



Teen Drug Use - NIH Study

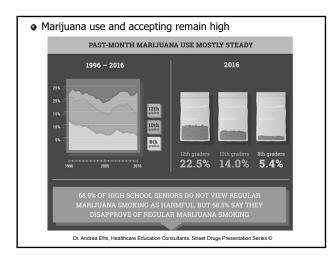
Trends for Teens

- Alcohol and cigarettes continue to decline
- Teens are more likely to use E-Cigarettes than cigarettes
- Also more likely to use flavoring

Prescription and Illicit Drug Use

- Prescription drug use and prescription opioids have decreased
 Despite high use and ODs in adults
- Vicodin use has dropped in the past 5 years
- Across all grades we have lower rates of inhalants, heroin, meth, synthetic cannabinoids, alcohol, and cigarettes

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Drugs Targeting Teens

- WGN TV: December 6th, 2016: Naperville IL: Drug-laced candy sends 13 students to hospital. Symptoms of tachycardia, dizziness and dry mouth: thought to be liquid based marijuana
- DEA News: March 24th 2016: (BOISE, Idaho): Two men from Soldotna, Alaska, were indicted - synthetic cannabinoids (Spice) with flavor labels such as Mango, Grape, and Cotton Candy
- WSB-TV 2: North Fulton County, GA. Police warning Seized nearly 20lbs of drug-laced candy from a home - gummy worms, peach rings and chocolate-covered caramels laced with THC
- WFLA New 8: St Petersburg, FL: drug laced gummy worms sent 5 high school students to the hospital hospital after eating drug-laced gummy worms (one gummy tested +ve for THC)

Targeting Youth: Drug-Laced Candy INCHES 1 Miami-Dade: candy that resembled Sour Patch Kids candy, laced with ethylone, a synthetic drug relative of methylone - a type of Bath salt similar to FLAKKA Also there are reports of Flakka in gummy bears in 2015 and 2016

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ABC News: SAN FRANCISCO August 8th, 2016

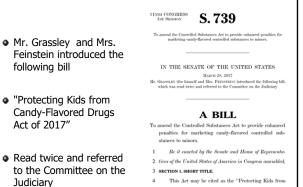
Marijuana Edibles

- THC laced gummy candies
- 19 guests hospitalized at quinceañera (traditional 15th birthday party)



- 13/19 were under 18 years old including a 6year-old child
- The 19 were hospitalized Saturday, but all of them were released by Monday
- Investigating: if candies were intentionally placed at the party to target children, which would be a serious crime, or accidental placement

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5 Candy-Flavored Drugs Act of 2017".

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Children may be the user, or the victim of someone else's drug use

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New Drug Trends – Legal Highs

- "legal highs," "designer drugs," or "research chemicals."
- Collectively known as "new psychoactive substances" (NPS) e.g., "bath salts", "spice", "N-bombs"
- Synthetic alternatives to traditional illegal drugs of abuse
- Substances with stimulant or mood-altering properties whose sale or use may not be currently illegal
 - Designed to produce the same, or similar effects, to drugs such as cannabis, cocaine, methamphetamine, LSD and/or ecstasy, but structurally different enough to avoid the law
- Marketed:
 - Gas stations
 - Convenience stores
 - Gardening/plant stores





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New Drug Trends – Legal Highs

- Availability and "Not for Human Consumption" notice
- Law enforcement and legislation challenges
- The internet also offers users information on how to use the drugs and how to share their highs and other drug-related experiences online
- Google search for "legal high" (44,800,000 results/ 0.43 seconds)
 - K2 and Spice are high on the google search listings
- You can seek guestions like: "How will taking a dose of this product affect me?'
- The Names are deceiving
- The results are unpredictable



National Trends in Street Drugs

- Opiates: "Epidemic"
 - Heroin cheaper alternative to Oxycodone
 - Rx drugs remain a problem
 - Street Fentanyl and Xanax Synthetic or diverted
 - Synthetic Opiates: eg: W-18, Pinky
- Synthetics New Psychoactive Substances (NPS) aka "Legal Highs"
 Synthetic Cannabinoids (K2 and Spice)
 - MDMA (Ecstasy, Molly)
 - Synthetic Cathinones (Bath Salts, Flakka)
 - Chemical Drugs EG: N-Bomb, B-Fly, Internet Purchases
- Marijuana (Wax/Dabs)
- Cocaine, PCP and Methamphetamine Regional
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Assessment Summary, November 2016 Dr. Andrea Efre. Healthcare Education Consultants. Street Drugs Presentation Series ©



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Heroin Epidemic

- West Virginia
- Drug overdose death rate - Highest rate in the country and nearly three times the national average
- On August 15, 2016, 28 overdoses in a five-hour span
- http://www.naturalnews.com/ 2017-03-11-heroin-epidemic-

Heroin epidemic so severe that many funeral homes can't keep up with demand Sway, Mars 11, 2017 by: Toread Datas

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Why is Heroin use increased?

