Psychoactive Substances

>Cocaine



16

Side effects of chronic use of Cocaine




- Brain:**
 - Increased risk of strokes
 - Reduced attention
 - Insatiable hunger
 - Insomnia/Hypersomnia
 - Lethargy
- Systemic:**
 - Fever
 - Eosinophilia
- Nose:**
 - Rhinorrhea (discharge)
- Teeth:**
 - Bruxism (abrasion)
- Throat:**
 - Soreness
 - Hoarse voice
- Lungs:**
 - Hemoptysis
 - Bronchospasm
 - Dyspnea
 - Infiltrates
 - Eosinophilia
 - Chest pain
 - Asthma
- Heart:**
 - Increased risk of infarction
- Skin:**
 - Pruritus

17

Cocaine



- > Testing
 - 3-4 days in urine and 1-2 days in blood
- > Anesthetic implications
 - Acute
 - > CV
 - > Pulmonary
 - > CNS
 - Chronic
 - > CV
 - > CNS



18

Old Psychoactive Substances

>Heroin

Harry junk boy
heroin skag horse
smack
brown

19

Short-Term Long-Term

- Euphoric high
- Dry mouth
- Flushed skin
- Increased body temperature
- Arms and legs feeling heavy
- Nausea
- Vomiting
- Itching

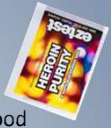

- Insomnia
- Collapsed veins
- Damaged nose tissue
- Heart lining and valve infections
- Abscesses
- Constipation
- Liver and kidney disease
- Lung complications
- Depression and antisocial personality disorder
- sexual dysfunction
- Irregular menstrual cycles for women

Source: <https://www.drugabuse.gov/publications/factsheets/heroin>

20

Heroin

- > Testing
 - 3-4 days in urine and up to 12 hours in blood
- > Anesthetic implications
 - Acute
 - > Decreased anesthetic requirements
 - Chronic
 - > Increased pain
 - > CV
 - > Access issues

21

New Psychoactive Substances

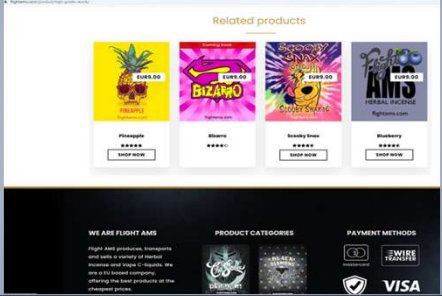
- > Spice/K2
- > Bath Salts
- > Flakka/Gravel
- > MDMA/Molly/Ecstasy
- > Salvia
- > Krokodil






22

Spice/K2



WE ARE FLIGHT AMS
Flight AMS products incorporate world class a variety of herbal blends and herbs to support the use of 100 tested compounds, offering the best products at the cheapest price.

PRODUCT CATEGORIES
K2, Bizamo, etc.

PAYMENT METHODS
CREDIT CARDS, WIRE, VISA

23



24

IMMEDIATE

- Drowsiness
- Paranoia
- Agitation
- Irritability
- Memory changes
- Confusion
- Sedation or loss of consciousness
- Panic attacks
- Extreme anxiety
- Seizures and convulsions
- Enlarged pupils
- Very rapid heartbeat or irregular heartbeat
- Slowing down of heart rate
- Chest pain
- Nausea
- Vomiting
- Appetite changes

LONG TERM

- Dependence
- Memory loss
- Paranoia (feeling extremely suspicious and frightened)
- Psychosis
- Withdrawal symptoms when usage is ceased

25

Spice/K2

- › Testing
 - Not detected in conventional drug test panels
- › Anesthetic implications
 - Acute
 - › CV
 - › CNS
 - › Hematologic
 - Chronic
 - › Unknown

