Street Drugs Overview and Effects on Pregnancy
Part 3

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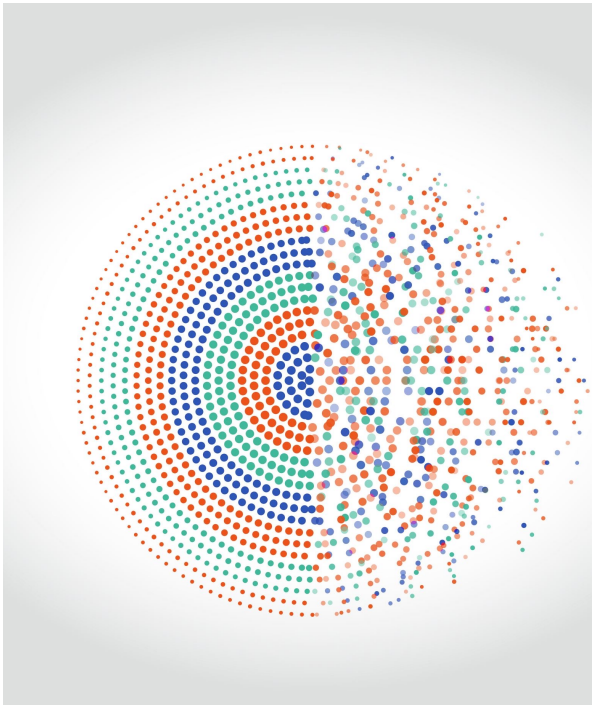

"Street Drugs"

- Delta 8 THC
- Alcohol
- Amphetamines
- Bath Salts
- Black Mamba
- Benzodiazepines
- Caffeine Pills and Drinks
- Cannabis Leaf, Oil, Dabs
- Cocaine
- Counterfeit Drugs
- Date Rape Drugs: GHB and Rohypnol
- DXM
- Fentanyl
- Flakka
- Gas Station Drugs
- Heroin
- Imodium
- Inhalants
- Khat
- Kratom

"Street Drugs"

- Synthetic Drugs 2022
- LSD
- MDMA
- Mescaline
- Methadone
- Methamphetamine
- Methylphenidate
- Magic Mushrooms
- Opioids
- Peyote
- Pink
- Poppers
- Pseudoephedrine
- Salvia
- Tianeptine
- Tobacco/Nicotine
- Vaping and the Brain

Synthetic Drugs 2022

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What Are Synthetic Drugs?

- **A synthetic drug is a drug with properties and effects similar to a known hallucinogen or narcotic but having a slightly altered chemical structure, especially such a drug created in order to evade restrictions against illegal substances.**
- **Examples of synthetic drugs are synthetic phenethylamines, including synthetic cathinones or synthetic hallucinogens and, more commonly known as "bath salts". Synthetic cannabinoids, also known as synthetic marijuana, are another example of designer drugs and these are often found in herbal incense products that mimic the effects of delta-9-tetrahydrocannabinol (THC), the primary psychoactive constituent of marijuana.**
- **The term "designer drug" in the context of drug abuse refers to substances chemically similar to and/or that mimic the drug-like effects of controlled substances. The term is often used synonymously with "club drugs," "party drugs," and "synthetic drugs." Designer drugs affect the central nervous system (CNS) and can display stimulant, depressant and/or hallucinogenic properties.**

Synthetic Drugs

Created (or reformulated, if the drug already existed) to get around existing drug laws (Controlled Substance Act), usually by modifying the molecular structures of existing drugs to varying degrees.

Synthetic Drugs:

- **Second International Opium Convention in 1925 which specifically banned alternative esters of morphine**
- **1960s - 1970s, new synthetic hallucinogens (modifications of LSD & PCP)**
- **“Designer drug” was first coined by law enforcement in the 1980s**
- **1980s - 1990s, design of MDMA (ecstasy) & methcathinone**
- **2000 - 2005, derivatives of psilocybin & mescaline, anabolic steroids**
- **European authorities have identified 41 new psychoactive drugs in 2010 alone**

New Information of Synthetics and the effects on the brain

- **Some of the most commonly abused synthetic drugs include synthetic marijuana, bath salts, ecstasy, N-bomb, methamphetamine and anabolic steroids.**
- **These drugs have detrimental (and often irreversible) effects on the brain and primarily affect the central nervous system by two mechanisms:**
- **1) Neural hyper stimulation via increasing activation of certain neurotransmitters (norepinephrine, dopamine, and serotonin),**
- **2) Cause significant reduction in CNS neural connectivity affecting various brain regions such as the basal ganglia, hippocampus, cerebellum, parietal lobe, and globus pallidus.**
- Creagh S, Warden D, Latif MA, Paydar A. The New Classes of Synthetic Illicit Drugs Can Significantly Harm the Brain: A Neuro Imaging Perspective with Full Review of MRI Findings. *Clin Radiol Imaging J*. 2018;2(1):000116.

New Information of Synthetics and the Effects on the brain

On average the US market introduces five synthetic drugs every month, which means 60 different names in a year. Synthetic marijuana has grown into the second most commonly abused drug among young males.

Synthetic cannabinoids are a combination of herbs and spices with similar effects as marijuana; however, they can be four times as potent.

The primary problem is direct neurotoxicity, presumably by affecting mitochondrial function similar to tetrahydrocannabinol (THC).

This pattern is that of a global hypoxic ischemic injury. (Stroke, coma, Pulmonary embolism, MI, Seizures)

Creagh S, Warden D, Latif MA, Paydar A. The New Classes of Synthetic Illicit Drugs Can Significantly Harm the Brain: A Neuro Imaging Perspective with Full Review of MRI Findings. *Clin Radiol Imaging J*. 2018;2(1):000116.

New Information of Synthetics and the effects on the brain

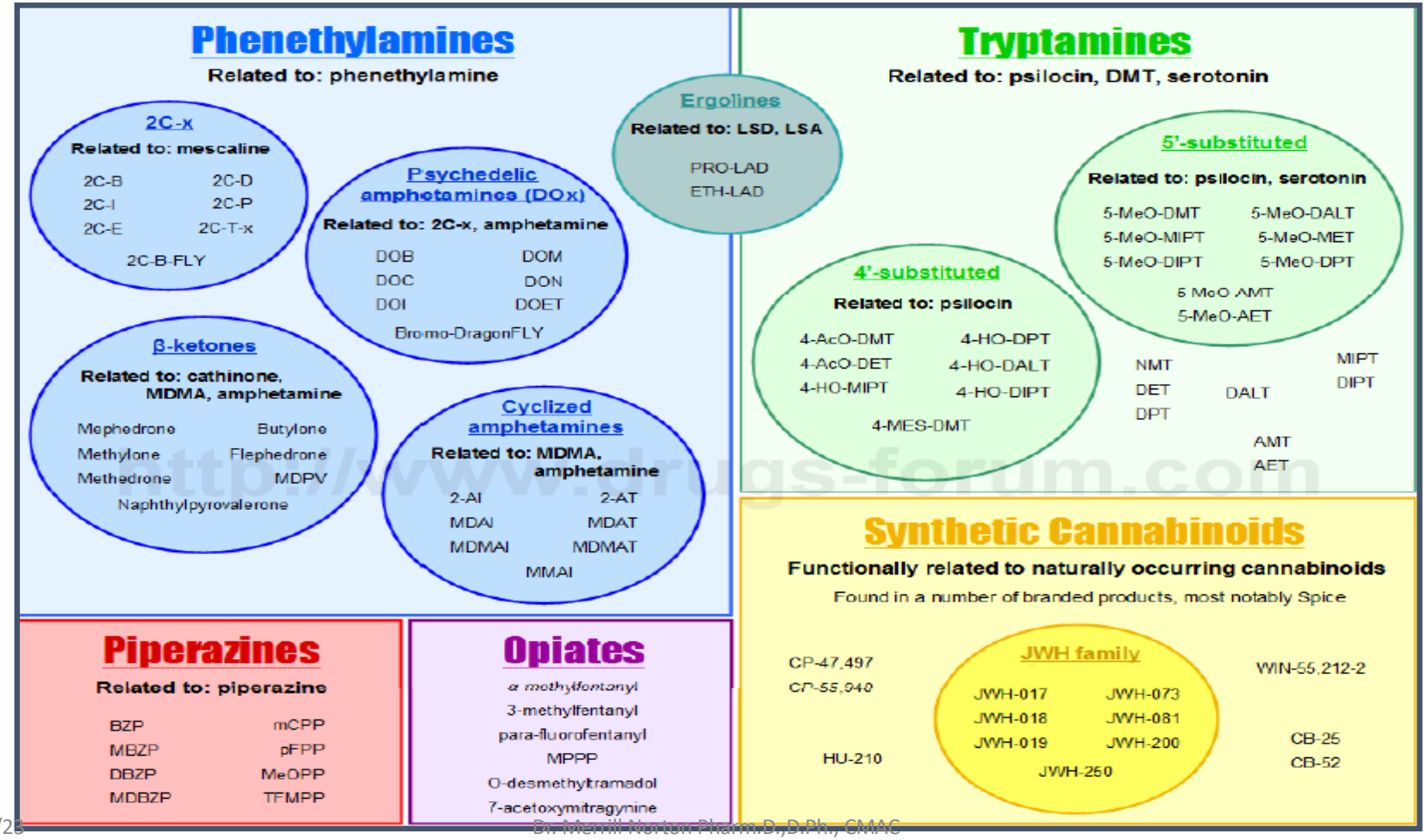
- Other synthetic drugs include bath salts,
- ecstasy,
- N bombs(phenethylamine),
- Ketamine, Methamphetamine,
- Methadone, Fentanyl,
- anabolic steroids, and derivatives.
- The damage caused by these is irreversible and leads to psychosis, depression, suicidal thoughts as well as motor, memory and executive dysfunction.
- Creagh S, Warden D, Latif MA, Paydar A. The New Classes of Synthetic Illicit Drugs Can Significantly Harm the Brain: A Neuro Imaging Perspective with Full Review of MRI Findings. *Clin Radiol Imaging J*. 2018;2(1):000116.

Table of Contents

Commonly Used Psychoactive Substances

SUBSTANCE	EFFECTS
Alcohol (liquor, beer, wine)	euphoria, stimulation, relaxation, lower inhibitions, drowsiness
Cannabinoids (marijuana, hashish)	euphoria, relaxations, slowed reaction time, distorted perception
Opioids (heroin, opium, many pain meds)	euphoria, drowsiness, sedation
Stimulants (cocaine, methamphetamine)	exhilaration, energy
Club Drugs (MDMA/Ecstasy, GHB)	hallucinations, tactile sensitivity, lowered inhibition
Dissociative Drugs (Ketamine, PCP, DXM)	feel separated from body, delirium, impaired motor function
Hallucinogens (LSD, Mescaline)	hallucinations, altered perception

“Designer” Psychoactive Substances



SOURCE: http://www.drugs-forum.com.

SYNTHETIC MARIJUANA

Spice

A Dangerous Legal High

Synthetic Marijuana

- 2007: “spice” “mojo” “legal weed” appeared
  - Synthetic psychoactive drug mixture of different herbals
  - Commonly labeled as incense
  - Mimics cannabinoids
  - Undetectable in urine drug screens designed to check for cannabinoids
  - Some states have banned; others have legislation pending

Synthetic Cannabinoids

- **Street names: K2 and Spice**
- **Marketed as “herbal incense”; claims to be a blend of traditionally used medicinal herbs but instead is laced with synthetic cannabinoids that are not naturally in the herbs it is labeled to possess**

Synthetic Cannabinoids (a.k.a. Spice)

- **Wide variety of herbal mixtures**
- **Marketed as "safe" alternatives to marijuana**
- **Brand names include: K2, fake weed, Yucatan Fire, Skunk, Moon Rocks**
- **Labeled "not for human consumption"**
- **Contain dried, shredded plant material and chemical additives that are responsible for their psychoactive effects.**

SOURCE: NIDA. (2012). *NIDA DrugFacts: Spice (Synthetic Marijuana).*

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SOURCE: NIDA. (2012). *NIDA DrugFacts: Spice (Synthetic Marijuana).*

the Effects of synthetic cannabinoids and synthetic cathinones

SOURCE:
DIMOND, D.
THIS SPICE CAN KILL YOU.
POSTED.

"People high on these drugs can get very agitated and violent, exhibit psychosis, and severe behavior changes…some have been admitted to psychiatric hospitals and have experienced continued neurological and psychological effects."

(Dr. Rick Dart, AAPCC President)

Cannabis vs. Cannabinoids: Effects Seen in Clinical Cases

- **Most symptoms are similar to cannabis intoxication:**
  - **Tachycardia**
  - **Reddened eyes**
  - **Anxiousness**
  - **Mild sedation**
  - **Hallucinations**
  - **Acute psychosis**
  - **Memory deficits**

- **Symptoms not typically seen after cannabis intoxication:**
  - **Seizures**
  - **Hypokalemia**
  - **Hypertension**
  - **Nausea/vomiting**
  - **Agitation**
  - **Violent behavior**
  - **Coma**

SOURCES: Hermanns-Clausen et al. (In Press). *Addiction*; Rosenbaum et al. (2012). *Journal of Medical Toxicology*; Forrester et al. (2011). *Journal of Addictive Disease*; Schneir et al. (2011). *Journal of Emergency Medicine*.

K 2 Spice Spray

Aspire K2 Vaping Kit

How do people use synthetic cannabinoids?

The most common way to use synthetic cannabinoids is to smoke the dried plant material.

Users also mix the sprayed plant material with marijuana or brew it as tea.

Other users buy synthetic cannabinoid products as liquids to vaporize in e-cigarettes.

How do synthetic cannabinoids affect the brain?