- Oxycodone and prescription narcotics have become more difficult to attain
 - One theory for young peoples heroin use is that prescription Rx (Vicodin, OxyContin or Percocet) are easily be found in a parent's medicine cabinet, leading to addition
- Reduced availability Rx means Street value increased, whereas heroin is much cheaper
- Hydrocodone combination products rescheduled from Schedule III to Schedule II of the Controlled Substances Act (CSA)
 - The DEA's rationale for reducing controlled prescription drug abuse
- Mexican drug cartels are thought to be fueling US heroin, with easy access, cheaper product and a network of traffickers in place
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Symptoms of Heroin Use

Short Term Effects and Side Effects

- Confusion, Disorientation, Delirium
- Sudden changes in behavior or actions
- Dry mouth
- Shortness of breath
- Constricted (small) pupils
- Cold and clammy skin
- "Rush" feeling a surge of euphoria
 Accompanied by a warm flushing of the skin
 - $\ensuremath{\mathfrak{O}}$ Dry mouth, and heavy extremities
- "On the Nod" following the initial euphoria, this is a wakeful and drowsy state

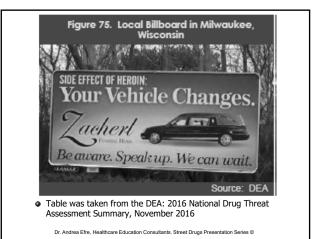
Long Term Effects of Heroin

- Pulmonary complications Including pneumonia
- Pulmonary emboli and DVTs
- Organ complications (including Liver disease) and vessel damage due to the additives that the heroin was cut with

Needle Users Long Term Effects

- Endocarditis
- Collapsed veins
- Abscesses
- Cellulites
- Infected sites
- HIV, Hep B and C in needle users

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Symptoms of Withdrawal

Patient will most likely have intense heroin cravings - However, they may not tell you why they are having symptoms

- Abdominal pain
- Arthralgia (bone aches)
- Crvina
- Chills and/or cold sweats
- Diarrhea
- Depression
- Feeling of heaviness
- Fatigue
- Fever
- Goose bumps/ Goose flesh ("cold turkey")

- Insomnia
- Intense cramping in limbs, resulting in "kicking"

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- Myalgia (muscle aches)
- Nausea and vomiting
- Nervousness and agitation
- Rhinorrhea (runny nose)
- Sweating
- Shaking

Withdrawal From Heroin and Opiates

- Withdrawal symptoms peak between 48 and 72 hours and subside after about a week
- Sudden withdrawal by heavily dependent users in poor health is occasionally fatal - but less dangerous than alcohol or barbiturate withdrawal
- Use in pregnancy leads to Neonatal abstinence Syndrome (NAS) in the baby -
 - Managed in NICU may use a scoring scale such as: The Finnegan Neonatal Abstinence Scoring System
 - Treatment may include Morphine, methadone, phenobarbital, Buprenorphine (Butrans)

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US.News News

A Controversial Response to Heroin Epidemic: Supervised Injections

Will having a safe place to shoot up help reduce overdose deaths and trasmission of diseases?



Legislative discussions: supervised injection sites The idea is to permit drug addicts to

use illicit substances under the supervision and care of trained medical professionals.

The centers do not provide the drugs or admit people already under the influence.

Switzerland has implemented "people-centered" policy with supervised injection sites and substance analysis services and

Fentanyl Street names: Apache • Synthetic Opioid analgesic (since 1960's) China girl • China white • Fentanyl is a schedule II substance Cash • Rapid onset and short duration of action Dance fever • Approx 100 x more potent than morphine Friend (DEA) Goodfella Jackpot Murder 8 • Brand Names: Actiq, Duragesic, and TNT Sublimaze Tango

> https://www.drugabuse.gov/drugs-abuse/fentanyl www.deadiversion.usdoj.gov/drug_chem_info/fentanyl.pdf http://v Dr. Andrea Efre, Healthcare Education Consultants. Street Drugs Presentation Series (C)

Fentanyl - Supplies

Two varieties of Fentanyl Licit vs Illicit

- Licit or prescription: medical grade which is illegally diverted
 Example: diverted from medical facilities
 - $\ensuremath{\mathfrak{S}}$ Usually for personal use, or small scale dealing

• Illicit: which is illegally manufactured

- responsible for the current fentanyl epidemic
- Non-pharmaceutical fentanyl: produced in clandestine laboratories mostly from china and maybe Mexico
- Liquid or powder
- Wide scale sales
- May be sold as heroin or mixed with heroin
- Boston found that fentanyl-laced heroin (disguised as heroin) is available in kilogram quantities (DEA

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Forms

- Liquid injectables
- Transdermal patches
- Intranasal spray
- Lozenge or lollipop
- Nausea and vomiting
 Opioid constipation
 Confusion, Drowsiness, Sedation
- Unconsciousness, coma

Fentanyl

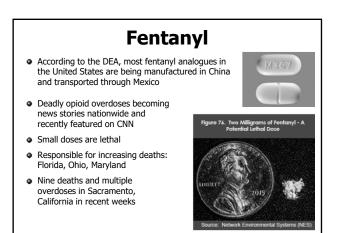
Analgesic, euphoria, relaxation,

- Respiratory depression
- Respiratory arrest
- Death

Effects include:

May be taken alone or may be mixed (or cut) with other drugs

- Mixing fentanyl with heroin or cocaine $\uparrow\uparrow\uparrow$ dangers
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Fentanyl

April 14th, 2016: Fox 32 News: Chicago

- Will County: 53 overdoses and 18 deaths January to April 2016
 Youngest 16 year old child to 73 year old grandmother
- DEA officials note that much of this synthetic fentanyl is coming from China or is being made in amateur labs here at home

January 03, 2017: Boston herald: Boston

 Grandfather saves 10-month-old baby girl who stopped breathing twice after having being exposed to fentanyl
 http://www.bostonherald.com/topic/fentanyl

July 2016: British Columbia Canada

- 43 people overdosed on fentanyl at a wedding (they actually thought it was crack cocaine)
 - http://globalnews.ca/news/3266024/b-c-s-chief-health-officer-says-43-people overdosed-on-fentanyl-at-a-wedding-last-summer/