26

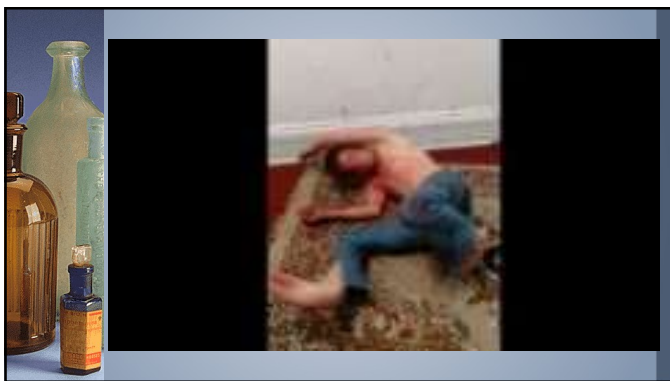
New Psychoactive Substances

- › Bath Salts

27

Bath Salts

28



29

Bath Salts Side Effects


Bath salts are unpredictable drugs, and abusing them can cause a number of mental and physical problems.

- Dilated pupils
- Headaches
- Hallucinations
- Increased body temperature
- Increased heart rate
- Chest pain
- Paranoia

30

Bath Salts

- > Testing
 - Not detected in conventional drug test panels
- > Anesthetic implications
 - Acute
 - > CNS
 - > CV
 - Chronic
 - > Hematologic
 - > Dental



31


New Psychoactive Substances



32

Flakka/Gravel


- > Testing
 - Not detected in conventional drug test panels
- > Anesthetic implications
 - Acute
 - > Hyperthermia
 - > CV
 - > CNS
 - Chronic
 - > Renal
 - > CV




33

New Psychoactive Substances

> MDMA/Molly/Ecstasy



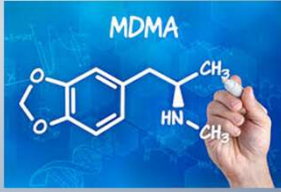
34



35

MDMA/Molly/Ecstasy

- > Testing
 - 3-4 days in urine and 1-2 days in blood.
- > Anesthetic implications
 - Acute
 - > Hyperthermia
 - > Dehydrated
 - Chronic
 - > Organ damage
 - > Bleeding



36

New Psychoactive Substances

>Salvia




Salvia products and plant material including a bottle of Salvia Divinorum, a packet of Salvia, and various dried plant samples.

37

Salvia

- Testing
 - Detectable for 12-36 hours with specific testing
- Anesthetic implications
 - Acute
 - Chronic




Two packages of Salvia products: Planetary Salvia and Salvia Sage.

38

New Psychoactive Substances

>Krokodil

- Crocodile, Russian Magic, Poor Man's Heroin, Zombie drug




A hand in a white glove holding a dark, chunky substance, likely Krokodil.

39

Krokodil

- >Testing
 - Not reliably
- >Anesthetic Implications
 - IV access
 - Pulmonary
 - Hepatic
 - Renal



Two images showing severe skin damage on a hand, illustrating the anesthetic implications of Krokodil.

40

Say NO To KROKODIL



A graphic with a syringe and a 'NO' sign, listing ingredients used in Krokodil: Gasoline, Iodine, Codeine, Paint Thinner, Lighter Fluid, and Industrial Cleaning Oil.

41

HEROIN vs KROKODIL



A comparison infographic between Heroin and Krokodil. Heroin is shown as a high for 4-6 hours, taking weeks to harvest, and costing \$100-\$300/gram. Krokodil is shown as a high for 1 hour, taking 1 hour to cook, and costing \$10-\$30/gram. Krokodil is noted as being 10x stronger and 3x more toxic than heroin.

42

New Psychoactive Substances

> Kratom

- Thom, Thang, Kakum, Ketum, and Biak

43

Kratom

- > Testing
 - Urine 5-7 days, hair up to 3 months
- > Anesthetic Implications
 - Anesthetic resistance
 - Opioid resistant
 - HTN
 - Emergence delirium

44

Kratom

Table 1. Anesthetic challenges in a patient with heavy kratom use.

