Pink, Iso, Brorphine, Tranq, Smiles, Krokodil, Dragonfly, Trash Can, & Scooby Snax: The New Language of Drugs of “Abuse”

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LEARNING OBJECTIVES

1. Participants will be able to name 3 new illicit drugs which are being used in the United States.

2. Participants will be able to name 3 adulterants that are being used as an adulterant/substitute for heroin.

3. Participants will be able to list 3 possible medical complications of adulterants.
I have received no money from the manufacturers of the drugs I will discuss.
“Designer Drugs”

➢ “Novel Psychoactive Substances”, “NPS”, “Synthetics”, “Club Drugs”
➢ The term “Designer Drug” coined in 1988 by Henderson
  ➢ to describe attempts to produce fentanyl analogues
➢ Used to describe any drug produced by making a slight change in the chemical structure of a controlled substance (CSA of 1970)
➢ These newer substances were “legal” until 1986
  ➢ Controlled Substances Analogues Enforcement Act
  ➢ makes any drug “substantially similar to” a schedule I or II drug illegal
“DESIGNER DRUGS”

➢ Many are not truly new
➢ Many based on chemicals synthesized by chemists for legitimate reasons
➢ Some are marketed for legitimate medical reasons but are diverted for illicit use
➢ Others have never been used medically but synthesizing methods have been published and are easily obtained
➢ 100s of designer drugs have been made
  ➢ only a handful have become popular
➢ In the past, was a relatively small problem compared to heroin, etc.
MACS
LONDON - Keith Richards has acknowledged consuming a raft of illegal substances in his time, but this may top them all. In comments published Tuesday, the 63-year-old Rolling Stones guitarist said he had snorted his father's ashes mixed with cocaine.

"The strangest thing I've tried to snort? My father. I snorted my father," Richards was quoted as saying by British music magazine NME.

"He was cremated and I couldn't resist grinding him up with a little bit of blow. My dad wouldn't have cared," he said. "... It went down pretty well, and I'm still alive."
“DESIGNER” OPIOIDS

- Non-pharmaceutical fentanyls (NPFs)
- >30 different fentanyl analogues
  - alpha-methylfentanyl (AMF)
  - 3-methylfentanyl (TMF)
  - carfentanil
- Originally referred to as “China White” (the term reserved for very pure heroin), “Tango & Cash”, “Persian White”, “Goodfella”
  - “Gunpowder heroin”- newer term
- TMF & carfentanil 1000s of times more potent than morphine
- 1-methyl-4-phenyl-propionoxy-piperidine (MPPP) is the most well known meperidine analogue
“DESIGNER” OPIOIDS: HISTORY

➢ AMF appeared in late 1970s
  ➢ 15 deaths in California in 1979-1980
  ➢ made Schedule I of CSA in 1981

➢ TMF appeared in 1983
  ➢ >100 deaths attributed to it through 1980s
  ➢ spread to East Coast in late 1980s
  ➢ 30 deaths in Baltimore in 1992

➢ MPPP tested as an analgesic in 1970s
  ➢ appeared on the streets in mid 1970s
  ➢ 1st MPTP induced Parkinson’s syndrome reported in ‘79
Demographic Characteristics of 23 Fentanyl Related Deaths in Maryland in 1992

Two-thirds of Fentanyl related deaths in Maryland involved a black male or female and were over 30 years of age. Almost all of the incidents occurred in Baltimore City or Baltimore County in February or March. 550 envelopes containing Fentanyl have been seized by the state police. State police indicate the Fentanyl to be licitly manufactured rather than produced in clandestine labs. Heroin addicts should be alerted that drugs sold as heroin may contain Fentanyl ("China White").

Demographics of Maryland Fentanyl Incidents

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<th>RACE</th>
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East Coast Hit by Rash of Heroin Deaths, Overdoses

May 8, 2006

News Summary

Heroin users from Chicago to Maryland have been killed or sent to the hospital by a powerful drug mix that includes the painkiller fentanyl, USA Today reported May 5.