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Heroin and Fentanyl

May 16, 2014: Fox News, Guilford Co, North Carolina

- Multiple deaths due Heroin cut/mixed with Fentanyl
- 36 overdoses and 9 deaths in period of 15 days

DEA Update March 18, 2015

- DEA issued nationwide alert = dangers of fentanyl + its compounds
 50-100 times more powerful than morphine
- Vancouver, Canada, warned that fentanyl being concealed in noninjection drugs, oxycodone, marijuana and "party drugs"
- Because of this new threat, British Columbia officials are urging all recreational drug users to "know their source."
 - http://www.drugabuse.gov/drugs-abuse/emerging-trends

May 4th, 2016: Orlando Sentinel, Orlando, Florida:

Orange, Osceola top in state for fentanyl and heroin deaths Dr. Andrea Efre, Healthcare Education Consultants. Street Drugs Presentation Series ©

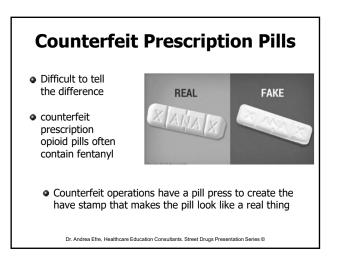
Carfentanil

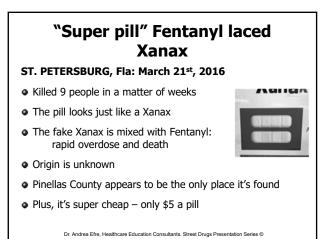
- Carfentanil is used commercially to sedate large animals, known as Elephant tranquilizer
- Carfentanil is the most potent opioid used commercially
- 10,000 times stronger than morphine and 100 times more potent than fentanyl
- It is an analogue of fentanyl
- Produced clandestinely in Mexico and China
- Drug found in Ohio, Indiana Florida, Georgia, Rhode Island, Pennsylvania, Kentucky, West Virginia and Illinois, New Jersey
- May have been used for assassination attempts and by Russian Special Forces in 2002
- Reports of Heroin laced with Carfentamil throughout the country
- Recently made headlines with its role in the death of pop star Prince
 - Reported by CNN August 25th, 2016
- September 22nd, 2016: DEA Issues Carfentanil Warning to Police and Public – concerned for deadly consequences

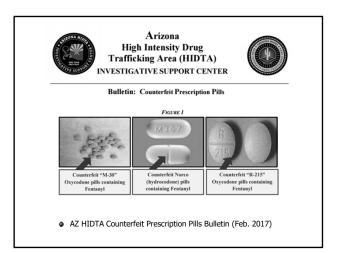
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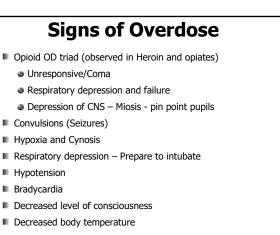
	The government's struggle to he	e e e e e e e e e e e e e e e e e e e
38		
	opioid manufacturers accounta	ble
8.8	Sixty-six percent of all oxycodone sold in Florida came from this compar	ny.
00	But the DEA's case against it faltered.	
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	By Lenny Bernstein and Scott Higham	
	April 2, 2017	
	To combat an escalating opioid epidemic, the Drug Enforcement Administration	
	trained its sights in 2011 on Mallinckrodt Pharmaceuticals, one of the nation's largest manufacturers of the highly addictive generic painkiller oxycodone.	











Treatment of Overdose

- If found in the community: Call 911 Must go to ER
- Even if Narcan given it has a short 1/2 life compared to many opiates and may need multiple dosing
- Naloxone nasal injection used in the community
- http://getnaloxonenow.org/
- DEA recommendation for suspected carfentanil exposure to dose naloxone every 2-3 minutes until the individual is breathing on his/her own for at least 15 minutes or until EMS arrives



March 2017: CVS now offers Naloxone without prescriptions across 41 states:

 Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia and Wisconsin.

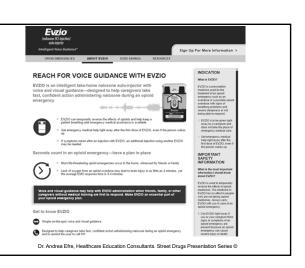
 Walgreens, Rite-Aid and Albertsons pharmacies are expanding naloxone access

Naloxone

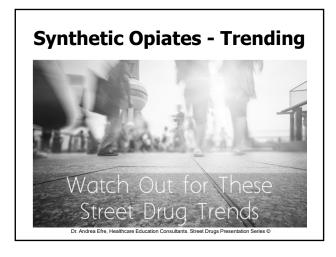
• The federal government and pharmaceutical companies have also negotiated in extending the nearly 20% price cut for naloxone

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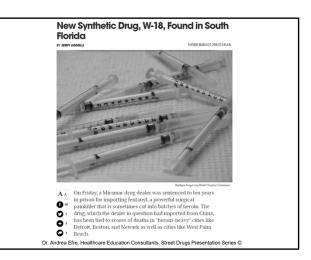


W-18 1-(4-Nitrophenylethyl)piperidylidene-2-(4-chlorophenyl)sulfonamide (W-18)

- Synthetic opioid said to be 10,000 x more powerful than morphine
- Known as synthetic heroin Street names: "beans" or "shady 80s"
- First invented at the University of Alberta, Canada in 1981 trying to make a non-addictive painkiller - not well researched - stopped
- A Chinese chemist found it, produced in China for a cheap high
 - Ship to North America via services such as FedEx
- May not induce a high through the opioid receptors
- Therefore, naloxone may not work
- Some anecdotal success saving lives with Narcan (New England)