- **Synthetic cannabinoids act on the same brain cell receptors as THC (*delta-9-tetrahydrocannabinol*), the mind-altering ingredient in marijuana.**
- **So far, there have been few scientific studies of the effects of synthetic cannabinoids on the human brain, but researchers do know that some of them bind more strongly than marijuana to the cell receptors affected by THC and can produce much stronger effects. The resulting health effects can be unpredictable and dangerous.**
- **Because the chemical composition of many synthetic cannabinoid products is unknown and may change from batch to batch, these products are likely to contain substances that cause dramatically different effects than the user might expect.**
-

Synthetic cannabinoid users report some effects similar to those produced by marijuana:

elevated mood

relaxation

altered *perception*—awareness of surrounding objects and conditions

symptoms of *psychosis*—delusional or disordered thinking detached from reality

Psychotic effects include:

extreme anxiety

confusion

***paranoia*—extreme and unreasonable distrust of others**

***hallucinations*—sensations and images that seem real though they are not**

What are some other health effects of synthetic cannabinoids?

- **People who have used synthetic cannabinoids and have been taken to emergency rooms have shown severe effects including:**
- **rapid heart rate**
- **vomiting**
- **violent behavior**
- **suicidal thoughts**

Are synthetic cannabinoids addictive?

- **Yes, synthetic cannabinoids can be addictive. Regular users trying to quit may have the following withdrawal symptoms:**
- **headaches**
- **anxiety**
- **depression**
- **irritability**
- **Behavioral therapies and medications have not specifically been tested for treatment of addiction to these products. Health care providers should screen patients for possible co-occurring mental health conditions.**
-

Can you overdose on synthetic cannabinoids?

- **Yes. An overdose occurs when a person uses too much of a drug and has a dangerous reaction that results in serious, harmful symptoms or death. Use of synthetic cannabinoids can cause:**
- **toxic reactions**
- **elevated blood pressure**
- **reduced blood supply to the heart**
- **kidney damage**
- **seizures**
- **Deaths can also occur when dangerous synthetic opioids, such as fentanyl, are added to the packaged mixture without the user knowing it.**

Synthetic Cannabinoid Testing—urine

- **How long can synthetic cannabinoids be detected in urine?**
- Following a single low dose exposure, synthetic cannabinoids can be detected up to 72 hours in human urine. In case of chronic exposure the window of detection is much longer.
- **How are synthetic cannabinoids metabolized in urine?**
- Synthetic cannabinoids metabolize extensively in humans via oxidation, carboxylation and glucuronide conjugation. Parent drug is usually not found in urine at detectable concentrations. The urine test relies on monitoring multiple hydroxylated and carboxylated metabolites.

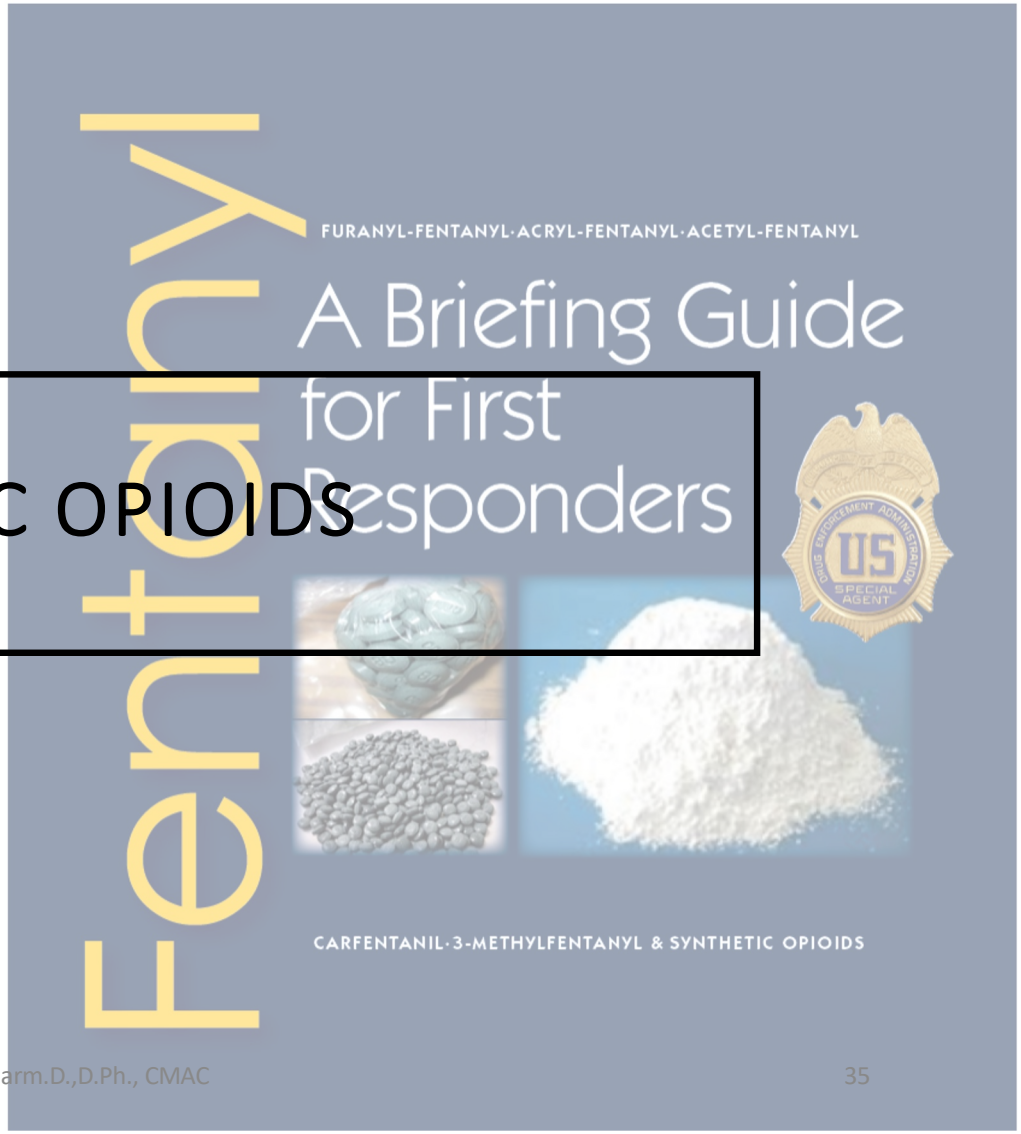
Synthetic Cannabinoid Testing—urine

- **What are the urine cutoff levels?**
- There are no cutoff levels for RTL's Urine Synthetic Cannabinoid Test. Toxicology result reporting will indicate either "Detected" or "Not Detecte
- **Will a standard drug test detect synthetic cannabinoids?**
- Conventional drug test panels will not detect the broad range of synthetic cannabinoids. They pass undetected in standard urine testing for such drugs as cocaine, marijuana, heroin and amphetamines. RTL's Urine Synthetic Cannabinoid Test can be ordered with your standard panel to ensure detection.

Synthetic Cannabinoid Testing—urine

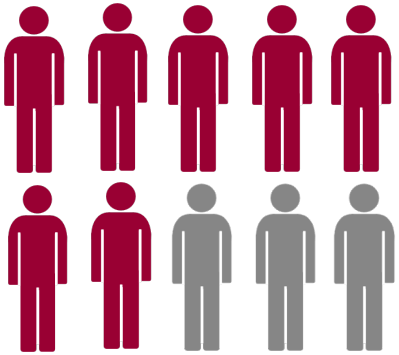
- **How accurate and reliable is the RTL Urine Synthetic Cannabinoid Test?**
  RTL's test utilizes the most sophisticated, sensitive and specific equipment and technology available, LC/MS/MS (liquid chromatography/mass spectrometry/mass spectrometry) to confirm JWH-018, JWH-073, JWH-081, JWH-250, AM-2201, RCS-4 and their metabo- lites in urine.
- To ensure accuracy, the detection method relies on monitoring multiple metabolites for each of the compounds. RTL's test methodology provides the most definitive synthetic cannabinoid biomarker test results.

SYNTHETIC OPIOIDS



Nonmedical Use of Prescription Opioids Significant Risk Factor for Heroin Use

3 out of 4 people who used heroin in the past year misused prescription opioids first



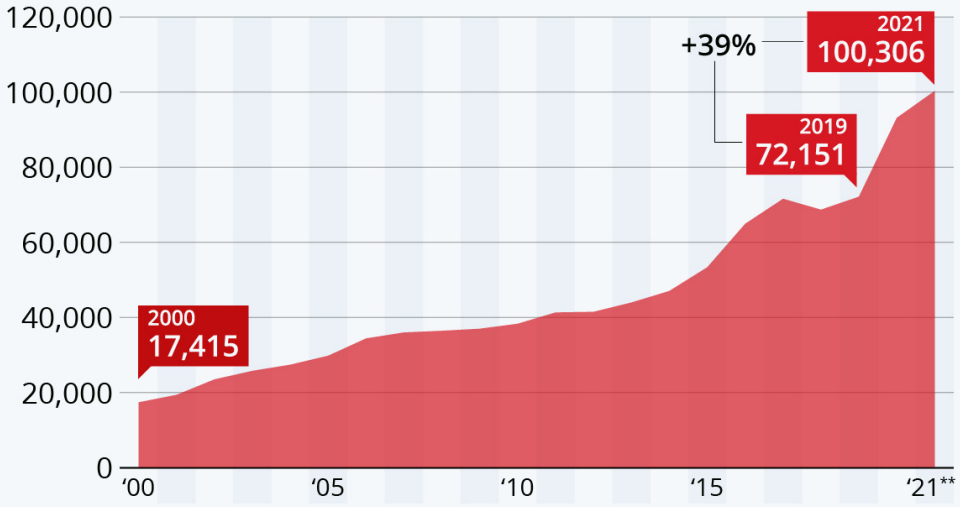
7 out of 10 people who used heroin in the past year also misused prescription opioids in the past year

2018: 2 million with opioid use disorder

Source: Jones, C.M., Heroin use and heroin use risk behaviors among nonmedical users of prescription opioid pain relievers – United States, 2002–2004 and 2008–2010. Drug Alcohol Depend. (2013). Slide credit – Grant Baldwin, CDC

U.S. Drug Overdose Deaths Spike Amid the Pandemic

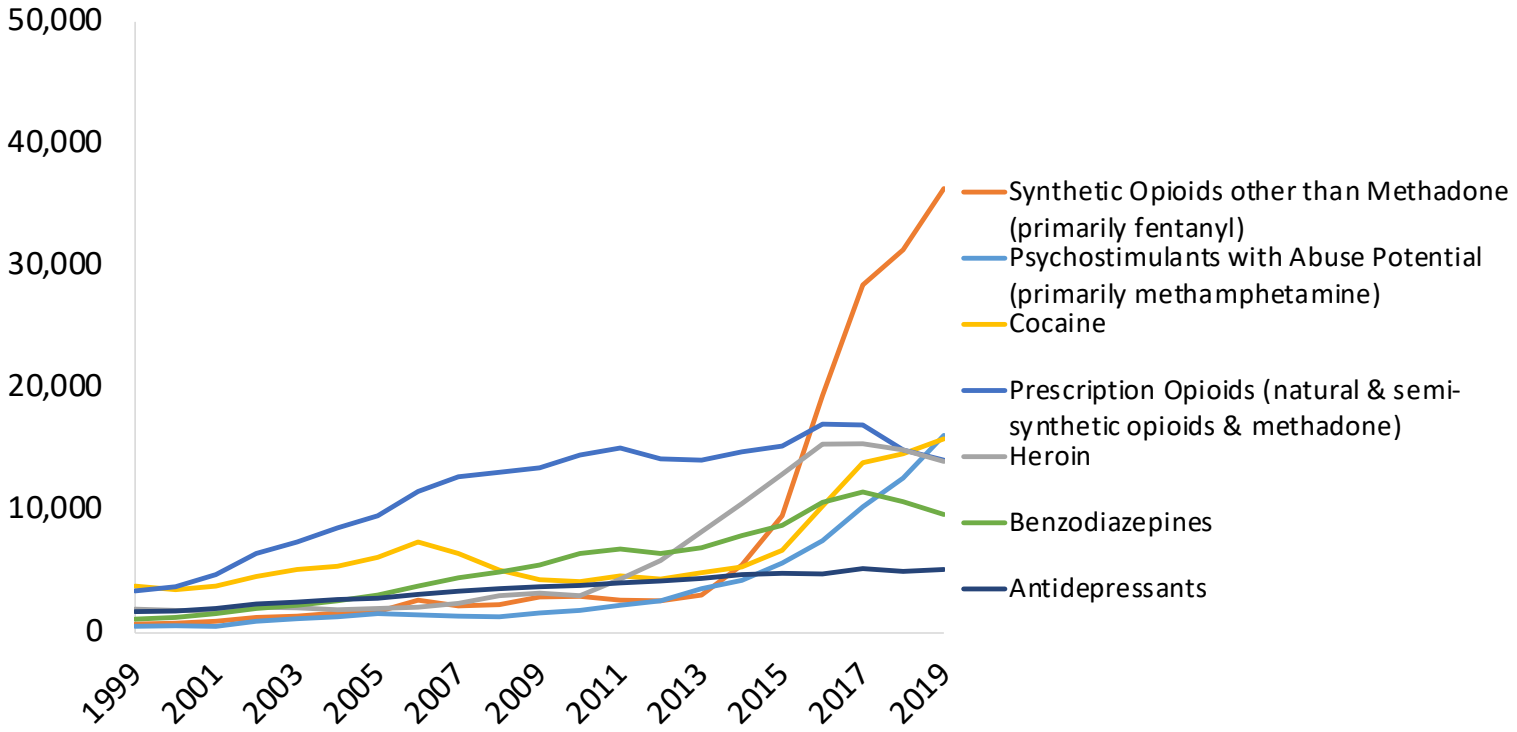
Number of drug overdose deaths in the United States*



* Estimates for 2020 and 2021 are based on provisional data.
** 2021 estimate refers to 12-month period ending April 2021
Source: Centers for Disease Control and Prevention