Challenge encountered	Proposed mechanism	Suggested interventions
Anesthetic induction	Resistance to intravenous anesthetics due to chronic activation by kratom alkaloids	Anticipation of potential for unusually high doses. Consider the use of EEG/ BIS™ to monitor anesthetic depth.
Anesthetic maintenance	Refractory hyperventilation	Inadequate pain control due to kratom-induced opioid resistance. Intraoperative EEG monitoring, BIS™ to monitor anesthetic depth. Multimodal approach to pain control. Use regional/neuraxial anesthesia if possible. Consider arterial line for hemodynamic monitoring.
Anesthetic emergence	Severe emergence delirium	Poorly controlled pain. Possible kratom withdrawal. Multimodal approach to pain control. Optimal treatment for withdrawal (consider alpha-2 agonists, opioids, benzodiazepines).
Postoperative pain control	Poorly controlled pain	Kratom-induced opioid resistance. Multimodal approach to pain control, including use of regional/neuraxial anesthesia. Anticipate higher than normal opioid requirements. Consider chronic pain consult.

When possible, advise tapering or cessation of kratom use before surgery. For heavy habitual, or long-term users, consider consultation with an addiction specialist for assistance with tapering. Abrupt cessation can lead to serious withdrawal symptoms.

45

New or Novel Psychoactive Substances (NPS)

Class	Q1	Q2
Designer Benzodiazepines	~90	~90
Designer Opioids	~95	~95
Hallucinogens/Dissociatives	~40	~40
NPS Other	~75	~75
Synthetic Cannabinoids	~60	~60
Synthetic Stimulants	~60	~60

46

Designer Opioids

Figure 4. Proportion of Designer Opioids detected in Q1 and Q2 of 2025. Designer Opioids with less than 5 detections in the first half of 2025 were excluded from the graphs.

47

Designer Benzodiazepines

Figure 6. Proportion of Designer Benzodiazepines detected in Q1 and Q2 of 2025. Designer Benzodiazepines with less than 5 detections in the first half of 2025 were excluded.

48

Depressants: Opioids and Benzos

Depressant NPS

Opioids	Benzodiazepines
AH-7921 OITAs Novel fentanyl Similar to established recreational opioids, but with the potential for much longer durations of action	Oxaloxepam Flubromazepam Sedative, anxiolytic, hypnotic, and anticonvulsant properties; some with long duration of action

Smoked

Swallowed Pills / Tablets

Inhaled

Nasal

Short term risks:

- Overdose
- Confusional states
- Seizures after withdrawal
- Novel opioids may trend more naloxone than traditional opioids

Long term risks:

- Addiction
- Depressed cognition
- Potential for withdrawal effects after cessation

49

Synthetic Cannabinoids

Figure 8. Proportion of Synthetic Cannabinoids detected in Q1 and Q2 of 2025. Synthetic Cannabinoids with less than 5 detections in the first half of 2025 were excluded.

50

Synthetic Cannabinoids

Cannabinoid NPS

Synthetic cannabinoid receptor agonists (SCRAs)

"Spice" "Kronic" "Black mamba"
 "Clockwork Orange" "Zambora's Dirt"

Typically full agonists of cannabinoid receptors, producing a pleasant state of relaxation and of feeling "stoned"

Smoked after being crushed into herb mixtures

Inhaled using e-cigarettes and vaporizers

Short term risks:

- Psychosis
- Agitation
- Convulsion
- Cardiac toxicity
- Respiratory toxicity
- Brain injury
- Altered perception
- Altered perception
- Altered perception

Long term risks:

- Psychological dependence
- Addictive potential
- Psychotic disease
- Psychological withdrawal effects likely after cessation

51

Synthetic Stimulants

Figure 10. Proportion of Synthetic Stimulants detected in Q1 and Q2 of 2025.

52

Synthetic Stimulants

Stimulant NPS

Cathinone family, such as methedrone (M cat)

"Bath salts" "Plant Food"

Increase synaptic levels of serotonin, dopamine, and/or norepinephrine to produce a sense of euphoria and alerting "3-high"

Swallowed

Nasal

Less commonly: Injected

Rectal

Short term risks:

- Agitation
- Psychotic symptoms
- Hyperthermia
- Arrhythmia
- Psychomotor
- Cardiotoxicity
- Seizures
- Acute respiratory distress
- Orbitopathy
- Severe headache
- Stroke

Long term risks:

- Impulsive behavior
- Dependence
- Depression
- Cognitive impairments
- Psychosis
- Psychological withdrawal effects common after cessation

53

Hallucinogen/Dissociatives

Figure 12. Proportion of Hallucinogens/Dissociatives detected in Q1 and Q2 of 2025.