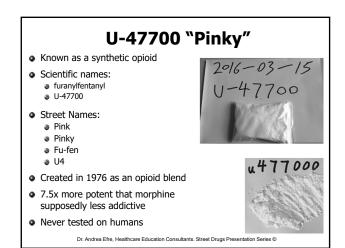
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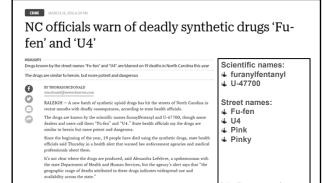


W-18 1-(4-Nitrophenylethyl)piperidylidene-2-(4-chlorophenyl)sulfonamide (W-18)

- Sweden: W-18 was made illegal in January 2016
- Canada: W-18 restricted the drug May 2016
- Canada and Australia currently have significant problems
- February 24th, 2017: Health Canada confirm W-18 and fentanyl was laced into drugs seized in Surrey and on Vancouver Island (Canadian Press)
- April 26th, 2016: New Chanel 10, Tampa Bay FL Reported: Florida drug dealer convicted of importing fentanyl also had 2.5 pounds of W-18. The drug isn't illegal so it didn't factor into his sentence
- Reports that Maine and Massachusetts have had cases of W-18 overdoses

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http://www.newsobserver

com/news/local/crime/arti cle68114222.html

Neither of the drugs is available by prescription in the United States

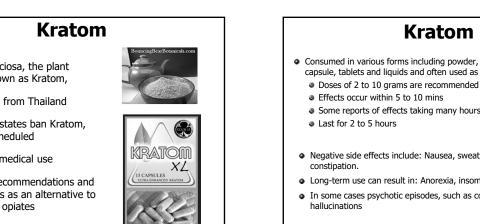
The emergence of deadly synthetic drugs has caught the attention of public health offici recent years. In 2013, state health officials warned that acetyl fentanyl, a drug five time more potent than heroin, had killed three people in Person, Sampson and Transylvania counties and sixened another in Comberland County.

Pinky U-47700

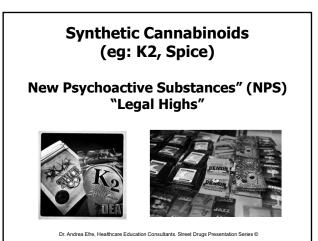
- November 15, 2016: DEA News: Temporarily Ban on Synthetic Opioid U-47700
- 46 confirmed deaths—31 in New York and 10 in North Carolina
- The Drug Enforcement Administration said it is aware of confirmed fatalities associated with U-47700 in New Hampshire, North Carolina, Ohio, Texas, and Wisconsin.
- Powder form and as counterfeit tablets that mimic pharmaceutical opioids
- Earlier in 2016 law enforcement in Ohio seized 500 pills resembling a manufacturer's oxycodone immediate-release tablets. However, laboratory analysis confirmed that they contained Pink.



Additional Synthetic Opiates AH-7921: An opioid analgesic drug 80% the potency of morphine when administered orally It was discovered in the 1970's placed into Schedule I of the Controlled Substances Act on May 16, 2016 and banned or restricted in many countries • U-77891: An opioid analgesic drug that was first synthesized in 1983 Dr. Andrea Efre, Healthcare Education Consultants. Street Drugs Presentation Series ©



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Cannabinoids

- Receptor CB₁ mainly in the brain, CNS. Lungs, liver and kidneys
- Receptor CB₂ mainly immune system and hematopoietic cell
- Tetrahydrocannabinol (THC) psychoactive "high" effect (Δ8THC and Δ9THC)
 - Mostly associated with Marijuana (flower/bud)
 - Positive effects: analgesic, anti-spasmodic, anti-tremor, anti-inflammatory, appetite stimulant and anti-emetic properties
 - Dab/Wax is an example of a very potent high level of THC psychoactive compound: up to 80% THC, (range 50-75%)
- Cannabidiol (CBD) medical effects without the "high"
 - CBC is mostly associated with hemp and CBD-rich cannabis plants. Positive effects: anti-inflammatory, anti-convulsant, anti-psychotic, antioxidant, neuroprotective and immunomodulatory effects
- Synthetic Cannabinoids (like Spice and K2) have no natural THC or CBD. They are synthesized to mimic the psychoactive effects of THC Dr. Andrea Efre, Healthcare Education Consultants. Street Drugs Presentation Series ©

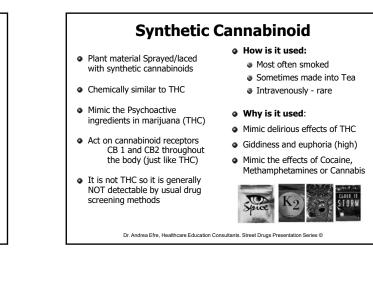
- Mitragyna speciosa, the plant commonly known as Kratom,
- Usually comes from Thailand
- Currently five states ban Kratom, but not yet scheduled
- No legitimate medical use
- Some street recommendations and advertisements as an alternative to heroin and Rx opiates





- capsule, tablets and liquids and often used as a tea Doses of 2 to 10 grams are recommended
 - Some reports of effects taking many hours start
- Negative side effects include: Nausea, sweating, itching, dry mouth and
- Long-term use can result in: Anorexia, insomnia, weight loss
- In some cases psychotic episodes, such as confusion, delusions and