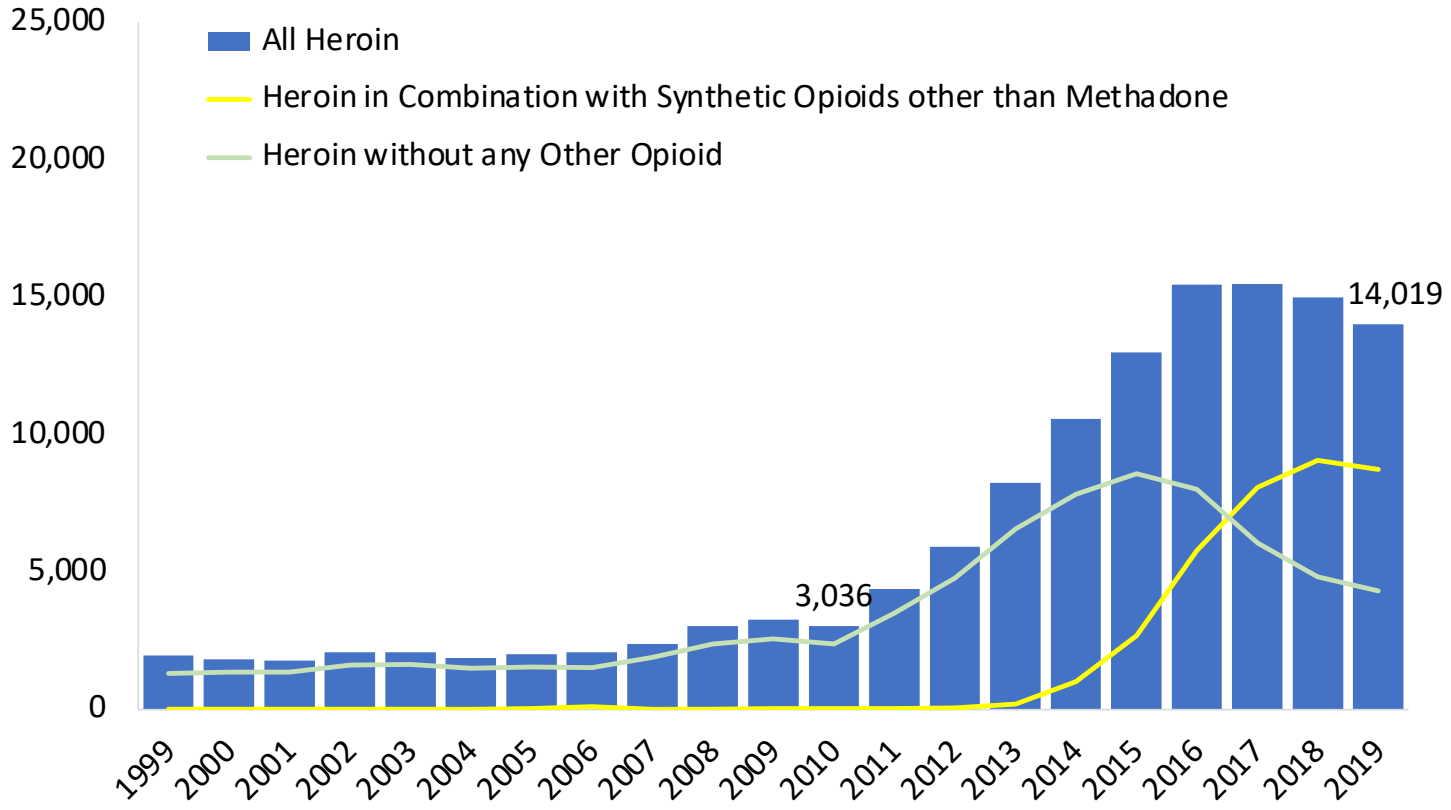
statista

Figure 2. National Drug-Involved Overdose Deaths*, Number Among All Ages, 1999-2019



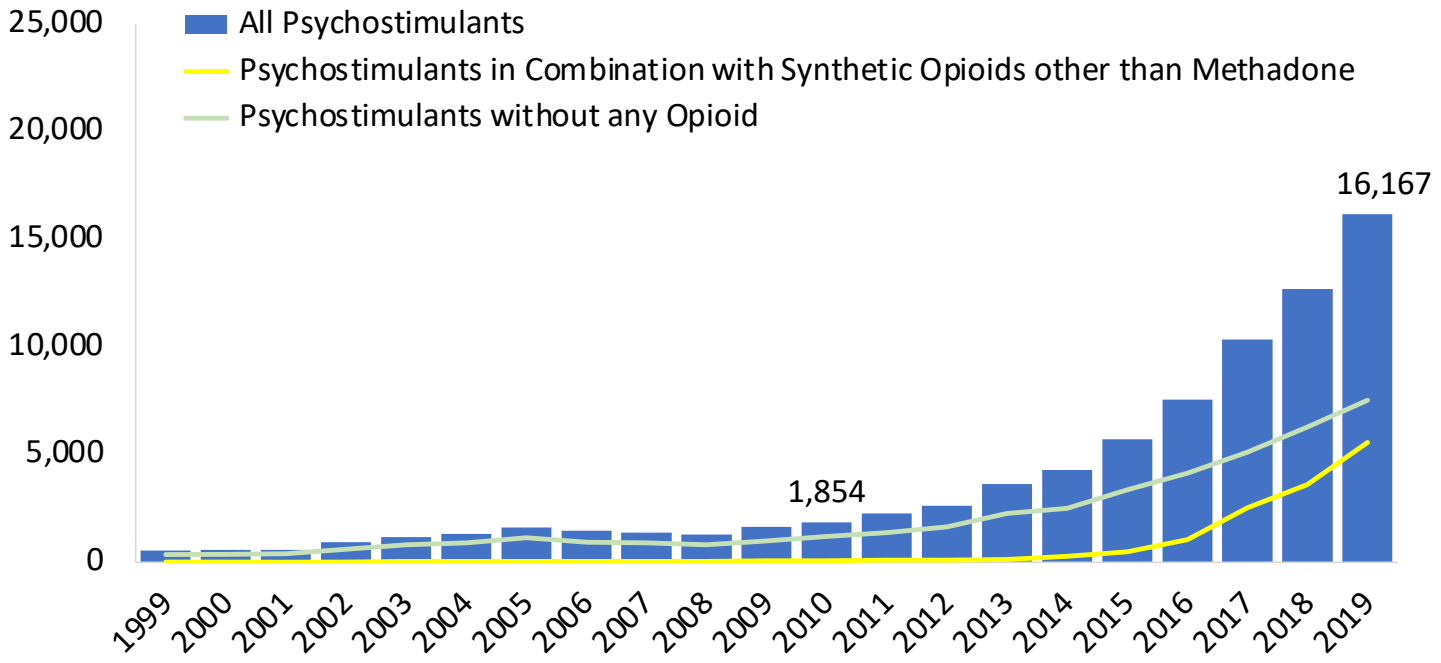
*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Figure 5. National Overdose Deaths Involving Heroin*, by other Opioid Involvement, Number Among All Ages, 1999-2019



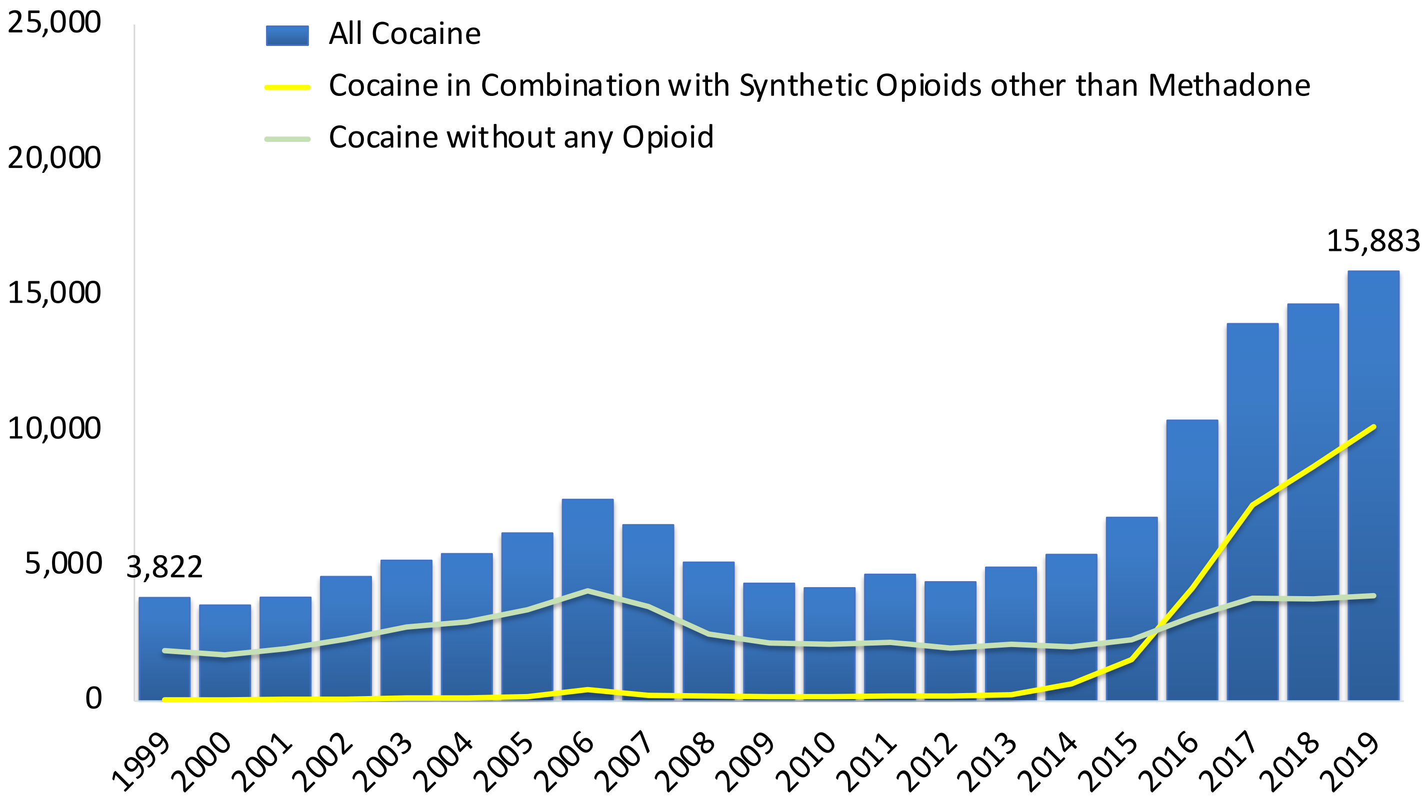
*Among deaths with drug overdose as the underlying cause, the heroin category was determined by the T40.1 ICD-10 multiple cause-of-death code. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Figure 6. National Overdose Deaths Involving Psychostimulants with Abuse Potential (Primarily Methamphetamine)*, by Opioid Involvement, Number Among All Ages, 1999-2019



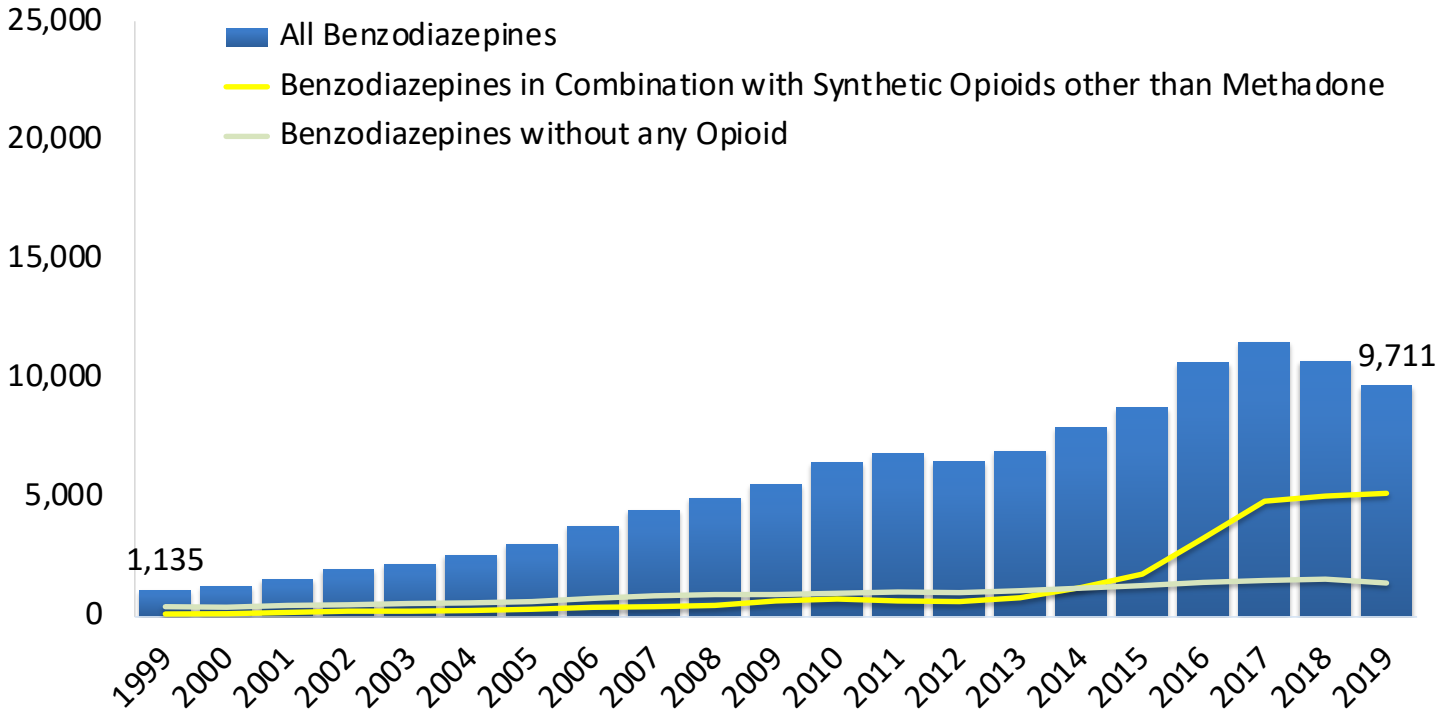
*Among deaths with drug overdose as the underlying cause, the psychostimulants with abuse potential (primarily methamphetamine) category was determined by the T43.6 ICD-10 multiple cause-of-death code. Abbreviated to *psychostimulants* in the bar chart above. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Figure 7. National Drug Overdose Deaths Involving Cocaine*, by Opioid Involvement, Number Among All Ages, 1999-2019