More than two dozen deaths and 300 hospitalizations have been tied to use of the mixture during the past three weeks, according to state and federal officials. The heroin-fentanyl mix first appeared in Chicago on April 13, and has killed 11 people there and caused overdoses in 144 other users. Since then, the drug has surfaced in Camden, N.J.; Wilmington, Del.; Salisbury, Md.; Harrisburg, Pa.; and a handful of other communities.

Experts say the heroin-fentanyl mix is unusual because the painkiller is expensive, whereas heroin is usually cut with cheap substances like sugar or flour to boost dealer profits. Typically, it is midlevel dealers in the U.S. who cut the drugs.
Toxic Fentanyl sold as Heroin

Powder fentanyl can cause overdoses

Fentanyl overdoses can be harder to reverse

Try not to use alone
Inject slowly
Use InSile
Carry Naloxone
Call 911 right away if someone ODs

Recommendations for Laboratory Testing for Acetyl Fentanyl and Patient Evaluation and Treatment for Overdose with Synthetic Opioids

Summary: Recently, a number of intravenous drug users have overdosed on a new, non-prescription, injected synthetic opioid, acetyl fentanyl. Acetyl fentanyl is a fentanyl analog previously encountered in illicit drug use that is up to five times more potent than heroin. CDC recommends increased vigilance by public health agencies, emergency departments, state laboratories, medical examiners, and coroners for patients with symptoms consistent with opioid overdose and laboratory results showing an enzyme-linked immunosorbent assay (ELISA) positive for fentanyl.

Background:
Since March 6, 2013, 14 overdose deaths related to a novel, injected non-prescription synthetic opioid have occurred among intravenous drug users in Rhode Island. Ten of these deaths occurred in March. On May 30, 2013, Rhode Island Department of Health confirmed that the implicated synthetic opioid is acetyl fentanyl, a fentanyl analog previously encountered in illicit drug use. Acetyl fentanyl is not available as a prescription drug in the U.S.

The age of the person who died from an acetyl fentanyl overdose ranged from 16 – 57 years, and 10 of the decedents were male. The toxicology testing results for most of the decedents showed, in addition to acetyl fentanyl, varying mixtures of drugs, including cocaine, heroin (or heroin), ethanol, and benzodiazepines. However, none of these additional substances were present in all decedents and none of these persons tested positive for heroin by GCMS after testing positive for fentanyl by ELISA.

Toxicology results for one decedent showed only acetyl fentanyl (by GCMS) and no other substances. These deaths represent a significant increase in the number of illicit drug overdose deaths compared with the number of cases typically reported in one month in Rhode Island.

There have been unconfirmed reports from other states of increases in illicit opioid-related overdose events seen in emergency departments. Media stories have associated these events with fentanyl-contaminated heroin or, in some cases, to heroin alone. It is possible that these events are related to acetyl fentanyl, but confirmatory testing is needed. States other than Rhode Island have not reported CDC that they are testing for acetyl fentanyl.

Case definitions:
1. Illicit opioid-related overdose: A diagnosis by a physician of an illicit opioid overdose.

Note: If a suspected illicit opioid overdose event results in death, jurisdictions often carry out drug screening. Some jurisdictions perform ELISA that includes a screen for fentanyl, while others do not routinely screen for fentanyl. CDC recommends screening for fentanyl by ELISA to...
CARFENTANIL

➢ Fentanyl analog
➢ Synthetized by Jansen Pharmaceuticals in 1974
➢ One of the most potent opioids known
➢ Used commercially as a large animal tranquilizer (*Wildnil*)
➢ On illicit opioid scene in N. America since 2015
“PINK”

- U-47700
- Synthesized by Upjohn in 1976
- “Pink”, “Pinky”; “U4”
- 7-10 Xs more potent than Morphine
- Never tested in humans. Relegated to research.
“ISO”