Synthetic Cannabinoid

- Commonly purchased in head shops, tobacco shops, gas stations, retail outlets, and the Internet
- Packaged Not for human consumption
- Users consider it a "Legal high"
- The chemical compounds typically include HU-210, HU-211, JWH-018, and/or JWH-073
 - >100 such substances have been synthesized and identified to date
- Many states have banned substances involved in making it
- However, once banned, the compound is modified to avoid laws
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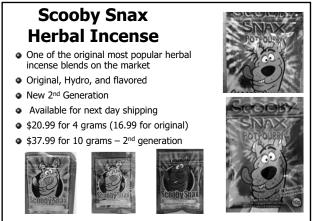


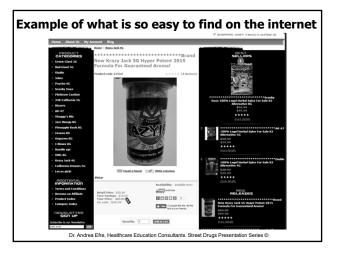


Synthetic Cannabinoid: Recent Events

- August 25th: Austin-Travis County EMS treated 52 patients using K2, 17 additional followed making the total 69 people (no deaths
- August 19th: Los Angeles police suspect a bad batch "spice" sickened 50 people in the Skid Row area and then another 14 on Monday August 22nd
- July: Brooklyn, New York 33 people were hospitalized after authorities responded to calls of "K2" overdoses at one intersection
 - the drug was street name AK-47 24 Karat Gold = 85 x as potent as plant-grown marijuana (THC)
- July 14, 2016: Synthetic Cannabinoid Advisory New York City -130 people were taken to emergency rooms in 2 days (from July 11 through July 13) after using synthetic marijuana
- March: People high on "spice" look like 'zombies' laying around the park in Clearwater, FL. Also, Spice sickened several dozen people in St. Petersburg, FL over a few weeks in March

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Side Effects

Hypokalaemia

Oyspnea

Diaphoresis

Hypertonia

Muscle spasms

Tremors and seizures

Renal dysfunction

Acute kidney injury and

 Appetite changes, Nausea and Vomiting

- Tachycardia and Hypertension
- ECG changes (including ST elevation, T wave changes and QTc prolongation
- Arrhythmias and BBB
- Palpitations
- Chest pain
- High doses = bradycardia and hypotension = Cardiac hypoperfusion
- Decreased Coronary pressure and myocardial ischemia
- Cardiotoxicity

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Side Effects

- Changes in neurological status
- Decreased responsiveness
- Acute cerebral ischemia
- Agitation, irritability, drowsiness, confusion
- Anxiety and panic attacks
- Changes in perception
- Intense hallucinations, delusions
- Paranoia and psychosis
- Psychotic episodes, and suicidal fixations
- It appears to be stored in the body for long periods of time, and therefore the long-term effects are not fully known

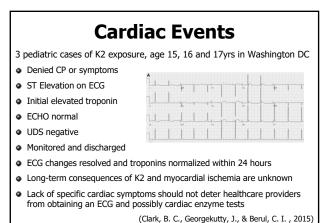
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Psychotic Events from Cannabis vs Synthetic Cannabinoid

- Cannabis use is associated with an increased risk of psychosis and schizophrenia because of the tetrahydrocannabinol (THC)
- Cannabis high in cannabidiol (CBD) has fewer psychotic experiences
- Synthetic cannabinoid receptor agonists (SCRAs) are full agonists
- They are more potent than natural THC and contain no CBD
- Therefore, cause more frequent and more severe unwanted negative effects, especially in younger, inexperienced users
- Psychosis seem to occur relatively often with synthetic cannabinoids, presumably due to their high potency and the absence of CBD

(van Amsterdam, J., Brunt, T., & van den Brink, W., 2015)

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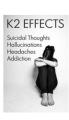
Treatment

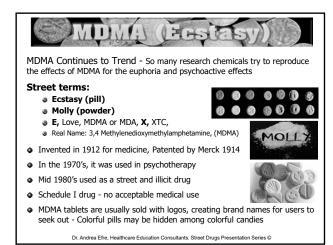
There is no specific antidote for intoxication with synthetic cannabinoids

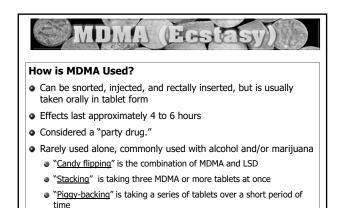
- Supportive care
- Fluids
- Monitor closely and be prepared to resuscitate
- Maybe consider lipids a small study in Turkey had success in recovering (cardio and neuro effects) in 3 out of 4 patients
 - Lipid-sink-theory Drugs that are free in the intravascular space are thought to be trapped within the intravenous lipid emulsion and this reduces the concentration
 - Unstable patients presenting to ED with acute synthetic cannabinoid intoxication may be candidates for intravenous lipid emulsion treatment
 - (Aksel, G., Güneysel, Ö., Taşyürek, T., Kozan, E., & Çevik, Ş. E. 2015)

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MDMA - Lets Talk X







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- Molly MDMA
- Molly—slang for "molecular"
- Thought to contain "Pure" MDMA
- Pure crystalline powder, or can be powder capsules capsules for \$8 to \$40 per pill depending on location
- Also available as Mollywatr (glow-in-the-dark container) Usually high priced and exclusive
- Molly had a surge in interest in the past few years, being celebrated frequently by actors and musicians
- "Molly" = street term also used to describe some • 'Bath salts" such as Methylone: (bk-MDMA) or Mephodrone (meow meow) (especially in the UK)
- Molly = street term for Methampetamine/meth combos
- User may not get what they expected with Molly