54

Hallucinogen/Dissociatives

Hallucinogenic NPS

Psychedelics	Dissociatives
<ul style="list-style-type: none"> 5-MeO-DALT NBOMe-series 2C-series <p>Produce perceptual alterations and quasi-mystical experiences. Some have stimulant properties.</p>	<ul style="list-style-type: none"> Methoxetamine (moxvy) Similar to ketamine and phencyclidine <p>Produce a euphoric, dissociated state, with a perception of disconnection from physical body.</p>
<ul style="list-style-type: none"> Swallowed Inhaled 	<ul style="list-style-type: none"> Swallowed Inhaled Rectal Injection
<p>Short term risks:</p> <ul style="list-style-type: none"> Accidents / trauma Aggression / psychotic states Acute cerebellar ataxia Cardiovascular toxicity Hyperosmia <p>Long term risks:</p> <ul style="list-style-type: none"> Addiction Problems with mood / memory Cardiovascular problems Abdominal pain Kidney Bladder Urinary tract damage 	

55

NPS - Other

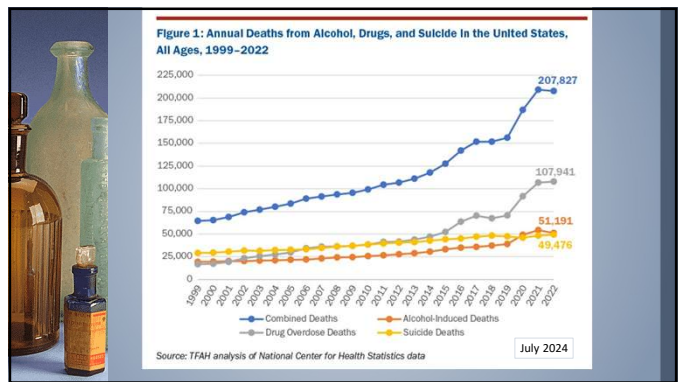
Figure 2. Proportion of NPS - Other compounds detected in Q1 and Q2 of 2025.

56

Top Novel Psychoactive Substances 2025

Table 1. Top NPS Detected at Aegis in Q1 and Q2 of 2025	NPS Classification
Xylazine/4-hydroxyxylazine	NPS-Other
Fluoro Fentanyl (FF)/Despropionyl FF/Fluoro Norfentanyl	Designer Opioids
Bromazolam/alpha-hydroxybromazolam	Designer Benzodiazepines
MDMB-4en-PINACA/ MDMB-4en-PINACA-BA/NBA metabolites	Synthetic Cannabinoids
Medetomidine/3-OH-Medetomidine	NPS-Other
o-Methylfentanyl/Despropionyl o-Methylfentanyl	Designer Opioids
MDMB-INACA/MDMB-INACA BA	Synthetic Cannabinoids
Despropionyl m/p-Methylfentanyl	Designer Opioids
8-Aminoclonazepam	Designer Benzodiazepines
Phenibut	NPS-Other
Tianeptine/Tianeptine MCS	NPS-Other
Norcarfentanyl	Designer Opioids
SF-MDMB-PINACA/SF-MDMB-PINACA M2/M7 metabolites	Synthetic Cannabinoids
BTMPS	NPS-Other
Metonitazene/N-desethyl Metonitazene	Designer Opioids

57



58

Summary

- Identify examples of old and new psychoactive substances
 - Old: Marijuana, Cocaine, Heroin
 - New: K2/Spice, Bath Salts, Flakka, MDMA, Salvia, Krokodil, Kratom, and the novel psychoactive substances
- Explain how to test for and identify the use of psychoactive substances
 - Traditional testing doesn't capture new psychoactive substances
- Describe the anesthetic implications of psychoactive substances
 - Varies

59

Questions?

IN ORDER TO PROTECT MY FAMILY, I HAD TO SELL DRUGS AND DO HORRIBLE THINGS

AWW, THAT'S ADORABLE.

60