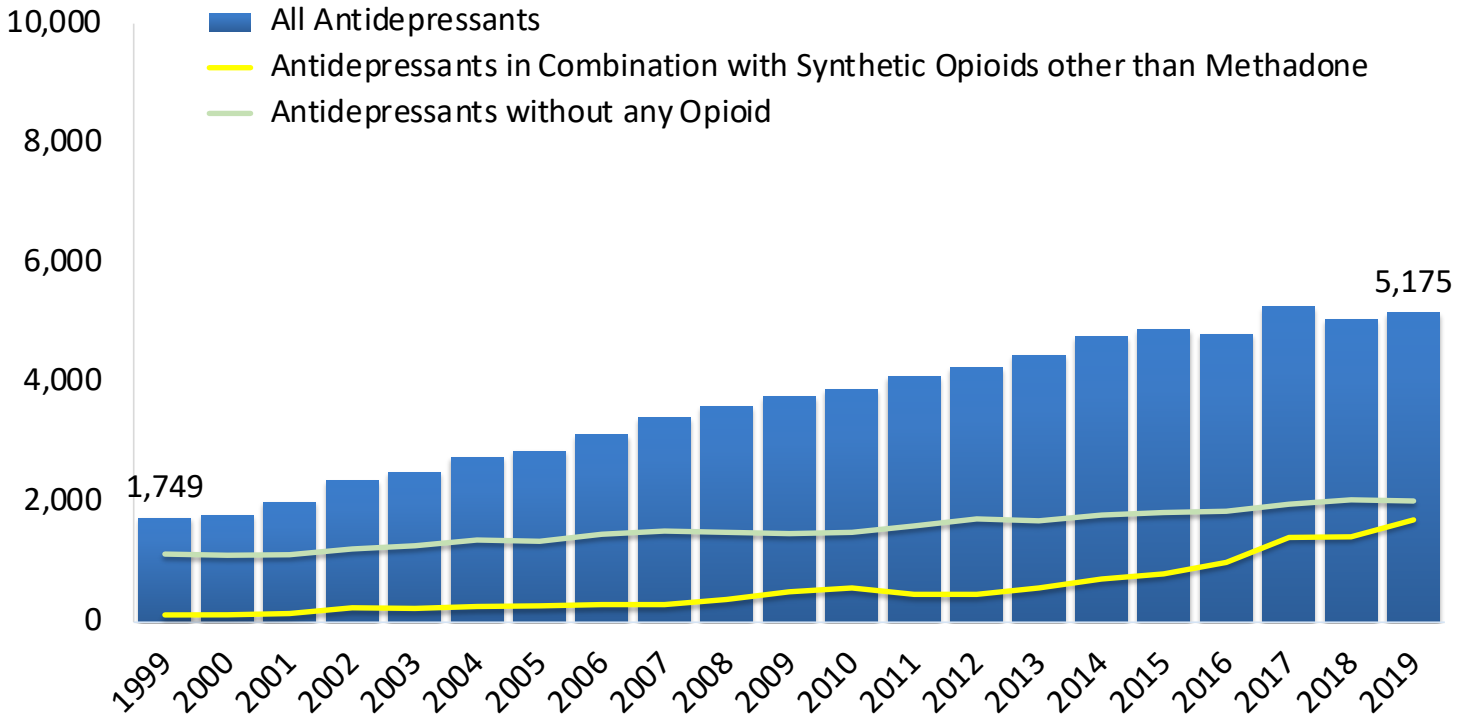
*Among deaths with drug overdose as the underlying cause, the cocaine category was determined by the T40.5 ICD-10 multiple cause-of-death code. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Figure 8. National Drug Overdose Deaths Involving Benzodiazepines*, by Opioid Involvement, Number Among All Ages, 1999-2019



*Among deaths with drug overdose as the underlying cause, the benzodiazepine category was determined by the T402.2 ICD-10 multiple cause-of-death code. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Figure 9. National Drug Overdose Deaths Involving Antidepressants, by Opioid Involvement, Number Among All Ages, 1999-2019



*Among deaths with drug overdose as the underlying cause, the antidepressant subcategory was determined by the following ICD-10 multiple cause-of-death codes: Tricyclic and tetracyclic antidepressants (T43.0), monoamine-oxidase-inhibitor antidepressants (T43.1), and other unspecified antidepressants (T43.2). Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

Fentanyl Related Substances

- **3-methylfentanyl**
- **3-methylthiofentanyl**
- **4-methoxy-butyryl fentanyl**
- **Acetyl norfentanyl**
- **Acetyl-alpha-methylfentanyl**
- **Acetylfentanyl**
- **Acryl-alpha-methylfentanyl**
- **Acrylfentanyl**
- **Alfentanil**
- **Alpha-methylfentanyl**
- **Alpha-methylthiofentanyl**
- **Benzodioxole fentanyl**
- **Benzoylbenzyl fentanyl**
- **Benzylfentanyl**
- **Beta-hydroxy-3-methylfentanyl**
- **Beta-hydroxyfentanyl**
- **Beta-hydroxythiofentanyl**
- **Butanoyl 4-fluoro fentanyl**
- **Butyryl fentanyl**
- **Carfentanil**
- **Crotonyl fentanyl**
- **Cyclopentyl fentanyl**
- **Cyclopropyl fentanyl**
- **Fluorobutyryl fentanyl**
- **Fluorofentanyl**
- **Fluoroisobutyryl fentanyl**
- **Furanyl fentanyl**
- **Isobutyryl fentanyl**
- **Lofentanil**
- **Methoxyacetyl fentanyl**
- **N-isobutanoyl 4-fluoro fentanyl**
- **Ortho-fluorofentanyl**
- **P-fluorobutyryl fentanyl**
- **P-fluorofentanyl**
- **P-fluoroisobutyryl fentanyl**
- **Phenyl fentanyl**
- **Remifentanil**
- **Sufentanil**
- **Tetrahydrofuran fentanyl**
- **Thenylfentanyl**
- **Thiofentanyl**
- **Thiofuranyl fentanyl**

Primer on Synthetic Opioids

11 July 2017

(U) Fentanyl Analogues Not Resistant to Narcan® (Naloxone)

(U) ***Contrary to recent news reporting, there are no fentanyl analogues resistant to Naloxone.*** News reports indicated a "new" fentanyl analogue, acrylfentanyl, was "extremely powerful" and implied it resisted Naloxone's effects.[1,2] However, acrylfentanyl binds to the same receptors within the human body as fentanyl, meaning correctly administered Naloxone is effective against it.

- (U) Naloxone belongs to a category of drugs known as opioid antagonists. Opioid antagonists reverse opioids' effects by binding to the same opioid receptors in the human body as opioids. If administered quickly and at a sufficient dose, Naloxone and other opioid antagonists are effective against all opioids—including fentanyl and its analogues—regardless of their potency, according to the National Heroin Coordination Group.[3]
- (U) Acrylfentanyl is comparable in potency to other illicit fentanyl analogues. Depending on dosage, acrylfentanyl may be more potent than fentanyl and can maintain its analgesic effects longer, according to the European Monitoring Centre for Drugs and Drug Addiction.[4,5]
- (U) Acrylfentanyl's decades-long existence proves that it is not a new analogue, according to the European Monitoring Centre for Drugs and Drug Addiction.[6]

(U) Implications

(U) The misbelief in a Naloxone-resistant fentanyl, particularly acrylfentanyl, will persist until media outlets, journalists, and the public learn more about the opioid-Naloxone relationship. An abundance of accurate and legitimate information is available to the public on both fentanyl and acrylfentanyl. The Substance Abuse and Mental Health Services Administration and the Bureau of Justice Assistance provide excellent overviews of opioids and Naloxone, respectively.[7,8]

Synthetic Drugs and Pregnancy

- **Synthetic cannabinoids and opioids cause the following complications of pregnancy:**
- **High Blood Pressure. ...**
- **Gestational Diabetes. ...**
- **Infections. ...**
- **Preeclampsia. ...**
- **Preterm Labor. ...**
- **Depression & Anxiety. ...**
- **Pregnancy Loss/Miscarriage. ...**
- **Stillbirth.**
- American College of Obstetricians and Gynecologists. (2020). *Preeclampsia and high blood pressure during pregnancy. FAQ034.* Retrieved December 30, 2020,

LSD - Lysergic Acid Diethylamide

Dr. Merrill Norton Pharm.D.,D.Ph., CMAC

What Is LSD?

- LSD is one of the most commonly used 'psychedelic' or 'hallucinogenic' substance.
- It comes in a variety of forms, but is virtually always taken orally.
- LSD is most commonly found in the form of small squares of paper called blotter → full sheets of paper are decorated with artwork or designs, perforated, then soaked in liquid LSD solution and dried
- Other forms include, pills, gelatin sheets or shapes (pyramids, cubes, etc.), liquid, liquid sugar cubes, and powder
- Blotter is most common because it is easily produced, easily concealable, and the format allows for few adulterant chemicals.

LSD

Common names for LSD are Acid, Mellow Yellow, and Dots

Short-term body effects of LSD include:

- Dilated pupils
- High body temperature
- Increased heart rate/ blood pressure

LSD Short-Term Mind Effects

- Visual changes
- Extreme changes in mood
- Impaired depth and time perception
- Impaired ability to make judgments

LSD Adverse Side Effects

Anxiety
Tension, jaw tension
Increased perspiration
Nausea
Dizziness, confusion
Megalomania
Over-awareness & over-sensitization to music and noise
Paranoia, fear, and panic
Unwanted and overwhelming feelings
Unwanted life-changing spiritual experiences
Flashbacks

LSD Long-Term Effects

- Hallucinogen Persisting Perception Disorder
  - Flashback of drug effects
- Paranoia, fear, panic
- Anxiety

Drug Testing for LSD

- LSD can be detected in a urine test for 2-4 days after last use, in a blood test for 6-12 hours after last use, and in a hair test for up to 90 days
- Factors that can affect these tests include how much LSD the person took prior to the test, their age, their health, and their weight
- The liver quickly breaks it down into 2-oxy-LSD and 2-oxo-3-hydroxy LSD—both inactive byproducts of LSD metabolism (metabolites)
- The most common LSD drug test is a urine drug screen

Drug Testing for LSD

- False positive:
  - Ambroxol
  - Amitril (amitriptyline)
  - Buspar (buspirone)
  - Cardizem (diltiazem)
  - Fentanyl
  - Prozac (fluoxetine)
  - Risperdal (risperidone)
  - Ritalin (methylphenidate)
  - Trandate (labetalol)
  - Verelan (verapamil)
  - Wellbutrin (bupropion)
  - Zoloft (sertraline)

LSD and Pregnancy

- LSD is an agonist at both 5-HT2 and dopamine receptors and accumulates in the placenta.
- LSD has been shown to have vasoconstrictive effects on both the uterine arteries and umbilical arteries in pregnant ewes, with potential for significant compromise of fetal blood flow.
- There are very limited reports of the effect of LSD on human pregnancy, with a number of reported cases of ocular abnormalities,-although in a single case series of 10 women known to have taken LSD during pregnancy, there were no adverse pregnancy outcomes or congenital abnormalities noted.
- *Scott, K., & Lust, K. (2010). Illicit substance use in pregnancy - a review. Obstetric medicine, 3(3), 94–100. https://doi.org/10.1258/om.2010.100014*

MDMA

What Is MDMA (Ecstasy/Molly)?

MDMA is a stimulant and psychedelic

MDMA is a synthetic chemical made in labs

MDMA tablets often also contain:

- Methamphetamine, ketamine, cocaine, or caffeine

MDMA

MDMA comes as colorful pills, capsules, powder, liquid

They can be snorted, swallowed, and sometimes smoked

Dr. Merrill Norton Pharm.D.,D.Ph., CMAC

3/7/23

MDMA Short-Term Mind Effects

- Increased sensitivity to touch
- Euphoria
- Energy
- Sexual arousal
- Confusion
- Anxiety
- Paranoia
- Sleep problems

MDMA Short-Term Body Effects:

- Increased heart rate/ blood pressure
- Muscle tension
- Tremors
- Teeth clenching
- Nausea
- Increased sweating leading to dehydration
- Blurred vision

MDMA Long-Term Effects

Severe dehydration → kidney damage

Damage to the serotonin system can lead to the lack of ability to feel pleasure

Overdose leading to death

Drug Testing for MDMA

- MDMA is usually detectable in bodily fluids for 1 to 3 days after ingestion. However, it may be detected for up to 5 days or more in some circumstances. Like other drugs, it's detectable in hair for around 90 days.
- Most fluid-based detection windows are based on a single dose ranging from 50 to 160 milligrams (mg). Higher doses may take longer to leave your system.
- Detection times are based on the time you last took the drug. Taking multiple doses over a period of several hours can lengthen the detection window.

Drug Testing for MDMA

- False positives
  - Trazodone
  - Metoprolol
  - Fenofibrate metabolite, fenofibric acid
  - Mebeverine

MDMA and Pregnancy

It is not surprising then that MDMA use is associated with unplanned pregnancy;

MDMA causes a small (0.68C) rise in core body temperature, which may contribute to the reported association with congenital abnormalities.

Obstetric outcomes may be significantly compromised,with increased rates of premature rupture of membranes,placental abruption, premature delivery andntrauterine infections.

Intrauterine growth restriction is common and stillbirth may occur.