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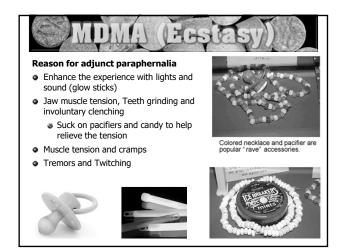


Term



- Suppresses need to eat, drink, or sleep
- Enables user to endure all-night or 2-3 day parties
- Eliminates anxiety
- Increases talkativeness and giggling
- Reduces inhibitions
- Produces feelings of empathy/affection for others
- Enjoying touching
- Enjoying being touched
- Making it a <u>Rape Drug</u>
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- Nausea, Faintness
- Dry mouth, Dehydration
- Chills/Sweating
- Tachycardia/Hypertension
- Overheated ↑ core temp
- Hyperthermia 107-109°F
- Loss of consciousness
- Confusion & Panic attacks
- Jaw & Muscle tension/cramps
- Seizures
- Hepatic/Renal failure & Death



Testing the Purity of Molly

- The bunk police risk prison to bring drug testing kits to music festivals
- Testing for impurities
 - Featured November 4 2015
 - Lisa Ling's CNN Report about designer drugs at music festivals
 - EDM Festival "Mysterland"
 - Electronic Dance Music
 - Risk: Dehydration, over heat, death





Signs of Use/Side Effects of LSD

- Elevated BP
- Tachycardia, Palpitations
- Hyperthermia
- Elevated blood sugar
- Dilated pupils
- Tremors
- Gooseflesh
- Perfuse perspiration
- Hallucinations, delusions and paranoia
- Panic reactions

- Flashbacks are unpredictable
- Occur spontaneously
- Vary in frequency and duration
- May occur days up to months after use
- Increase occurrence during times of stress



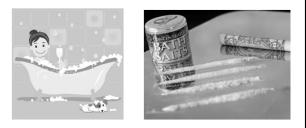
Management of overdose for MDMA, Molly, or LSD

- Treat as a Medical Emergency Call 911 if not in the hospital
 - Stabilize (ABC's), Oxygen, Monitor, IV
 - Code Cart –May need defibrillator
 - Prepare to intubate
- No specific antidote is known
- Benzodiazepines for seizures and muscle spasms
- Treat Hyperthermia use cold water, fans, cooling blankets, and anti-pyretics (Tylenol)
- Additional treatment depends on the presenting complaint and organ system involved

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Bath-salts and Legal Highs

New Psychoactive Substances (NPS)



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Mostly sold on the Internet

 Also head shops, novelty stores, convenience stores, and gas stations

Usually marketed with the warning

Marketed as "bath salts" to evade

products or Epsom salts)

• Users want to get high without

engaging in criminal activity

Originally synthesized in the 1920s

Recreational in UK & Europe 2009,

detection (Not to confuse with bath

"Not intended for human

consumption."

USA in 2010

Cathinones – Natural vs Synthetic **Natural Cathinone** Synthetic Cathinone

"Bath salts" (group name)

stimulate the CNS and have

• Emerged as legal alternatives to

cocaine known as 'legal highs'

(Valentine et al. 2013)

sympathomimetic features

amphetamine, ecstasy, or

Like Amphetamines, they

Khat (Quat, Cot, Tea)

- Natural Cathinone • Grows in East Africa and in southern Arabia
- DEA reports that 10 million people worldwide chew khat
- Cultural, usually males
- Hallucinogenic: Excitement, Euphoria, Hyper-manic states, Hyperactivity, talkative, paranoia, delusions of grandeur



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- MDPV: Bath salts
- Alpha PVP Flakka
- Mephedrone: Meow-Meow
- Methylone: bk-MDMA Not to be confused MDMA = Ecstasy
- Ethylone and Butylone

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Synthetic Cathinones (General)

Stimulant effects similar to cocaine, amphetamines, Khat, LSD, and MDMA Increases dopamine, serotonin, and norepinephrine in synapses **Duration:** 4 to 8 hours – depending on substance/route

Route:

- Sniffing/snorting (Most common)
- Oral ingestion
- Smoking, vaporization,
- Intravenous, intramuscular
- Rectal insertion
 MDPV (bath salts) loses potency when Dissolved, rarely used IV/IM

Desired effects: Reported by users:

- Increased energy
- Empathy, Openness
- Increased libido, Enhanced Sexual experience

User Reports: Highly addictive with intense cravings

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FSU Student Ate Victims Face

Monday August 15th

- The Martin County Sheriff's Office
- 19 year old FSU Student accused of murdering a married couple and biting off one of the victim's faces
- A neighbor initially intervened but was allegedly stabbed
- Unprovoked and random attack on two victims who were standing in their garage
- Possible use of bath salts, maybe Flakka



- Detectives said: he had enormous strength and was shouting incoherent things
- It took a K9, a taser and three deputies to reign him in away from the victims

Most Common Bath salts

- MDPV (Bath salts, Ivory Wave, plant food....)
- Alpha PVP (Flakka, gravel)
 - MDPV and a-PVP Both are very potent and selective inhibitors of dopamine and noradrenaline transporters - 10x more potent than cocaine or methamphetamine with a 3-4 hour duration
- Mephedrone: (Meow-Meow, M-cat, Mad Cow)
 Desired Effects similar to MDMA (ecstasy, X)
- Methylone: (room odorizer" or "Explosion)
 - **bk-MDMA** Not to be confused MDMA = Ecstasy
 - Mephedrone mixed with_methylone = bubbles
- Ethylone and Butylone
 - Desired effects for all three drug groups is to be similar to MDMA

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- **Effects of Bath salts**
- Users are usually looking for euphoria, sexual energy and drive and increased sociability