- Isotonitazene
- Similar to etonitazene (Schedule I)
- Slightly more potent than fentanyl
- Not currently scheduled
- Manufactured in China
- Appeared in U.S. summer, 2019
- More in Midwest but spreading
BRORPHINE

- 1-(1-(1-(4-bromophenyl)ethyl)piperidin-4-yl)-1,3-dihydro-2H-benzo[d]imidazol-2-one
- “Purple Heroin”
  - Often purple, grey or white
  - Typically mixed with other synthetic opioids
- Piperidine-based
  - Similar to fentanyl but not an “analogue”
- @ 100 X more potent than morphine
- Synthesis first reported 2018
- Reported in U.S., Canada, Sweden, Belgium
  - First reported in U.S. Summer, 2019
- > 30 fatalities in: Illinois, Minnesota, Arizona, Louisiana
- DEA proposed Schedule I on 12/3/2020
- Potent hERG potassium ion channel inhibitor
  - May increase risk of Torsades
“Mexican black tar heroin”
“Cruder” form
Historically seen int U.S. west of the Mississippi
More across Midwest & Appalachia over past decade
In Virginia, West Virginia and western Pennsylvania
Smoked or injected
“chasing the dragon”; “foiling”
leukoencephalopathy
botulism, etc
KROKODIL

➢ Contains desomorphine
  ➢ Synthesized in the U.S. in 1932
  ➢ Synthesized from codeine (OTC in some places)
➢ Increase in popularity in Siberia @ 2002
  ➢ spreading to rest of Russia since 2010
➢ More reports in rest of Europe
➢ Few, but increasing, reports in U.S. since early 2000-teens
➢ More potent than heroin
➢ Shorter acting than heroin
➢ Associated with significant abscesses, etc
  ➢ Likely due to impurities from manufacture (solvents, phosphorous, etc)
KRATOM

- *Mitragyna speciosa*
  - a tropical tree in the same family as the coffee tree
  - “4x100”: M. speciosa leaves, coca cola, cough syrup (often w/codeine), ice
- Native to Southeast Asia
  - primarily used in Thailand, Malaysia, Indonesia
- Used by field workers for energy and relief from muscle strain
- Also used as opium substitute
  - Assist with symptoms of opioid withdrawal since 1800’s
- Fresh leaves chewed, dried leaves smoked or steeped in tea
- Increase in U.S., especially Pacific Northwest; S.F.
  - Widely available online and in “head”/smoke shops
KRATOM

➢ Contains mitragynine, mitraphylline, 7-α-hydroxymitragynine
➢ Structurally similar to hallucinogens like psilocybin
➢ Psychostimulant effects at low doses
  ➢ Increased alertness, physical energy, talkativeness
➢ Opioid receptor agonist at higher doses
  ➢ High affinity for κ-opioid receptor
  ➢ Pain relieving properties by partial agonist activity at μ- and δ-opioid receptors
➢ Effects occur within 20-30 minutes after ingestion
➢ Effects last 2-5 hours
➢ Acute side effects: nausea, itching, dry mouth, constipation, loss of appetite
➢ Psychosis and respiratory depression reported
➢ Withdrawal syndrome possible with chronic use
  ➢ Irritability, muscle aches, rhinorrhea
KRATOM

➢ Thailand: Narcotics Act B.E. 2522 classifies kratom with marijuana as Class V (1979)
➢ United States: DEA “drug of concern”
  ➢ DEA announced emergency scheduling of Kratom on August 11, 2016
  ➢ Retracted under pressure from lobbyists and federal lawmakers
  ➢ Open for public commenting through December 1, 2016; over 60,000 comments posted
XYLAZINE