Scott, K., & Lust, K. (2010). Illicit substance use in pregnancy - a review. Obstetric medicine, 3(3), 94–100. https://doi.org/10.1258/om.2010.100014

Mescaline/Peyote ($C_{11}H_{17}NO_3$) (3,4,5-trimethoxy-ß-phenethylamine)

What Is Mescaline/Peyote?

Peyote (Lophophora williamsii) is a small (less than 12 cm in diameter), round cactus with fuzzy tufts instead of spines.

It rarely rises more than an inch or so above the soil surface. The largest part of the cactus is actually underground in the long, carrot-like root.

The above ground portion is the "button" which is cut and consumed either fresh or dried.

It is found commonly in Mexico and the southwest US

What Is Mescaline/ Peyote?

- The button contains mescaline, an active hallucinogen
- Usually, anywhere from four to a dozen buttons are eaten or made into tea.
- Myths concerning the presence of strychnine in the flesh or fuzz of are often circulated in the common lore, but this substance is completely absent from peyote.
- Common names include Buttons, Cactus, Mesc, Peyoto, and Sacred Cactus

Mescaline/Peyote Short-Term Body Effects

- Intense nausea and vomiting
- Increased heart rate/ blood pressure
- Rise in body temperature
- Heavy sweating
- Impaired coordination

Mescaline/Peyote Short-Term Mind Effects

- Illusions
- Hallucinations
- Altered perceptions of space/time
- Altered body image
- Euphoria followed by anxiety

Mescaline/ Peyote

- Long-term effect:
  - Hallucinogen Persisting Perception Disorder
    - Flashback of drug effects

Drug Testing for Mescaline

- It is extremely rare for mescaline to be specifically tested for, but it is possible to initiate a specific mescaline urine drug screen
- Mescaline is detectable in the urine for 1-4 days
- The NarcoCheck® MES rapid test strip is an immunoassay for fast the detection of mescaline use in human urine

Mescaline and Pregnancy

- Peyote is a substance with varied potential. Used properly it may be a spiritual aid but used in excess, it can be a hallucinogenic agent with teratogenic potential.
- Congenital malformations of the brain, spinal cord, liver, and other viscera were increased.
- No reports describing the use of peyote or its active alkaloid mescaline during human lactation have been located.
- However, the use of low doses of peyote by adults in religious rituals often is associated with adverse effects, such as nausea, vomiting, and sympathomimetic effects (mydriasis, mild tachycardia, mild hypertension, diaphoresis, ataxia, and hyperreflexia).
- Higher maternal doses that may be associated with recreational use of peyote, and certainly with mescaline, could cause these effects in a nursing infant.
- *Gilmore HT. Peyote use during pregnancy. S D J Med. 2001 Jan;54(1):27-9. PMID: 11211421*.
- *Scott, K., & Lust, K. (2010). Illicit substance use in pregnancy - a review. Obstetric medicine, 3(3), 94–100. https://doi.org/10.1258/om.2010.100014*

Methadone

What Is Methadone?

- Methadone is a synthetic (man-made) narcotic.
- It is used legally to treat addiction to narcotics and to relieve severe pain, often in individuals who have cancer or terminal illnesses.
- When used to treat narcotic addiction, methadone suppresses withdrawal symptoms for 24 to 36 hours.
- Individuals who are prescribed methadone for treatment of heroin addiction experience neither the cravings for heroin nor the euphoric rush that are typically associated with use of that drug.

Methadone

- Methadone abuse among high school students is a concern.
- Nearly 1 percent of high school seniors in the United States abused the drug at least once in their lifetime, according to the University of Michigan's Monitoring the Future Survey.
- Individuals who abuse methadone risk becoming tolerant of and physically dependent on the drug.
- Discontinuing use may result in withdrawal symptoms including muscle tremors, nausea, diarrhea, vomiting, and abdominal cramps.

Methadone

- Short-term effects:
  - Lacks the euphoria of other opioids
  - Pain relief
  - Reduced opioid craving

- Long-term effects:
  - Ironically, risk for addiction
  - Irregular heart rhythm

Methadone

- Overdosing on methadone poses an additional risk.
- In some instances, individuals who abuse other narcotics (such as heroin or OxyContin) turn to methadone because of its increasing availability.
- Methadone, however, does not produce the euphoric rush associated with those other drugs; thus, these users often consume dangerously large quantities of methadone in a vain attempt to attain the desired effect.
- Methadone overdoses are associated with severe respiratory depression, decreases in heart rate and blood pressure, coma, and death.

Drug Testing for Methadone

- Because methadone is used in medication assisted treatment, drug testing is a common practice used there
- Drug testing is a clinical tool whose purpose is to provide objective meaningful information, which will reinforce positive behavioral changes in patients and guide further treatment needs.
- Such information includes knowledge of whether the patient is taking their methadone as prescribed and reducing or abstaining from using opioid and other drugs of abuse use

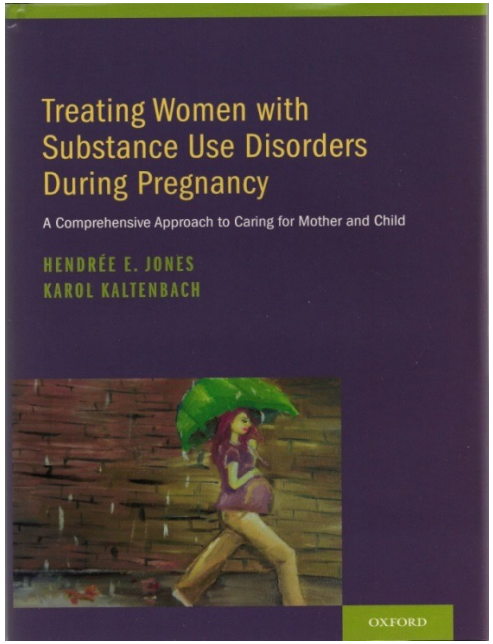
Drug Testing for Methadone

- Generally, the results of oral fluid drug testing are similar to urine drug testing but there are some differences, such as lower concentrations of substances in oral fluid than urine, and some drugs remain detectable for longer periods of time in urine than oral fluid.
- Urine drug screening is considered the criterion measure (gold standard) for methadone maintenance monitoring
- Because of methadone's long half-life, it can be detected in the urine anywhere from 2 to 13 days after ingestion

Drug Testing for Methadone

- False positives
  - Quetiapine
  - TCAs
  - Diphenhydramine
  - Doxylamine

What Does Substance Use Disorders Look Like In Women?



- Initiation of drug use
- How she obtains her drugs
- Where she uses her drugs
- How she recovers from drug use

➥ ***Untreated addiction places a woman and her fetus at risk for multiple adverse consequences***

Methadone: Dosing during Pregnancy

- **In the 1970s, a positive relationship between maternal methadone dose and NAS severity was reported**
- **Recommendations to maintain pregnant women on methadone doses between 20 to 40 mg**
- **3 decades of research shows an inconsistent relationship between maternal methadone dose and NAS severity**
- **The latest systematic review and meta-analysis concluded that the "Severity of the neonatal abstinence syndrome does not appear to differ according to whether mothers are on high- or low-dose methadone maintenance therapy."**

(Review in Cleary et al., *Addiction,* 2010)

Split Dosing

Methadone: Dosing during Pregnancy

- Maternal Results
  - **increase drug negative urines during treatment**
  - **Increased adherence with treatment**
  - **decrease withdrawal symptoms in mother**
  - **No change in maternal heart rate, vagal tone or skin conductance**

- Fetal Results
  - **Minimizes the reduction in breathing**
  - **Minimizes the reduction in movement**
  - **Fetal movement-fetal heart rate coupling less suppressed**

(DePetrillo et al., 1995; Swift et al., 1989; Wittmann et al.,1991; Jansson et al., 2009)

Methadone and Pregnancy

The Food and Drug Administration (FDA) has established five categories of pregnancy drugs based on the potential of a drug to cause birth defects when used during pregnancy; methadone is a **Pregnancy Category C** drug.

Methadone, a drug widely used in the treatment of heroin addiction, **may impair the fertility and sexual performance of many of the men who take it** according to the findings of a preliminary study.

Methadone and Pregnancy

- Babies who are exposed to methadone during pregnancy could experience: **Respiratory symptoms such as stuffy nose, fast breathing and repeated sneezing and yawning**.
- Nervous system issues, including decreased sleep, being jittery and irritable, and becoming startled due to sound or touch.
- Mothers who are thinking about detoxing from methadone while pregnant are often concerned that methadone treatment will cause harm to their babies.
- **Studies have not shown methadone to increase the chance of birth defects or complications during pregnancy**

Methadone and Pregnancy

- For newborn outcomes, treatment with **buprenorphine as compared to methadone** resulted in significantly longer gestational age, reduced incidence of preterm birth (defined as gestational age less than 37 weeks), larger birth weight, and larger head circumference.
- **Preterm birth was more common in methadone-exposed pregnancies (25% versus 14%)**.
- The incidence of NAS treatment was higher in methadone compared with buprenorphine-exposed infants (65% vs 49%), and term compared with preterm births (64% vs 36%).

Methadone: Breastfeeding

Breastfeeding in Methadone-Stabilized Mothers

- Methadone detected in breast milk in very low levels
- Methadone concentrations in breast milk are unrelated to maternal methadone dose
- The amount of methadone ingested by the infant is low
- The amount of methadone ingested by the infant remains low even 6 months later
- Several studies show relationships between breastfeeding and reduced NAS severity and duration
- Hepatitis C is not a contraindication for breastfeeding
- Contraindications: HIV+, unstable recovery

(D'Apolito, 2013; AAP 2012; McQueen et al., 2011; Jansson et al., 2007; Jansson et al., 2010)

Methadone and Pregnancy

The exposure of infants to methadone through their mothers' breast milk is minimal.

Women using methadone for treatment of opioid dependence should not be discouraged from breastfeeding.

The benefits of breastfeeding largely outweigh any theoretical minimal risks.

A review of studies showed that **long-term methadone causes sexual dysfunction and infertility**.

Few studies on seminal fluid parameters, have shown reduced sperm motility in methadone-consuming men, may be a potential cause of infertility.

Methylphenidate

Dr. Merrill Norton Pharm.D.,D.Ph., CMAC

What Is Methylphenidate?

- Methylphenidate is a nonamphetamine, behavioral stimulant
- Primary use: treatment of ADHD in children, adolescents, and adults.
- Methylphenidate increases dopamine concentration in the synapse by blocking the transporter (like cocaine) and increasing dopamine release (like amphetamine).
- Methylphenidate prescriptions numbered over 14 million in 2019 which placed the drug in the TOP 50 drugs prescribed in the US.

Prescription Names of Methylphenidate

- Adhansia XR®
- Aptensio XR®
- Concerta®
- Cotempla® XR-ODT
- Jornay PM®
- Metadate® CD
- Metadate® ER
- Methylin®
- Methylin® ER
- Quillichew® ER
- Quillivant® XR
- Ritalin®
- Ritalin® LA
- Ritalin® SR

Dr. Merrill Norton Pharm.D.,D.Ph., CMAC

Methylphenidate Abuse in Adolescents

- Methylphenidate like other central nervous system stimulants, may be **addictive**.
- If taken in large doses, the quick rise in dopamine can produce a temporary feeling of euphoria.
- Taking methylphenidate in high doses or for a long time can be habit-forming and lead to addiction.
- Street Names: Kibbles and bits, Kiddy cocaine, Pineapple, Skippy, Smarties, Vitamin R, West coast

Methylphenidate Side Effects

- nervousness
- irritability
- difficulty falling asleep or staying asleep
- dizziness
- nausea
- vomiting
- loss of appetite
- weight loss
- stomach pain
- diarrhea
- heartburn

- dry mouth
- headache
- muscle tightness
- drowsiness
- uncontrollable movement of a part of the body
- restlessness
- decreased sexual desire
- heavy sweating
- back pain

Methylphenidate Severe Side Effects

- fast, pounding, or irregular heartbeat
- chest pain
- shortness of breath
- excessive tiredness
- slow or difficult speech
- fainting
- weakness or numbness of an arm or leg
- seizures
- changes in vision or blurred vision
- agitation
- believing things that are not true
- feeling unusually suspicious of others
- hallucinating (seeing things or hearing voices that do not exist)

- motor tics or verbal tics
- depression
- abnormally excited mood
- mood changes
- unexplained wounds on the fingers or toes
- fever
- hives
- rash
- blistering or peeling skin
- itching
- swelling of the eyes, face, lips, mouth, tongue, or throat
- hoarseness
- difficulty breathing or swallowing

Symptoms of Overdose May Include the Following:

- vomiting
- nausea
- diarrhea
- fainting, blurred vision, or dizziness
- restlessness
- abnormally rapid breathing
- anxiety
- agitation
- uncontrollable shaking of a part of the body
- muscle twitching
- seizures
- loss of consciousness

- inappropriate happiness
- confusion
- hallucinating (seeing things or hearing voices that do not exist)
- sweating
- flushing
- headache
- fever
- fast, pounding, or irregular heartbeat
- widening of pupils (black circles in the middle of the eyes)
- dry mouth or nose
- muscle weakness, fatigue, or dark urine

Drug Testing for Methylphenidate

- Methylphenidate might not show up a standard 5-panel drug screen, but it could show up on a screening panel for amphetamines.
- Methylphenidate tends to be metabolized pretty quickly, so it doesn't stay in the body for very long
- It will be detectable in your blood for up to about 12 hours.
- Urine tests are the most common options for drug testing, and Methylphenidate may be found for 1 to 3 days.
- Hair follicle testing is less common, but it can detect drugs for up to 90 days.

Drug Testing for Methylphenidate

- Cross-reactivity with methylphenidate and amphetamines is often assumed to take place
- However, a study analyzing the cross-reactivity found that when laboratory screening procedures are followed by confirmation of potential positives by gas or liquid chromatography with mass spectrometric detection, methylphenidate will not be mistaken for amphetamine class compounds or vice versa, nor will the presence of methylphenidate in a urine sample mask abuse of amphetamines when proper analytical methods are used

Methylphenidate and Pregnancy

- The pregnancy category for methylphenidate was changed from pregnancy Category B3 to **Category D** due to a small increased occurrence of foetal cardiac malformations in women who received methylphenidate during the first trimester of pregnancy, compared with non-exposed pregnancies seen in large observational studies.
- **Methylphenidate exposure in early pregnancy is associated with a small but significant increased risk for major malformations**, which can be attributed mostly to increased risk of cardiac malformations.
- **Methylphenidate is teratogenic at toxic doses for the pregnant female**, and can lead to skeletal abnormalities and neural tube closure defects.