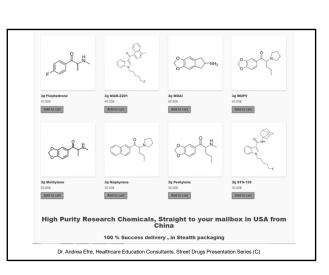
Side effects

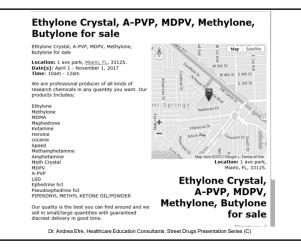
- · Psychosis, agitation, combative behavior,
- Delusions and paranoia and prolonged insomnia
- Sympathomimetic toxidrome: typically includes hypertension, tachycardia, mydriasis, agitation, and sweating
- Chest pain
- Deadly effect: Hyperthermia 105-106 f
 Leading to kidney failure, and rhabdomyolysis
- SymptomsDepressionAnxiety

Withdrawal

- Tremors
- Problems sleeping
- Paranoia

Possible Treatments for Cathinone		
Adverse Events	Treatments	
Psychosis, agitation, anxiety	Benzodiazepines are first line treatment, then antipsychotics. Haloperidol without benzodiazepines is generally not recommended because seizure and dysrhythmia thresholds are lowered and negative drug induced psychological effects including anxiety may increase – it may also worsen hyperthermia	
Hyperthermia	Physical cooling, and relaxation with benzodiadepines. Antipyretics may not be effective	
Tachycardia	Negative chronotropic agents	
Hypertension	Antihypertensives: primarily with nitrates. β-blockers should be avoided because of unopposed α-adrenergic stimulation resulting in further increases in blood pressure	
Chest pain	Monitor cardiac enzymes and ECG	
МІ	Standard treatments for MI (MDPV: avoid or use caution with beta-blockers), benzodiazepines	
Hyponatremia	Monitor serum sodium. Fluid restriction and hypertonic saline	
Manganism	Elevated serum or urinary manganese. Monitor manganese concentrations. Chelation therapy, Parkinson's medications	





General Chemicals and New Psychoactive Substances (NPSs)

- New Psychoactive Substances (NPS)
- May be referred to by their chemical names or a brand name
- Usually contain hallucinogenics biochemically characterized as analogs of mescaline or LSD
 - Mescaline is a natural hallucinogenic phenethylamine compound found in the peyote cactus
 - Phenethylamine hallucinogens similar to the effects of Mecaline
 - Eg: Bromo DragonFly (B-Fly) Ethylone and Butylone
 - Tryptamine hallucinogens are similar to LSD
 - EG: N-Bomb (Smiles), DT, 2C-B (Smiles)
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Bromo DragonFly

More Street Term: B-Fly, Fly or 2C-B-fly

Nexus, 2's, Toonies, Bromo, Spectrum, Venu • Chemical: 4-Bromo-2,5dimethoxyphenethylamine

- Psychedelic drug Related to phenethylamine (Mescaline) family
- Extremely potent hallucinogen
- Psychedelic effects that last 6–8 hours, or up to 12 hours in larger doses. Sometimes up to 3 days
- USA: Schedule I control substance
- Drug of choice for club drug in Colombia
 - Vasoconstriction: extremity tissue necrosis
 - Seizures,
 - Respiratory distress
 - Hepatic and renal failure
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N-bomb N-Bomb: Smiles, 25I, 25C, 25B and "legal acid" • Chemical: 25I-NBOMe, 25C-NBOMe, and 25B-NBOMe Almost exclusively Made in China – marketed as "LSD safe alternative" Sublingual/Buccal last 6–10 hours Last 4–6 hours when inhaled Duration up to 12 hours 25I-NBOMe Small amounts can cause: Seizures, MI, Cardiac or Respiratory Arrest and death Deaths are recorded in USA Prices: \$10-15 per hit Bulk: 100mg=\$100, 250mg=\$225, 500mg=\$400, 1000mg=\$750 The LSD analog 25I-NBOMe was the most common hallucinogen detected as part of our 4-year surveillance program in Arkansas Dr. Andrea Efre, Healthcare Education Consultants. Street Drugs Presentation Series ©

Severe clinical toxicity associated with analytically confirmed recreational use of 25I–NBOMe: case series

- Study: Seven patients, all young adult males, presented to hospitals in the northeast of England with clinical toxicity after recreational drug use of 25I-NBOMe in January 2013
- **Side effects:** tachycardia (n = 7), hypertension (4), agitation (6), aggression, visual and auditory hallucinations (6), seizures (3), hyperpyrexia (3), clonus (2), elevated white cell count (2), elevated creatine kinase (7), metabolic acidosis (3), and acute kidney injury (1).

Hill et al, 2013

DRAGONFL

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Diagnosis and Treatments

- Diagnosis mostly based on history and presenting behavior
- Routine drug screens do not detect bath salt compounds
- Some commercial kits are sold, but rarely available at the bedside
- Management mostly supportive
- Aggressive IV hydration
- Benzodiazepines
- May assist in dampen excessive sympathetic outflow
- Close monitoring in the ICU setting
- Treat Hyperthermia use cold water, fans, cooling blankets, and anti-pyretics (Tylenol)