➢ A2 agonist
  ➢ Clonidine analogue
  ➢ Structural similarity to phenothiazines and tricyclic antidepressants
➢ FDA approved in U.S. as a sedative, analgesic, & muscle relaxant only for animals
  ➢ dogs, cats, horses, elk, fallow deer, mule deer, sika deer, and white-tailed deer
  ➢ Rompun, Anased, Sedazine, Xylamed and Chanazine
➢ Can see significant sedation, hypotension, bradycardia, hyperglycemia
  ➢ Some reports of skin ulceration/abscesses (not consistent)
➢ Illicit use dating back to late 1970s
➢ Often from diverted veterinary supply
➢ Popular in Puerto Rico (“Anestesia de Caballo”) since early 2000s
➢ Increasing adulterant in heroin/fentanyl
➢ “Tranq Dope”, “Tranq”, “Sleep Cut”
➢ “Wipeout”- fentanyl + cocaine + xylazine
➢ "Tiana", "Tia", "Zaza"
➢ Atypical antidepressant
  ➢ Approved to treat depression and anxiety in Europe & Asia as Stablon, Coaxil
➢ Available in U.S. through DarkWeb
➢ Misuse in U.S. reported since @ 2000; Increase @ 2015
➢ µ opioid receptor agonist & δ opioid receptor agonist
➢ Binds to serotonin transporter but appears to enhance reuptake
➢ Effects on NMDA Glutamate receptor
  ➢ May increase synaptic plasticity (similar to Ketamine)
➢ Reports of deaths from respiratory suppression
  ➢ + response to naloxone
Many not regulated

Some available in other countries

Available in U.S. on-line

Used in manufacture of “knock-off” benzos in U.S.
“PSYCHEDELIC/STIMULANTS”

➢ “methylated amphetamines”
➢ over 1000 have been synthesized
➢ chemically similar to mescaline & amphetamine
➢ have physiologic and psychological effects of stimulants and hallucinogens
➢ MDMA
➢ MDEA, MDA, STP(DOM), 2C-B(Nexus), Aminorex
MDMA: HISTORY

➢ Synthesized by Merck in Germany in 1912
➢ ? as an appetite suppressant
➢ Some military research in the 1950s
➢ Not really used until the early 1970s
  ➢ (after MDA was made schedule I)
➢ Used in the 1970s & 1980s by therapists to enhance psychotherapy
➢ Made Schedule I in 1985
➢ Use peaked in late 1990s-mid 2000s
➢ Resurgence @ 2012 as MOLLIE(Y)
➢ New research for PTSD, depression
Investigators say deaths in Boston, New York, and DC may be linked to 'Molly'

Molly deaths may be caused by other drugs

Electric Zoo music festival canceled after 2 deaths blamed on drugs
SMILES

- 2C-I
- 2C class are phenethylamines
- Synthesized by Alexander Shulgin
- Used illicitly since the mid-1990s
- Available in Dutch shops in early 2000s.
- Usually in a powder; occasionally a tablet.
  - Some reports of mixing with chocolate.
- Typically snorted or swallowed.
- Effects last 4-12 hours
- DEA Schedule I
N-BOMB

- 25-NBOMe
- Similar to 2-C series
- Action at 5-HT 2A
- DEA Schedule I
BROMO-DRAGONFLY

➢ 3C-Bromo-Dragonfly; “DOB-Dragonfly”; “Fly”
➢ Synthesized in 1998.
➢ Similar to phenethylamines.
➢ Acts at several serotonin receptor types.
➢ Very potent (1/5 that of LSD).
➢ Effects can last several days.
➢ May see vasoconstriction.
➢ Usually a powder or on blotter paper.
➢ Popular in Scandanavia but seen in U.S.
➢ Deaths reported from seizures & vomiting blood.
➢ Not DEA scheduled in the U.S.
PIPERAZINES