Magic Mushrooms (Psilocybin)

What Are Magic Mushrooms?

- There are dozens of species of psilocybin or 'magic mushrooms' belonging primarily to the genuses psilocybe, panaeolus, and copelandia (unrelated to psychoactive amanita species)
- The effects of their ingestion resemble a shorter acting LSD trip, producing significant physical, visual, and perceptual changes
- Nearly all of the psilocybin containing mushrooms are small brown or tan mushrooms easily mistakable for any number of non-psychoactive, inedible, or poisonous mushrooms in the wild.
- The primary distinguishable feature of most psilocybin containing mushrooms is that they bruise blue when handled.

Magic Mushroom Side Effects

- Effects can include nausea and/or vomiting
- Anxiety and unwanted or frightening thoughts and visions
- Strong, temporary changes in an individual's experience of life and reality.
- Effects are significantly affected by experiences, set, and setting
- Physically or psychologically unsettling events in the days before a Mushroom trip can blossom into more serious distress and trauma while tripping.
- It is important to be prepared for the possibility of encountering difficult or frightening mental states.

Magic Mushrooms (Psilocybin)

- Street Names: mushrooms, magic mushrooms, mushies, shrooms, psilocybes, cubes (p. cubensis), liberty caps
- Magic Mushroom Effects:

  Onset
  Depending on how much and how recently one has eaten, mushrooms generally takes 30-60 minutes (though sometimes as long as 2 hrs) to take effect.

  Duration
  The primary effects of magic mushrooms last for 4-6 hours when taken orally. Residual effects may be felt 2-6 hours after

Magic Mushroom "Do Nots"

- Taking psyilocybin containing mushrooms while on an MAOI can dramatically increase the effects of the experience.
- MAOIs are most commonly found in the prescription anti-depressants Nardil (phenelzine), Parnate (tranylcypromine), Marplan (isocarboxazid), Eldepryl (l-deprenyl), and Aurorex or Manerix (moclobemide).
- Ayahuasca also contains MAOIs (harmine and harmaline). Check with your doctor if you are not sure whether your prescription medication is an MAOI.

- Individuals currently in the midst of emotional or psychological upheaval in their everyday lives should be careful about choosing to use psychedelics such as mushrooms as they can trigger even more difficulty.

- Individuals with a family history of schizophrenia or early onset mental illness should be extremely careful because mushrooms have been known to trigger latent psychological and mental problems.

Drug Testing for Magic Mushrooms

- Drug testing for psilocybin is not on typical urine drug screen panels
- The half-life of psilocybin is very short - 50 minutes
- About 66% of the compounds get excreted from the body within 3 hours
- After 24 hours, the compounds are no longer detectable in the urine

Mushroom Poisoning: Death of the Mother

- Toxic mushroom exposure during pregnancy has been reported and deaths of pregnant women have been reported.
- In one series, a slightly lower birth weight was noted in infants born to mothers with toxic mushroom exposure than in infants of mothers with no such exposure.
- Most infants appeared to be healthy and developmentally normal, in keeping with the findings that amatoxins do not cross the placental barrier.
- Poisoning can lead to dehydration, euphoria, a heightened imagination, a loss of the sense of time, and visual distortions or hallucinations are common.
- Fever and seizures have been reported in rare cases. Symptoms generally last 4 to 6 hours but can persist up to 12 hours.
- There are infrequent reports of flashbacks for up to 4 months after ingestion.

Mushrooms and Pregnancy

- Pregnant women should always avoid consuming any poisonous or magic mushrooms, as these can be potentially fatal to the fetus.
- Magic mushrooms contain a chemical called psilocybin that alters brain activity — is thought to gravely affect a pregnant woman and her fetus.
- Consuming poisonous mushrooms may lead to physical birth defects and should be avoided at any life stage.
- However, there are not enough well-controlled studies available to completely determine what kinds of birth defects and other malformations may be caused by ingesting magic mushrooms during pregnancy.

Opiates and Opioids

What Are Opiates and Opioids?

Opiates are natural drugs from the poppy plant

Opioids are man made drugs

Also known as “opioids,” the term “narcotic” comes from the Greek word for “stupor” and originally referred to a variety of substances that dulled the senses and relieved pain.

“Narcotic” refers to opium, opium derivatives, and their semi-synthetic substitutes.

Examples include the illicit drug heroin and pharmaceutical drugs like OxyContin®, Vicodin®, codeine, morphine, methadone, and fentanyl.

Opiates and Opioids

- Opiates/opioids can be:
  - Swallowed
  - Smoked
  - Sniffed
  - Injected

Effects of Opiates and Opioids

Opiates/opioids are prescribed by doctors to treat pain, suppress cough, cure diarrhea, and put people to sleep.

Effects depend heavily on the dose, how it's taken, and previous exposure to the drug.

Negative effects include:

- Slowed physical activity
- Constriction of the pupils
- Flushing of the face and neck
- Constipation
- Nausea
- Vomiting
- Slowed breathing

Physical Dependence and Withdrawal of Opiates and Opioids

Physical dependence is a consequence of chronic opioid use, and withdrawal takes place when drug use is discontinued.

Early withdrawal symptoms often include:

- Watery eyes
- Runny nose
- Yawning
- Sweating

Physical Dependence and Withdrawal of Opiates and Opioids

- As the withdrawal worsens, symptoms can include:
- Restlessness
- Irritability
- Loss of appetite
- Nausea
- Tremors
- Drug craving

- Severe depression
- Vomiting
- Increased heart rate and blood pressure
- Chills alternating with flushing
- Excessive sweating

Opiate and Opioid Overdose

Overdoses of opiates and opioids are not uncommon and can be fatal.

Physical signs of narcotics/opioid overdose include:

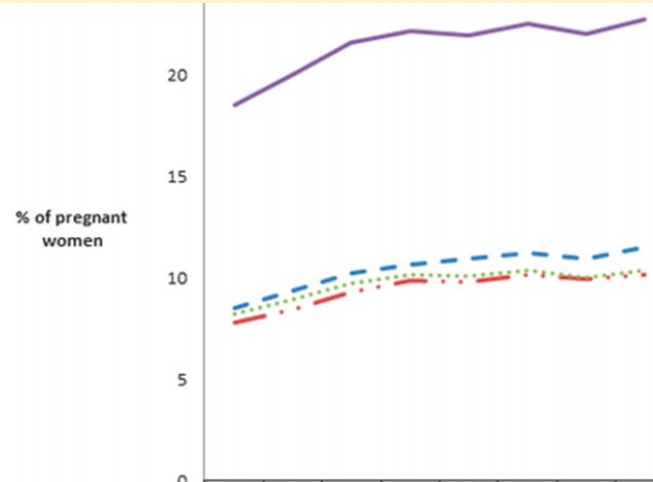
- Constricted (pinpoint) pupils
- Cold clammy skin
- Confusion
- Convulsions
- Extreme drowsiness
- Slowed breathing

Drug Testing for Opiates and Opioids

- Opioids/opiates are tested for on all basic urine drug screen panels
- The detection time is different for each type of opioid because of their varying half-lives

Opioids	
Codeine	48 h
Heroin (detected as morphine)	48 h
Hydromorphone	2-4 d
Methadone	3 d
Morphine	48-72 h
Oxycodone	2-4 d
Propoxyphene	6-48 h

Opioids epidemic also affecting pregnancy…



	2000	2001	2002	2003	2004	2005	2006	2007
First trimester	8.54	9.35	10.25	10.67	10.94	11.2	10.98	11.5
Second trimester	7.8	8.48	9.34	9.86	9.84	10.13	9.97	10.14
Third trimester	8.21	8.97	9.76	10.14	10.08	10.35	10.03	10.35
Any time during pregnancy	18.51	20.04	21.62	22.2	21.99	22.51	22.04	22.78

Fig. 2. Proportion of pregnant women who filled an opioid prescription, Medicaid 2000–2007. *P* value for the tests of linear trend <.001 for all the trimesters and at any time during pregnancy.

Desai. Prescription Opioid Use Trend in Pregnancy. Obstet Gynecol 2014.

Desai R, Hernández-Díaz S, Bateman BT, Huybrechts K. Increase in prescription opioid use during pregnancy among Medicaid-enrolled women. Obstet Gynecol. 2014;123(5):997-1002

Opioids and Pregnancy

- Taking opioids during pregnancy can cause problems for you and your baby.
- The possible risks include: Neonatal abstinence syndrome (NAS) - withdrawal symptoms (irritability, seizures, vomiting, diarrhea, fever, and poor feeding) in newborns.
- Neural tube defects - birth defects of the brain, spine, or spinal cord.
- Opioid drugs were found to raise the risk for several different types of heart defects.
- This class of medications more than doubled the chances of having a baby born with hypoplastic left heart syndrome.
- Other birth defects associated with the drugs include **spina bifida, congenital glaucoma, and hydrocephaly.**
- Broussard, C. *American Journal of Obstetrics and Gynecology*, 2011.

The Concern

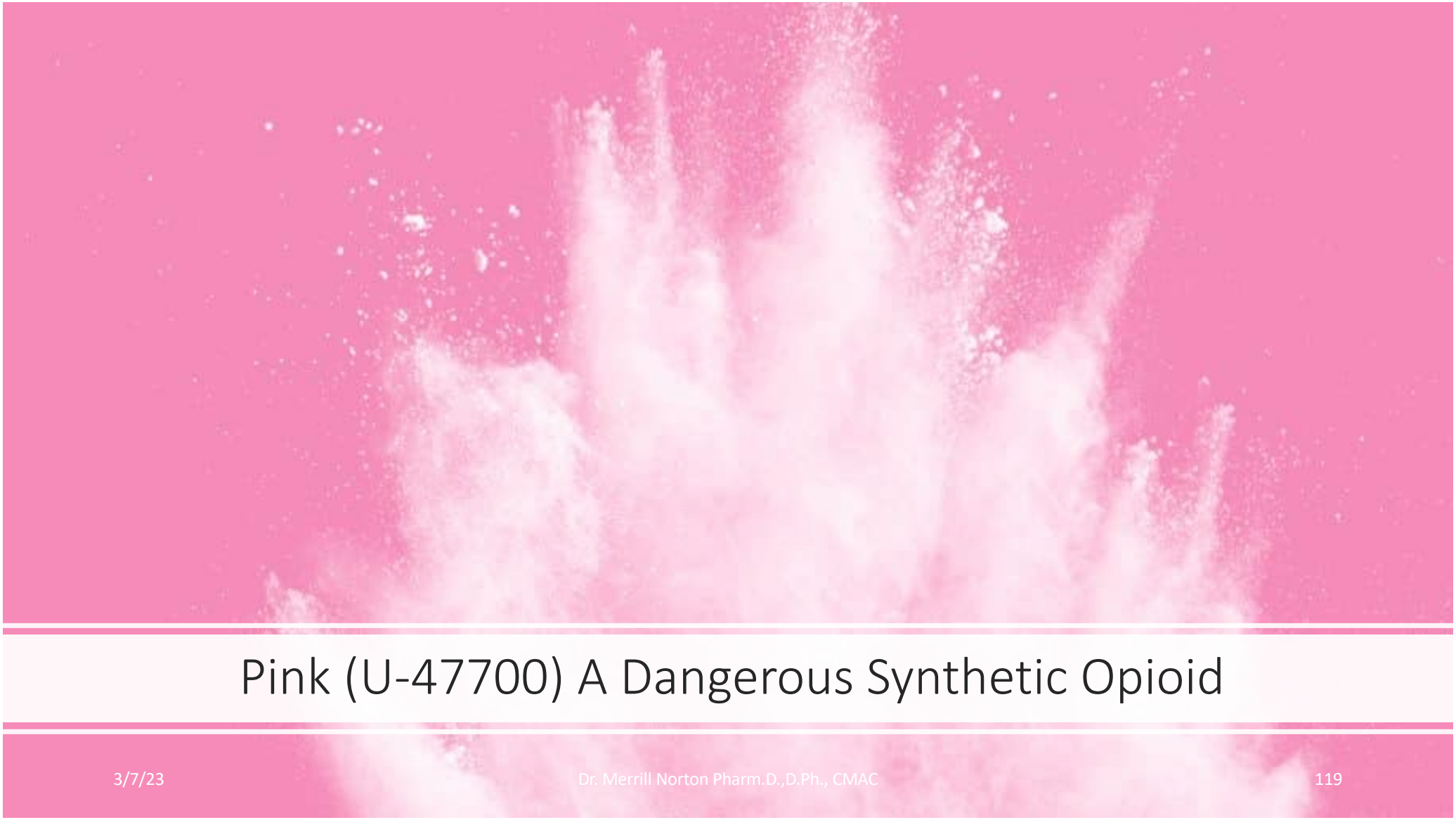
- One third of patients on MAT treatment are women of childbearing age.
- The rate of opioid use is 5.6% per 1,000 live births
- 85% of pregnancies in women with a opioid use disorder were unintended
- There is an increased fertility with treatment due to psychosocial and physical stabilization

Pregnant Women and Methadone Maintenance Treatment

The potential benefits include:

- safer, medically supervised opioid use (stable supply, pure quality, no fluctuating blood level, no exposure to contaminants)
- decreased risk of transmission of HIV (and potentially HCV and other blood-borne pathogens) (including decreased risk of transmission of HIV to infants)
- increased likelihood that infant will be discharged into his or her parents' care; and
- increased retention in treatment

(Kandall et al, (1999), The methadone maintained pregnancy. Clin Perinatol, 26: 173-83)



Pink (U-47700) A Dangerous Synthetic Opioid

Dr. Merrill Norton Pharm.D.,D.Ph., CMAC

Pink (U-47700)

- This is a synthetic opioid
- It has been linked with at least 46 confirmed deaths—31 in New York and 10 in North Carolina.
- It has been found in powder form and as counterfeit tablets that mimic pharmaceutical opioids
- Pink's name comes from the pinkish hue of the powder.
- It has been available for purchase over the internet and is misleadingly marketed as a "research chemical."
- Labels that state "not for human consumption" or "for research purposes only" are likely used in an effort to avoid legal restriction.