Benzo Fury or 6-APB

BENZO

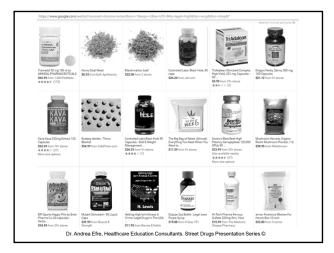
FURY

- Colorless stimulant, sold in powder and pellet or tablet form for oral consumption (may be snorted)
- Phenethylamine and amphetamine classes
- "research drug" "not for human consumption"
- Currently unscheduled in the U.S.
- \$15-16 U.S. dollars) per pill/pellet
- Effect within 30-60 minutes, may last up to 10 hours
- Affects and side effects are the similar to MDMA (Ecstasy):
- Alertness, energy, euphoria, feelings of peace and love toward others, tingling feelings, and intense sexual responses
- Tightening of jaw muscles, raised body temperature, tachycardia, anxiety/panic attacks and paranoid/confusion

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Sold primarily through websites claiming to be suppliers of research chemicals
 There are multiple websites – Biggest supplier in UK

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Betel Nut

Psychoactive stimulant

feathery palm tree

• Grows tropical Pacific,

parts of east Africa

and throat CA

areca palm (Areca catechu) a

Southeast Asia, South China,

India, Japan, Philippines, and

• First century AD it was used to

Now is thought to cause mouth

improve mouth health (in Asia)

- Mood-enhancing effects
 Increase alertness
- The areca nut is the seed of the
 Increase stamina,

Desired effects

- a sense of well-being,
- Euphoria,
- Increase salivation and
- Stimulate the appetite

March 3rd, 2017:

- Ohio police crack down on imported stimulant used by teens to get high
- http://fox8.com/2017/03/03/ohio-policecrack-down-on-imported-stimulant-used-byteens/

Smoking Alcohol

- Become drunk without the extra calories
- Vapor inhalation takes the person from sober to drunk within seconds
- Hangovers may be reduced



How is this done?

- Use a plastic bottle, fill with alcohol and seal with a cork
- A hand tire pump is then used to pump air into the bottle to increase the pressure
- A vapor develops when the pressure mixes with the alcohol
- Once the vapor is seen, the cork is pulled off and the vapors are inhaled though the mouth and nose
- Sometimes used with dry ice: Once the dry ice mixes with the alcohol, a vapor will develop

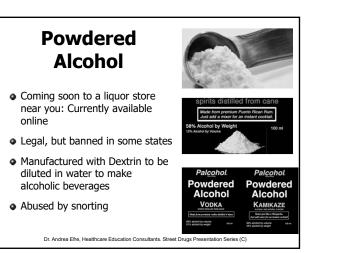
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Smoking Alcohol



- When a person <u>drinks</u> too much alcohol, the body induces ٥ vomiting to eliminate it. This does not happen with smoking alcohol.
- Smoke alcohol bypasses the stomach and intestines and is not broken down in the liver.
- The person does not have this safety net to prevent alcohol poisonina.
- Overdose risk is much higher due to the fact that the body has not broken down the alcohol.

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1,3,7-trimethylxanthine

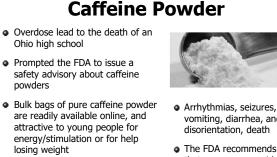
- Legal Highs 1,3,7-trimethylxanthine which is caffeine Smiley Face (powder) is pure caffeine
 - Snow Blow (powder) and Blowout (powder) • caffeine mixed with taurine and vitamin B
 - POW (powder)

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caffeine with the black pepper extract bioperine

- Bosh (2 pill pack) or Jester (2 pill pack)
 - Both are caffeine, guarana and cola nut extract mixed in big red capsules
- For more inofrmation on the effects this blogger had, visit the website: https://www.vice.com/en_ca/article/i-tried-every-legal-high-left-on-the-market

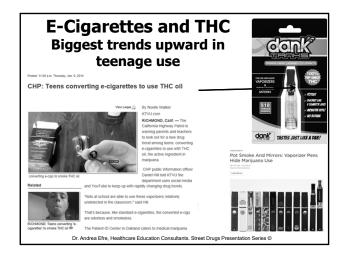
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 Just a teaspoon of pure caffeine powder is equivalent to about 25 cups of coffee-a lethal amount



- vomiting, diarrhea, and disorientation, death
- The FDA recommends that consumers avoid caffeine powder and parents be alert to their hazards



Do You Drip?

- February 7th, 2017
- NIH Published research on Dipping in teens
- "dripping" is a practice in which users placing drops of e-liquids directly onto heated atomizer coils
- Study finds one in four high school e-cigarette users have tried "dripping"
- Produce thicker clouds of vapor (63.5%), improve flavors (38.7%), and produce a stronger throat hit (27.7%)
- Concern: Increase nicotine, toxins, and carcinogens
- National Institute on Drug Abuse and the FDA Center for Tobacco Products.

"E-Cigarettes and "Dripping" Among High-School Youth"— published in Pediatrics, go to: http://pediatrics.aappublications.org/content/early/2017/02/02/peds.2016-3224

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Summary of Management for Intoxication of Synthetics

- Get as much of the story as you can from the patient or friends
- Treat as a Medical Emergency, monitor closely and prepare for the worst
 - Stabilize (ABC's), Oxygen, Monitor, 2 IV's
 - Code Cart –May need defibrillator
 - Prepare to intubate
- No specific antidote is known for most synthetics
- Benzodiazepines for seizures and muscle spasms
- Treat Hyperthermia use cold water, fans, cooling blankets, and antipyretics (Tylenol)
- Additional treatment depends on the presenting complaint and organ system involved

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DEA News: Prescription Drug Take-Back Effort

- DEA National Take Back Initiative -
 - National drug take back days twice a year Collection sites listed at: http://www.deadiversion.usdoj.gov/drug_ disposal/takeback/index.html