➢ Original research in 1970s as antihelminthics
➢ Most popular benzylpiperazine (BZP)
  ➢ Schedule I in 2002
➢ Trifluoromethylphenylpiperazine (TFMPP)
➢ 6-(2-aminopropyl)benzofuran (6-APB)
➢ Very popular in Australia and New Zealand
➢ Stimulant effects at lower dose
➢ Hallucinogenic effects at higher dose
  ➢ Effects serotonin reuptake, increases release & acts as agonist
➢ Typically snorted or taken orally
➢ Delayed onset of action (1-2 hours)
➢ Effects last 6-8 hours.
➢ Reports of seizures, QT prolongation, Serotonin Syndrome
5-MEO-DMT

- 5-methoxy-dimethyltryptamine
- Similar to DMT
- Found in several South American plants and in the venom of the Bufo alvarius toad
- Typically smoked, inhaled or injected
- Can be ingested orally with an MAO inhibitor
- Can be extracted from plants or synthesized
- About $300 per gram through mail order
KETAMINE

- Similar to phencyclidine (PCP)
- Dissociative anesthetic
- Modulated NMDA receptor; some effects on NE, DA, 5-HT
- Special K, K, Jet, Super K, Vitamin K, Kit Kat, Cat Valiums
- First manufactured in 1965
- Misuse probably began in the late 1960s
- Much of what is misused is diverted from manufacturers and suppliers of medical & veterinary drug
- Comes in a liquid form or a white powder
  - Liquid often “cooked” in microwave to get powder
- Typically snorted; can be smoked or injected
- Onset typically 30 seconds to 30 minutes
METHOXETAMINE

- Synthetic analog of ketamine
- 3-MeO-PCE (also 3-MeO-PCP, 4-MeO-PCP)
- Aka: “MXE”; “M-Ket”; “Kmax”; “Mexxy”; “Roflcopter”
- First reported in Europe in 2010
- Typically a white powder
- Usually snorted; occasionally ingested
- Primarily inhibits NMDA; effect on DA & 5-HT reuptake
- Reportedly more intense than ketamine; less than PCP
- Onset in 5-10 minutes
- Duration 1-2 hours with some reports of much longer
- Unscheduled in U.S.
- Also methoxyketamine 2-MeO-ketamine
Many are Cathinones
Often contain
  methylenedioxypyrovalerone (MDPV)
  Mephedrone
Similar to Methcathinone (Ephedrine)
“Bath Salts”
First reported in U.S. around 2008
$20-$80 per packet
MDPV 10X more potent than cocaine w/ stimulant effects
Typically snorted; occasionally injected
Effects last 2-8 hours
Reports of continued psychosis for weeks
Blocks DA & NE reuptake similar to cocaine
Not a transporter substrate
Statement from White House Drug Policy Director on Synthetic Stimulants, a.k.a “Bath Salts”

Washington, D.C. – Today, Gil Kerlikowske, Director of National Drug Control Policy, released the following statement following recent reports indicating the emerging threat of synthetic stimulants, including MDPV (3,4-methylenedioxypyrrolidone) and mephedrone. These stimulants are often sold and marketed in stores as “bath salts” under names such as “Ivory Wave” or “Purple Wave.”
“FLAKKA”

- Based on Spanish slang for “skinny woman”
- AKA “Gravel”
- Alpha-PVP (pyrrolidinopentiophenone)
- Similar to MDPV
- Imported from China
- First reported in U.S. 2014
  - Primarily Florida, Texas, Mississippi, Alabama
  - Emerging in Mid West
- $5 per packet
- White or pink powder
- Typically snorted; occasionally injected, eaten or smoked
- Similar to other potent stimulants- “Excited Delirium”
- Reports of continued psychosis for weeks
EUTYLONE

➢ A Cathinone
➢ Synthesized in 1960s
➢ Illicit use beginning @2019
➢ “Replacing” methylone/ethylone
➢ Less potent than some others
"TRASH CAN"

- Plastic containers with hinged lid
- Cylinder or cone
- 1st seen in Maryland in 2019
- Found in northeast, eastern shore, southern, western Maryland & Baltimore City
- Found to contain:
  - Heroin
  - Fentanyl
  - Cocaine
  - Xylazine
  - Eutylone
METHAMPHETAMINE