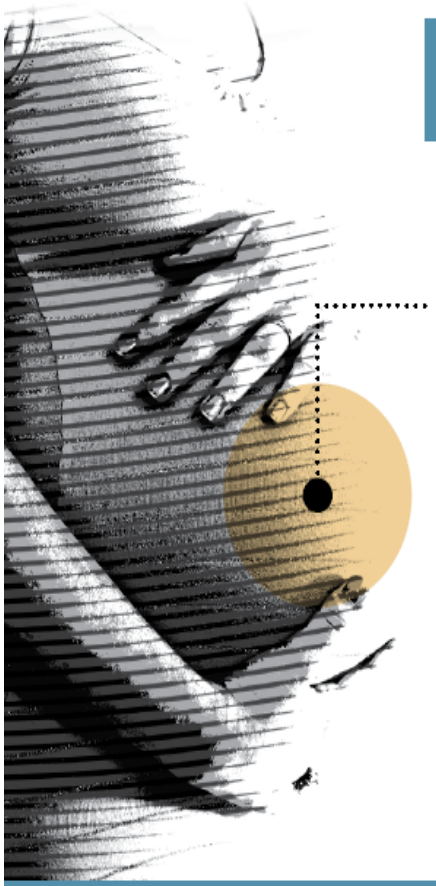
Drug Testing for Pink

- The two largest challenges for detecting U-compounds are (1) availability of standard reference material for comparison and/or confirmation and (2) utility of instrumentation to provide sufficient specificity, sensitivity, and discovery potential.
- Most of the drug testing for U-47700 has been postmortem blood analysis
- Tandem mass spectrometry is becoming essential for the identification of novel designer drugs when a negative toxicology is reported with case history consistent with suspected opioid overdose

Pink and Pregnancy

U-47700 was found in combination with fentanyl during the autopsy of the American artist Prince in 2016.

U-47700 has never been studied on humans, but would be expected to produce effects similar to those of other potent opioid agonists, including strong analgesia, sedation, euphoria, constipation, itching and respiratory depression which could be harmful or fatal



ARE OPIOID PAIN MEDICATIONS SAFE FOR WOMEN WHO ARE PREGNANT OR PLANNING TO BECOME PREGNANT?

Possible risks to your pregnancy include[1,2]:

- **Neonatal Opioid Withdrawal Syndrome (NOWS):** withdrawal symptoms (irritability, seizures, vomiting, diarrhea, fever, and poor feeding) in newborns[3]
- **Neural tube defects:** serious problems in the development (or formation) of the fetus' brain or spine
- **Congenital heart defects:** problems affecting how the fetus' heart develops or how it works
- **Gastroschisis:** birth defect of developing baby's abdomen (belly) or where the intestines stick outside of the body through a hole beside the belly button
- **Stillbirth:** the loss of a pregnancy after 20 or more weeks
- **Preterm delivery:** a birth before 37 weeks

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

LEARN MORE | www.cdc.gov/drugoverdose/prescribing/guideline.html

Poppers


ECSTASY
JUNGLE JUICE
SUPER RUSH
REDSIUM
GOLD RUSH
DANGER!
DO NOT USE

Nitrite "Poppers"

Commonly referred to as "poppers," these products contain chemical substances similar to the prescription medication, amyl nitrite, which is prescribed for the relief of chest pain.

However, poppers have not been evaluated by the FDA for safe use. These products are not safe to ingest or inhale.

Poppers

- Poppers are often packaged in small bottles similar to energy shot beverage products and commonly sold online, in adult novelty stores, and at other locations and are marketed as:
- air fresheners
- liquid incense
- deodorizers
- leather cleaners
- cosmetics
- solvents
- nail polish removers

Poppers

- They are often packaged in the same style of bottles as energy shots/drinks, and labeled with names like:
- Rush
- Super Rush
- Jungle Juice
- Locker Room
- Sub-Zero
- Iron Horse

Poppers

- Poppers work very quickly, producing an almost instant high or "rush" of warm sensations and feelings of dizziness, similar to sensations of extreme alcohol intoxication.
- The effects come on very quickly after inhaling the drug, but unlike drugs such as alcohol, only last for seconds or minutes.
- While some people find the effects of poppers pleasurable, others find it extremely disorienting and unpleasant.
- Another effect of these drugs is the relaxation of the anal sphincter.
- For this reason, poppers are sometimes used to facilitate anal sex.
- In addition, some users find that using poppers during sex increases sexual sensations and intensifies orgasm

Drug Testing for Poppers

- Poppers will not show up in regular urine drug screens
- Decomposition products of the alkyl nitrites are detectable in blood for a few hours – up to 1 day maximum.
- In urine poppers may show up much longer – for up to 72 hours.
- The exact detection period depends on type of alkyl nitrite and time it stays in your system
- Detection of chemical inhalants such as amyl nitrites is difficult because their half-life is very short. Usually, they get out of your system in minutes without forming metabolites.
- There is one test created by Japanese scientists in 2003, that can detect alkyl nitrites by testing for the drug's decomposition products - isoamyl, n-butyl alcohol, and isobutyl alcohol. It uses capillary gas chromatography with cryogenic oven trapping method on urine and blood samples, which makes it too impractical and expensive for a standard drug test

Poppers and Pregnancy

- Amyl nitrite has been assigned to pregnancy category C by the FDA. Animal studies have not been reported. There are no controlled data in human pregnancy.
- **It is not recommended that people use amyl nitrite while pregnant or breastfeeding as it can reduce the flow of blood and oxygen to the baby**.
- People who are concerned about their amyl nitrite use while pregnant or breastfeeding should talk to their doctor or health professional.
- There are no data on the excretion of amyl nitrite into human milk.
- The manufacturer recommends that due to the potential for serious adverse reactions in nursing infants, a decision should be made to discontinue nursing or discontinue the drug, taking into account the importance of the drug to the mother.
- Product Information. Amyl Nitrite (amyl nitrite)." Raway Pharmacal Inc, Accord, NY.

Pseudoephedrine

3/7/23

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Pseudoephedrine

- Pseudoephedrine is **a decongestant that shrinks blood vessels in the nasal passages**.
- Dilated blood vessels can cause nasal congestion (stuffy nose).
- Pseudoephedrine is used to treat nasal and sinus congestion, or congestion of the tubes that drain fluid from your inner ears, called the eustachian (yoo-STAY-shun) tubes.
- Taking too much pseudoephedrine can be dangerous. It can **make you restless or your heartbeat fast**, and make you feel sick or vomit. You may also have difficulty with urination.

Pseudoephedrine

- Pseudoephedrine **acts as a stimulant**. This causes some people to begin to abuse it in order to be awake and get a rush of energy.
- It's true that pseudoephedrine is a stimulant.
- But, medically, it is commonly used to shrink mucous membranes that often become inflamed due to allergies or a cold.
- The decongestant effect of pseudoephedrine is noticeable within 30 minutes of oral administration and reaches a peak within one to two hours.
- One immediate-release tablet of pseudoephedrine lasts anywhere from **three to eight hours**.

Pseudoephedrine

- The sensations that are felt from a pseudoephedrine high are described as short-term and can raise energy levels, cause a ticklish feeling on the skin, and induce a sense of euphoria.
- When taken in excessive amounts, it can also increase heart rate to a dangerous level, produce an irregular beating pattern, cause seizures, incite hallucinations, and raise blood pressure.
- The blood pressure increase that is experienced during a pseudoephedrine high is a result of the constriction of blood flow.
- This blood flow reduction within the bowel regions may cause gangrene or appendicitis.
- When this occurs, an inexplicable abdominal pain is felt.

Pseudoephedrine Abuse

- Those who are most likely to abuse pseudoephedrine are those who believe it may help them lose weight, or those who already abuse other substances. In some cases, pseudoephedrine is used by those who are involved in the production and use of methamphetamine, otherwise known as meth.
- There are some drugs available on shelves of drug stores that say, for example, “Sudafed PE”.
- The ‘PE’ indicates that pseudoephedrine is not an ingredient in the medication, rather this is an imitation drug that includes the similar decongestant drug phenylephrine, which is not used in methamphetamine production.

Drug Testing for Pseudoephedrine

- Pseudoephedrine is commonly believed to potentially cause a false positive on an amphetamine drug test
- Sympathomimetics like pseudoephedrine, ephedrine, and phenylephrine will not produce a confirmed, positive drug screen. It is a common misconception that OTC cold medications may produce positive results in workplace drug tests, but the fact is that while some of these may cause a specimen to initially screen as non-negative, they will not confirm positive in the second step of the GC/MS testing process.
- With the two-tiered testing process and the definitive identification and quantification with GC/MS confirmation, the use of these OTC drugs will not result in a confirmed positive drug test

Pseudoephedrine and Pregnancy

Pseudoephedrine and phenylephrine are **pregnancy category C in all three trimesters of pregnancy**.

The American College of Obstetricians and Gynecologists (ACOG) and the American College of Allergy, Asthma and Immunology (ACAAI) recommend using pseudoephedrine during pregnancy.

However, women who have high blood pressure should not take pseudoephedrine without first talking to a doctor.

The drug can raise blood pressure and can cause jitters and racing heartbeats.

Pseudoephedrine and Pregnancy

- However, some studies have found a small increased chance for specific birth defects.
- These birth defects are: gastroschisis (an opening in the baby's abdominal wall), small intestinal atresia (part of the small intestine is not fully developed) and hemifacial microsomia (part of the face is smaller than it should be).
- If you have already taken pseudoephedrine in the first trimester, remember that the risk for these birth defects, if any at all, is very small.
- At recommended doses, only a small amount of pseudoephedrine gets into breast milk. In most cases, pseudoephedrine is not likely to cause side effects in the breastfed baby.
- However, a few cases of irritability have been reported. If you are worried about any symptoms that the baby has, contact the child's healthcare provider.
- Pseudoephedrine may reduce the amount of milk that you produce.
- Given this concern, it may be best to wait to use pseudoephedrine until your milk supply is well established. If you notice a decrease in your milk supply, pseudoephedrine use can be stopped.

Salvia

What Is Salvia?

- *Salvia divinorum* is a perennial herb in the mint family that is abused for its hallucinogenic effects.
- *Salvia divinorum* is native to certain areas of the Sierra Mazaleca region of Oaxaca, Mexico.
- It is one of several plants that are used by Mazatec Indians for ritual divination.
- They can be grown indoors and outdoors, especially in humid semitropical climates.

Street Names for Salvia

- Common street names include:
  - Maria Pastora
  - Sally-D
  - Diviner's Sage
  - Ska Maria Pastora
  - Seer's Sage
  - The Sheperdess

How Is Salvia Used?

- Salvia can be
  - Chewed
  - Smoked
  - Vaporized
- The plant has spade-shaped variegated green leaves that look similar to mint.
- The plants themselves grow to more than three feet high, have large green leaves, hollow square stems, and white flowers with purple calyces

Salvia Effects

- Psychedelic effects include
  - Perceptions of bright lights, vivid colors, shapes, and body movement
  - Body or object distortions
  - Fear and panic
  - Uncontrollable laughter
  - A sense of overlapping realities
  - Paranoia
  - Hallucinations

Salvia Divinorum

- The addiction potential of Salvia is not currently known to be physically addicting or cause psychological dependence
- Withdrawal effects have not been reported.
- There appears to be no tolerance – experience can be extended or amplified with increased dose.

Salvia Divinorum

- Toxicity and Overdose
  - No reports of either toxicity or overdose
  - The danger comes from a need for “babysitters” to watch over first-time users
    - Users can have frightening experiences that mimic psychoses
    - Salvia can also precipitate psychotic episodes in those predisposed to schizophrenia

Drug Testing for Salvia

- Salvia does not show up on most standard drug tests. If someone wants to test for it specifically, the test needs to be specially ordered.
- Salvia tests are uncommon and expensive. Tests need to be conducted right after salvia use
- Its half-life is very short — only about an hour
- This short window means that salvia does not last long in the body

Salvia and Pregnancy

- Using salvia while pregnant **can be harmful to a woman and her unborn baby**.
- Someone who uses salvia may have unpredictable behavior or experience symptoms similar to psychosis or schizophrenia. If this happens, a pregnant woman may hurt herself or her baby.
- Salvia maybe a uterine stimulant due to its effects on estrogen, which could cause premature labor.
- The unknown elements of salvia are reasons it shouldn't be used during pregnancy.
- There's also currently no known scenario where the benefits of salvia would outweigh the risks during pregnancy.

Tobacco and Nicotine

What is Tobacco?

- Tobacco is the dried leaves of a plant that grows in many parts of the world.
- Tobacco contains a variety of chemicals, including nicotine, which is a drug with a mild stimulant effect.
- Most tobacco is sold in the form of cigarettes, cigars, and pipe tobacco (cigar and pipe tobacco is made from stronger, darker tobacco).

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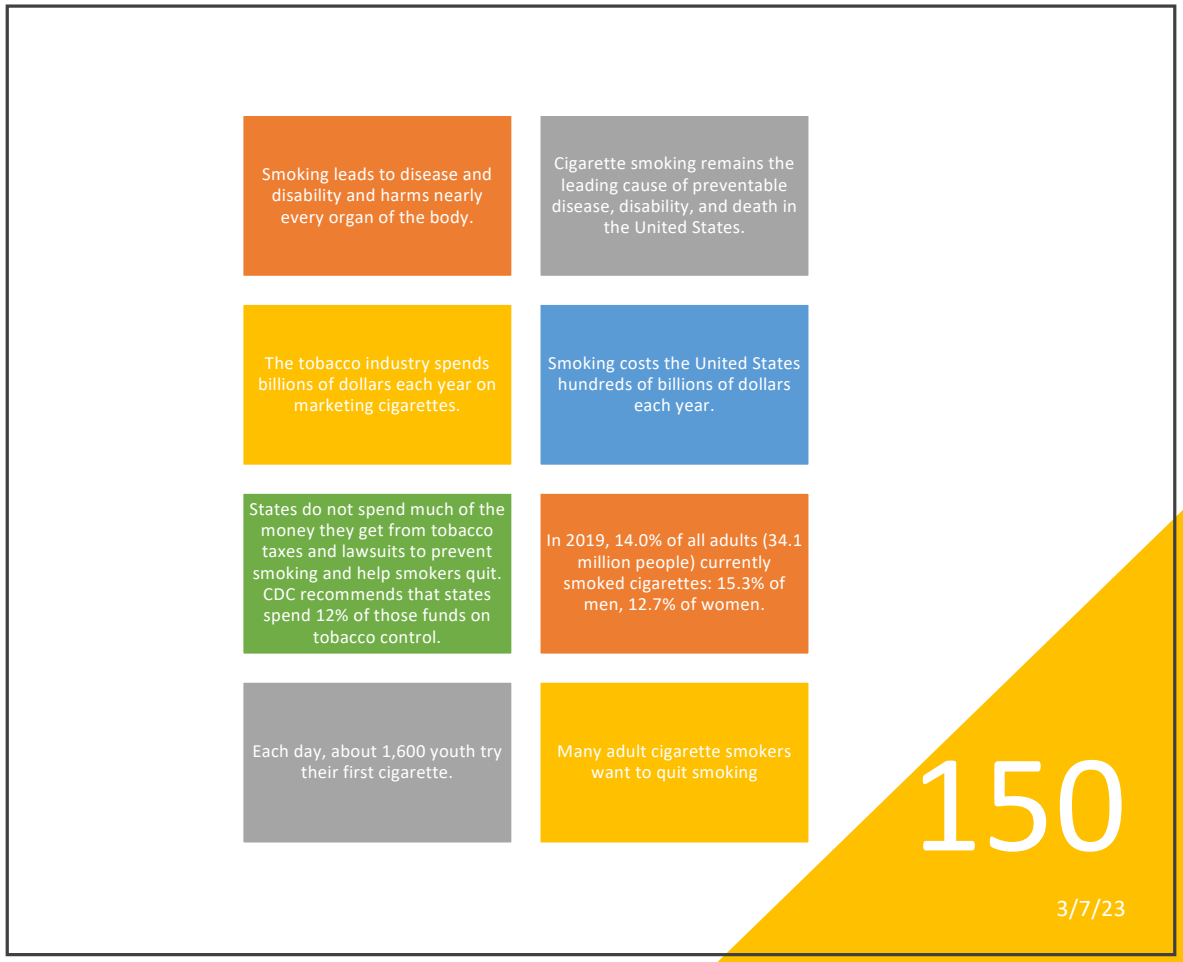
Effects of Tobacco



Youth and Tobacco Use

- If cigarette smoking continues at the current rate among youth in this country, 5.6 million of today's Americans younger than 18 will die early from a smoking-related illness.
- That's about 1 of every 13 Americans aged 17 years or younger who are alive today.

Youth and Tobacco Use

- Tobacco product use is started and established primarily during adolescence.
- Nearly 9 out of 10 adults who smoke cigarettes daily first try smoking by age 18, and 99% first try smoking by age 26.
- Flavorings in tobacco products can make them more appealing to youth.
  - In 2020, 85% of high school students and 74% of middle school students who used tobacco products in the past 30 days reported using a flavored tobacco product during that time.

Youth and E-Cigarette Use

- E-cigarettes have been the most commonly used tobacco product among youth since 2014.
- After increasing between 2017 and 2019, current (past 30 day) use of e-cigarettes went down among middle and high school students from 2019 to 2020.
- About 1 of every 20 middle school students (4.7%) reported in 2020 that they used e-cigarettes in the past 30 days — a decrease from 10.5% in 2019.
- About 1 of every 5 high school students (19.6%) reported in 2020 that they used electronic cigarettes in the past 30 days — a decrease from 27.5% in 2019.

Cigarettes

- From 2011 to 2020, current (past 30 day) cigarette smoking went down among middle and high school students.
- Nearly 2 of every 100 middle school students (1.6%) reported in 2020 that they smoked cigarettes in the past 30 days—a decrease from 4.3% in 2011.
- Nearly 5 of every 100 high school students (4.6%) reported in 2020 that they smoked cigarettes in the past 30 days—a decrease from 15.8% in 2011.

Cigars

- From 2011 to 2020, current use of cigars went down among middle school students and high school students.
  - Nearly 2 of every 100 middle school students (1.5%) reported in 2020 that they had used cigars in the past 30 days—a decrease from 3.5% in 2011
  - About 5 of every 100 high school students (5.0%) reported in 2020 that they had used cigars in the past 30 days—a decrease from 11.6% in 2011.

Hookah

- From 2011 to 2020, current use of hookahs did not change much among middle school students. Current use of hookahs among high school students declined from 2011 to 2019, then saw no change from 2019 to 2020.
  - About 1 of every 100 middle school students (1.3%) reported in 2020 that they had smoked hookah in the past 30 days. The prevalence was 1.0% in 2011.
  - Nearly 3 of every 100 high school students (2.7%) reported in 2020 that they had smoked hookah in the past 30 days. The prevalence was 4.1% in 2011.

Smokeless Tobacco

- From 2011 to 2020, current use of smokeless tobacco went down among middle and high school students:
  - About 1 of every 100 middle school students (1.2%) reported in 2020 that they had used smokeless tobacco in the past 30 days—a decrease from 2.2% in 2011.
  - About 3 of every 100 high school students (3.1%) reported in 2019 that they had used smokeless tobacco in the past 30 days—a decrease from 7.9% in 2011.

All Tobacco Product Use

- In 2020, nearly 7 of every 100 middle school students (6.7%) and about 23 of every 100 high school students (23.6%) reported current use of a tobacco product.
- In 2019, nearly 1 of every 4 middle school students (24.3%) and over half (53.3%) of high school students said they had ever tried a tobacco product.

Many Young People Use Two or More Tobacco Products

- In 2020, nearly 3 of every 100 middle school students (2.8%) and about 8 of every 100 high school students (8.2%) reported current use of two or more tobacco products in the past 30 days.
- In 2019, about 12 of every 100 middle school students (11.5%) and about 30 of every 100 high school students (29.9%) said they had ever tried two or more tobacco products.
- **Youth who use multiple tobacco products are at higher risk for developing nicotine dependence and might be more likely to continue using tobacco into adulthood.**

Vaping, E-Cigarettes, and The Brain

Vaping Dangers

- National and state data from patient reports and product sample testing show tetrahydrocannabinol (THC)-containing e-cigarette, or vaping, products, particularly from informal sources like friends, family, or in-person or online dealers, are linked to most EVALI (E-cigarette or Vaping use-Associated Lung Injury) cases and play a major role in the outbreak.
- Most e-cigarettes contain nicotine. Nicotine is highly addictive and can harm adolescent brain development, which continues into the early to mid-20s.
- E-cigarettes can contain other harmful substances besides nicotine.
- Young people who use e-cigarettes may be more likely to smoke cigarettes in the future.

Vaping Nicotine Dangers

- Most e-cigarettes contain nicotine—the addictive drug in regular cigarettes, cigars, and other tobacco products.
- A recent CDC study found that 99% of the e-cigarettes sold in assessed venues in the United States contained nicotine.
- Some e-cigarette labels do not disclose that they contain nicotine, and some e-cigarettes marketed as containing 0% nicotine have been found to contain nicotine.
- Nicotine can harm the developing adolescent brain. The brain keeps developing until about age 25.
- Using nicotine in adolescence can harm the parts of the brain that control attention, learning, mood, and impulse control.
- Each time a new memory is created or a new skill is learned, stronger connections – or synapses – are built between brain cells. Young people's brains build synapses faster than adult brains. Nicotine changes the way these synapses are formed.
- Using nicotine in adolescence may also increase risk for future addiction to other drugs.

What are E-cigarettes?

- E-cigarettes come in many shapes and sizes. Most have a battery, a heating element, and a place to hold a liquid.
- E-cigarettes produce an aerosol by heating a liquid that usually contains nicotine—the addictive drug in regular cigarettes, cigars, and other tobacco products—flavorings, and other chemicals that help to make the aerosol. Users inhale this aerosol into their lungs. Bystanders can also breathe in this aerosol when the user exhales into the air.
- E-cigarettes are known by many different names. They are sometimes called “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” “tank systems,” and “electronic nicotine delivery systems (ENDS).”
- Some e-cigarettes are made to look like regular cigarettes, cigars, or pipes. Some resemble pens, USB sticks, and other everyday items. Larger devices such as tank systems, or “mods,” do not resemble other tobacco products.
- Using an e-cigarette is sometimes called “vaping.”
- E-cigarettes can be used to deliver marijuana and other drugs.

What Is In E-Cigarette Aerosol?

The e-cigarette aerosol can contain:

- Nicotine
- Ultrafine particles that can be inhaled deep into the lungs
- Flavoring such as diacetyl, a chemical linked to a serious lung disease
- Volatile organic compounds
- Cancer-causing chemicals
- Heavy metals such as nickel, tin, and lead

It is difficult for consumers to know what e-cigarette products contain. For example, some e-cigarettes marketed as containing zero percent nicotine have been found to contain nicotine.

What Are the Health Effects of Using E-Cigarettes?

- E-cigarettes are still fairly new, and scientists are still learning about their long-term health effects. Here is what we know now:
  - Most e-cigarettes contain nicotine, which has known adverse health effects
  - Nicotine is highly addictive
  - Nicotine is toxic to developing fetuses
  - Nicotine can harm adolescent and young adult brain development, which continues into the early to mid-20s
  - Nicotine is a health danger for pregnant adults and their developing babies

What Are the Health Effects of Using E-Cigarettes?

- E-cigarette aerosol generally contains fewer harmful chemicals than smoke from burned tobacco product.
- E-cigarettes can cause unintended injuries.
- Defective e-cigarette batteries have caused fires and explosions, some of which have resulted in serious injuries.
- Most explosions happened when the e-cigarette batteries were being charged
- In addition, acute nicotine exposure can be toxic.
- Children and adults have been poisoned by swallowing, breathing, or absorbing e-cigarette liquid through their skin or eyes.

Drug Testing for Nicotine

- A saliva test is considered the most sensitive way to detect cotinine, and it can detect it for up to 4 days.
- Hair testing is a reliable way to figure out long-term use of tobacco products and can be very accurate for as long as 1 to 3 months after you stop using tobacco
- Your body breaks down nicotine into many chemicals, including cotinine, which can also be detected in certain tests.
- Cotinine is only found in your body if you have processed nicotine and, in general, it stays in the body longer than nicotine itself

Problems with Pregnancy

- **Risks**
- **Women who smoke are more likely to have the following problems:**
  - **Stillbirths and Miscarriages**
  - **Low birth weight**
  - **Children who have learning, emotional, and behavioral problems**

- **Benefits of Quitting**
  - **If you quit smoking before you become pregnant (or sometime during the first 3 months of your pregnancy), your risk of having a baby with low birth weight is the same as that of a woman who does not smoke. Women who quit later in their pregnancy still reduce the risk of problems for their babies.**

Nicotine and Pregnancy

- Nicotine is classified by the US Food and Drug Administration as a **Pregnancy Category D drug**.
- Animal studies indicate that nicotine adversely affects the developing fetal CNS, and nicotine effects on the brain may be involved in the pathophysiology of sudden infant death syndrome (SIDS).

Nicotine and Pregnancy

- Tobacco. Smoking during pregnancy **increases the risk of health problems for developing babies, including preterm birth, low birth weight, and birth defects of the mouth and lip**.
- Smoking during and after pregnancy also increases the risk of sudden infant death syndrome (SIDS).
- Additionally, e-cigarettes and other tobacco products containing nicotine (the addictive drug found in tobacco) are not safe to use during pregnancy.
- Nicotine is a health danger for pregnant women and developing babies and can damage a developing baby's brain and lungs.
- Also, some of the flavorings used in e-cigarettes may be harmful to a developing baby.

Nicotine and Pregnancy

- Your baby may be born too small, even after a full-term pregnancy. Smoking slows your baby's growth before birth.
- Your baby may be born too early (premature birth). Premature babies often have health problems.[5]
- Smoking can damage your baby's developing lungs and brain. The damage can last through childhood and into the teen years.[4]
- Smoking doubles your risk of abnormal bleeding during pregnancy and delivery. This can put both you and your baby in danger.

Nicotine and Pregnancy

- Smoking raises your baby's risk for birth defects, including cleft lip, cleft palate, or both. A cleft is an opening in your baby's lip or in the roof of her mouth (palate). He or she can have trouble eating properly and is likely to need surgery.
- Babies of moms who smoke during pregnancy—and babies exposed to cigarette smoke after birth—have a higher risk for SIDS.[1]

Nicotine and Pregnancy

- If you smoke during pregnancy, you are more likely to give birth too early. A baby born 3 weeks or more before your due date is premature.[5] Babies born too early miss important growth that happens in the womb during the final weeks and months of pregnancy.
- The earlier a baby is born, the greater the chances for serious health problems or death. Premature babies can have:
- Low birth weight
- Feeding difficulties
- Breathing problems right away
- Breathing problems that last into childhood
- Cerebral palsy (brain damage that causes trouble with movement and muscle tone)
- Developmental delays (when a baby or child is behind in language, thinking, or movement skills)
- Problems with hearing or eyesight
- Premature babies may need to stay at the hospital for days, weeks, or even months.

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Thank You For Your Time

Any Questions?