➢ “Meth”, “Crystal”, “Speed”
➢ Seeing more in Maryland
  ➢ especially west, eastern shore, southern and northeast
SYNTHETIC CANNABINOIDs

➢ Cyclohexphenols (non-classical) developed in mid 1980s
➢ First “classical” synthesized in Israel (Hebrew University) in 1988 (HU-210)
➢ John W. Huffman created first ones in the mid 1990s (JWH-018; JWH-250)
➢ Methods for synthesizing were published in scientific literature, & thus available to all
➢ Appeared in Europe’s underground drug market in 2004, then in the U.S. around 2006
➢ Sprayed onto herbs (bay bean, blue lotus, etc)
➢ Marketed as incense or aromatic potpourri
➢ Most commonly smoked (joint, bowl or bong)
SYNTHETIC CANNABINOIDS

- Variable similarity in function to THC
- **Full Agonist** at CB1 & CB2 receptors (THC is a partial agonist)
  - Aminoalkylindoles, Cyclohexylphenols, Dibenzopyrans
  - Bind CB1 50-30X greater than THC
- Metabolites are also active
- Faster onset
- Lack cannabidiol (CBD; may blunt some of the adverse actions of THC)
- Likely higher risk of causing psychosis
- Seizures and other medical complications not seen with marijuana
JWH-018, JWH-073, JWH-200, CP-47,497, and cannabicyclohexanol

S. 3187 (112th): Food and Drug Administration Safety and Innovation Act
This has been certified by laboratory analysis, and does not contain HU-210, JWH-018, JWH-073, JWH-200, CP 47,497 or any other chemical and/or plant ingredients prohibited by state or federal law. This product is designed specially as a potpourri product, and is not meant to be burned, smoked or incinerated in any manner. It should not be inhaled or consumed, and should be kept out of reach of children. The manufacturer, wholesaler and/or retailer are not responsible for any misuse of the product.
SYNTHETIC CANNABINOIDs: “THE NEXT GENERATION”

➢ Newer compound, URB-754: Does NOT bind to CB receptors itself, but inhibits enzyme that breaks down endocannabinoids
➢ More endocannabinoid around → more binding to receptors
➢ AND, one “spice” sample was found to contain URB + a cathinone, which reacted with one another and together created a whole new psychoactive compound
Synthetic marijuana leaves two dead and dozens with severe bleeding

Maryland Poison Center notified of a case in which a user of synthetic cannabinoids experienced bleeding and was hospitalized on April 3.

By: Maryland Department of Health
Thursday, April 5, 2018

Baltimore, Md. — The Maryland Poison Center and the Maryland Department of Health are warning the public of the danger of bleeding that can be linked to use of synthetic cannabinoids, also known as spice, K2, or fake weed.

The Maryland Poison Center at the University of Maryland School of Pharmacy was notified of a case in which a user of synthetic cannabinoids experienced bleeding and was hospitalized on April 3, 2018.

The symptoms in the Maryland case are similar to the description of dozens of cases in the Chicago region reported over the past two months by the Illinois Department of Public Health.

Maryland Poison Center clients concerned with potential synthetic cannabinoid exposure can call the Maryland Poison Center at 1-800-222-1222 to speak with a Poison Center expert.

Source: Maryland Poison Center
SALVIA DIVINORUM

- AKA: "Yerba Maria", "The Shepherdess", "la pastora", "Diviner’s Mint", "Diviner’s Sage"
- Indigenous to Southern Mexico
- Used in traditional healing and divination
- Smoked, chewed, or made into tea
- Currently not controlled in U.S.
- Available in stores in 5X, 6X, and 10X conc.
- $50-$100/ounce leaves; $20-$50/gram conc.
- Salvinorin A
- K-opioid receptor agonist
  - No serotonin activity
THANK YOU
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